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# The Trade-Off Between Ex Ante Pareto and Ex Post Egalitarianism

A Study of Extended Paternalism in Distributive Choices

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## Abstract

In this paper, we use an experimental approach to investigate the well-known tension between equality in society and individual freedom of choice. We have conducted a large-scale international experiment with nationally representative samples from Norway and the United States to create a situation that forces the participants to make a choice between respecting two other people's preferences or implement equality. We find that in Norway, 74.8 % of the participants put more weight on equality rather than respecting people's preferences, and they thereby choose equality at the expense of individual freedom. The corresponding number in the United States is 61.8 %, indicating that there are differences in preferences between the two countries.

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# 1 Introduction

All over the world, a central question is how society should make the trade-off between respecting individual freedom and securing equality. The ideal of equality among citizens is a highly regarded ideal in many societies, while at the same time, the ideal of individual freedom and people's right to make their own choices without government intervention is also seen as a central part of a democratic society. However, with freedom of choice comes the freedom to take risk, and this may lead to unequal outcomes among citizens. Hence, the ideal of individual freedom is in conflict with the ideal of equality, and the tension between these two ideals and how people weigh them makes for an interesting discussion. As a society, we need to decide to what extent we want to allow people to freely make choices involving risk that potentially leads to undesirable outcomes.

In economics, individual preferences are given a strong position when deciding how the economy should be organized. For instance, in standard economic theory the concept of consumer sovereignty builds on the argument that the market economy is set up to best serve the interest of the individual consumer. As production will follow from the demand of the consumers, what products are produced will be decided by the consumers, based on the idea that they themselves know best what products will maximize their utility, not the government or the producers. Additionally, it is commonly accepted that interfering in a free market will result in a loss of efficiency. This is due to the fact that some consensual interactions benefiting both consumers and producers will no longer take place, meaning that both parties would have been better off without the intervention.

In general, a reasonable principle for individual freedom seems to be that the main opinions to be respected when evaluating different prospects are the interests of the affected parties. That is, if for two prospects A and B, all parties affected prefer prospect A to prospect B, it seems reasonable that the society as a whole should prefer prospect A to prospect B.

However, there are some situations where it seems necessary to intervene and reduce people's freedom of choice. We distinguish between two kinds of paternalism; classic paternalism and moral paternalism. Classic paternalism is related to cases where there is reason to believe that people do not make decisions that promote their own good. For instance, people often fail to save sufficiently for their pension. Saving too little seems to come with greater costs than saving too much, and still there is substantial evidence that people fail to enroll in pension plans and save enough. This is shown to hold true even for very attractive pension plans (Thaler and Sunstein, 2008). In this kind of cases, it seems reasonable that the government should act paternalistically and intervene to help

people promote their own good. However, we do not study classic paternalism through our experiment, but rather moral paternalism. In moral paternalism, the justification for the paternalistic intervention is to promote an ideal the paternalist considers to be morally superior. Rather than helping people make a better choice for themselves, the paternalist wants to implement what he considers morally right. In our design, the person who gets the possibility to act paternalistically has no reason to believe that the persons they are intervening for do not know their own good. The only reason to intervene is if they put their moral ideal higher than both efficiency and the freedom of choice of the affected parties. One moral ideal that seems particularly important in distributive choices is fairness. People especially seem to dislike inequality that arises due to luck, while they are more willing to accept inequality that arises from differences in performance (Almås et al., 2016). People show an aversion towards inequality even when they are the ones benefiting from the inequality. This aversion has for example been shown in lab experiments with dictator games (List, 2007), (Forsythe et al., 1994).

In most situations involving economic policy, there exist a trade-off between equity and efficiency. This is a result of the fact that ensuring equity involves some sort of redistribution between high income groups and low income groups. As redistribution inevitably comes with a cost, this will lead to a less efficient outcome. For example, using an income tax to redistribute income will distort the market equilibrium as the incentives to work will be affected. In our design, we have one set of treatments revealing the trade-off between equity and efficiency, while we have another set of treatments primarily looking at how individual freedom is weighed compared to equality.

The considerations involved in the trade-off between freedom of choice and equality are essential both for policy makers and private individuals. However, welfare economics has still not agreed on how to evaluate such decisions between risky social prospects. In this thesis, we use an experimental approach to analyze how people actually make such choices.

Our experimental design combines the infrastructure of an international online marketplace and two leading international data collection agencies. The experiment has two groups of people; *workers* and *spectators*. The spectators make a real distributive choice for two workers who have both completed the same task. The spectators can choose between two different payment schemes, (I) an egalitarian payment scheme where both workers receive a medium payment, and (II) a non-egalitarian payment scheme where one of the workers receives a high payment and the other a low payment. We focus on the choices of spectators in a situation where both workers have chosen the non-egalitarian payment scheme, and the spectators have to decide to either respect the workers' freedom



of choice and let the payments be decided by the random draw, or to implement equal payments. This ensures a situation where there is a tension between respecting the workers' freedom of choice and implementing equality. If the spectators choose the egalitarian payment scheme, they show that they choose in accordance with their moral preferences for equality and ignores the workers' freedom of choice. By implementing the egalitarian payment scheme, the spectators reduce the expected payoff for all workers slightly. They do not allow the workers to take the risk involved in the non-egalitarian payment scheme, but they significantly improve the outcome of the workers that would have been worst off in the non-egalitarian payment scheme. This sheds light on how people make the trade-off between freedom of choice and equality. The experiment was conducted with nationally representative samples of spectators from Norway and the United States, which allows us to identify differences in preferences between the two countries.

Inspired by Fleurbaey and Voorhoeve (2013), we can illustrate how this kind of choice between risky prospects exists in everyday life. In Norway, all women born in 1991 or later were from the 1st of November 2016 until the 1st of November 2018 offered to take the HPV vaccine for free. This program involves a cost for all participating women, in the form of having to take the vaccine three times, but it also involves substantial gains for some women as it prevents cancer at a later stage in life. Thus, the government's choice of implementing this program involves reducing the expected outcome of all women slightly, but significantly improving the outcome of the ones who would have been worst off. This mirrors the outcome of the egalitarian payment scheme, where the total payoff is slightly smaller, but the worst off people are better off than the worst off people in the non-egalitarian payment scheme.

There are also other choices in everyday life situations that involves choosing between risky prospects, but that in character are very different from the one described above. For example, some people might prefer to have a performance based wage, and some employers might prefer this kind of wage scheme. Thus, both the affected parties prefer this payment scheme. These wage schemes lead the final salary to be very uncertain. However, workers in some fields can choose between jobs with a certain medium wage or jobs with a low certain wage and large bonus opportunities. The latter will result in "winners" and "losers" and thus inequality. Whether we as society want to move in the direction of mainly performance based wages, creating more inequality, is a debated question. Another example of choices involving risk, is occupations involving hazards. Some jobs which involve significant risk will offer high salaries, in effect paying a risk premium to their workers. This means that while the majority will be slightly better off by receiving a higher salary for having a job involving risk, some workers will get injured

and be significantly worse off than they would have been had they not taken the risk. This makes choosing between a safe occupation and a hazardous occupation a choice involving different outcomes with different probabilities.

How different societies handle the trade-off between individual freedom and equality vary across the world. This can be due to a number of factors. The institutions of a country and how much the citizens trust these institutions is likely to affect the degree of acceptance of government interventions. Another factor could be cultural differences, resulting in different views on the government's role in society. It is common to think of the United States as a society where respecting individual preferences is important, and where people place a high value on the individual freedom of both themselves and others. Norway along with the other Scandinavian countries, on the other hand, is often considered to be a society that is more accepting of government regulations and where a focus on equality often overshadows the respect for individual freedom of choice.

We find that a majority of the spectators choose to implement equality among two workers who had completed the same task, even though they knew that both of the workers preferred to have their payment decided through a payment scheme involving unequal outcomes. That is, the spectators choose to not respect the freedom of choice of the workers and rather ensure that they receive equal payments. We also find that being asked to make the distributive choice after the inequality between the workers has arisen significantly increases the share of spectators implementing the egalitarian payment scheme. Furthermore, we find that Norwegians are significantly more willing than Americans to implement the egalitarian payment scheme, both before and after the inequality has arisen. Additionally, we find that knowing that the workers themselves prefer to have their payment decided by the non-egalitarian payment scheme significantly reduces the willingness to implement the egalitarian payment scheme.

The rest of this paper is structured as follows; section 2 presents an overview of the relevant literature, section 3 describes the data collection and the experimental design, section 4 presents the empirical strategy, section 5 presents the main results, and section 6 concludes.

## 2 Background

The main part of the literature review is subsection 2.1, where we go through the relevant literature regarding the conflicting principles for evaluating social choice under uncertainty. For the remainder of the section we go through the literature on paternalism in

subsection 2.2, then the well-known trade-off between equity and efficiency in 2.3, and finally subsection 2.4 provides an overview of the research on different attitudes towards inequality between Norway and the United States.

## 2.1 Ex Ante Pareto, Ex Post Egalitarianism, and Dominance

In general, there are three intuitive principles that should be considered when comparing distributive choices involving risk. The three principles are conflicting, as it is not possible to obey all three of them at the same time. One must be rejected. This conflict is at the heart of Harsanyi's (1955) utilitarian theorem. The three principles are as follows (based on Nissan-Rozen (2017)):

1. *Ex ante Pareto*: If, for all individuals, the expected utility of one prospect, A, is higher than the expected utility of another prospect, B, then A is preferred to B.
2. *Ex post egalitarianism*: There are some cases where a more egalitarian distribution, A, is preferred to another less egalitarian distribution, B. This is true even if the total amount of utility is larger in distribution B than in distribution A.
3. *Dominance*: If the outcomes of one prospect, A, are better than the outcomes of another prospect, B, in every state of the world, then A is preferred to B.

Ex ante is Latin for "before the event" as opposed to ex post meaning "after the event". Ex ante is commonly used when considering outcomes that are yet to happen, while ex post is used when considering outcomes in retrospect.

To get a clearer sense of the meaning of the three principles, consider the situation described in Table 1.

Table 1: Payoff matrix: Rejection of ex ante Pareto

	$p(w_1)=0.5$	$p(w_2)=0.5$
A	2,2	2,2
B	5,1	1,5

The table shows the payoff of two individuals, individual 1 and individual 2, from now referred to as workers, in the case of two different prospects, A and B, and two different states of the world,  $w_1$  and  $w_2$ . The payoff represents the utility the workers receive. The final outcome is determined partly by chance, as each state of the world has a 50 % probability of occurring, and partly by an external third party, hereby called a spectator, choosing between prospects A and B.

Let us suppose the spectator is an ex post egalitarian and prefers certain equal outcomes to unequal outcomes. That is, the spectator prefers the equal outcome (2,2) to either of the unequal outcomes (5,1) and (1,5), even though the total payoff is higher in the unequal outcomes. This implies that prospect A is preferred to prospect B in both states of the world,  $w_1$  and  $w_2$ . The principle of dominance therefore yields that prospect A must be better than prospect B.

However, for both worker 1 and 2, their expected payoff is 2 for prospect A and 3 for prospect B. As all workers receive a higher expected payoff from B than from A, prospect B is preferred to prospect A according to the ex ante Pareto principle.

This situation shows the impossibility in evaluating distributive choices involving risk. A question that naturally arises is then, when one has to reject one of the principles, which one should be rejected?

In a comment to Harsanyi's article (1955), Diamond (1967) presents an argument for rejecting the dominance principle<sup>1</sup>. Diamond presents an example demonstrating the possible problems that may result from obeying the dominance principle. Table 2 shows the hypothetical situation described by Diamond (notation has been altered to be consistent with the notation in Table 1).

Table 2: Payoff matrix: Rejection of dominance (I)

	$p(w_1)=0.5$	$p(w_2)=0.5$
A	1,0	1,0
B	1,0	0,1

As in the previous example, an external third party is making a choice between two prospects, A and B. The payoffs of the two individuals concerned, worker 1 and worker 2, are determined as in the previous example.

In this example, choosing prospect A will result in the outcome (1,0) with certainty, as this is the payoff regardless of which state of the world occurs. By choosing prospect B however, the result is still that one worker receives a payoff of 1, while the other one receives a payoff of 0. However, who of the workers that ends up being on which side of the income distribution is determined by chance, and each of them has an equal probability of receiving a payoff of either 1 or 0.

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<sup>1</sup>Nissan-Rozen (2017) presents a different argument for rejecting the principle of dominance. A thorough description of this argument can be found in section 8.3 in the appendix.

The dominance principle yields that if the outcomes of one prospect are preferred to the outcomes of another prospect in all states of the world ex ante, then this prospect should also be preferred ex post. In this situation, all of the four outcomes in Table 2 are considered equally good ex post, as the same degree of inequality arises regardless of choice of prospect or state of the world. One worker will get a payoff of 1 while the other will get a payoff of 0, and we assume that the spectator treats the workers symmetrically and is indifferent between who of the workers is better off.

Ex ante however, the consideration becomes different. The spectator does not know which of the two states will occur, only the probability of each of them. In terms of expected payoff, the choice of the spectator becomes choosing between prospect A with the expected payoff distribution (1,0) and prospect B with the expected payoff distribution (0.5, 0.5). The expected payoffs show the difference between the prospects. While A for sure yields an unequal distribution of payoff in worker 1's favor, B gives each of the workers a fair chance at being the one better off. Diamond's point is that for an egalitarian, prospect B seems strictly preferable ex ante, because the possibility of outcomes, not only the final payoffs, is of importance. As the spectator is indifferent between A and B ex post, strictly preferring prospect B to A ex ante involves rejecting the dominance principle.

On the other hand, Fleurbaey and Voorhoeve (2013) argue that it is rather the ex ante Pareto principle that should be rejected. They present a principle of rationality, called the principle of full information, that they argue should be respected in the evaluation of the different prospects. We continue to use the example from Table 1. The argument goes as follows. Let us assume that the spectator is an ex post egalitarian and therefore prefers certain equal outcomes to unequal outcomes. Evaluating prospects ex ante, the spectator can justify choosing prospect B on the grounds that it was in the best interest of both worker 1 and 2 given the information she had at the time.

Fleurbaey and Voorhoeve further imagine each of the workers having a guardian seeking to provide the best possible outcome for the worker they are guarding. The spectator should only be choosing prospects that are the preferred prospect of both the guardian of worker 1 and the guardian of worker 2. Ex ante, both guardians would approve of the spectator's choice of prospect B, given that they have the same information she has. If the spectator would have an opportunity to acquire full information without any costs, she must do it, as if she does not, she can no longer claim that she is acting in the best interest of both workers, and that their guardians would have acted in the same way.

Let us assume that the guardians are fully informed, and that the spectator has the opportunity to get advice from both guardians. That is, they have full information in the sense that they know which state of the world will occur,  $w_1$  or  $w_2$ . The spectator

should act in accordance with what the fully informed guardians would advise her to, as this would preserve the best interest of both worker 1 and 2. When considering prospect B, the guardians both know which state will occur and hence, the guardian of the worker who will get a payoff of 5 in the state that will occur will advise the spectator to choose prospect B, while the guardian of the other worker, who will get a payoff of 1, will advise against choosing this prospect.

Hence, the spectator knows that choosing prospect B is unjustifiable regardless of which state of the world would occur. Either worker 1 would be worst off and his guardian would advise against choosing prospect B, or worker 2 would be worst off and his guardian would advise against it. Since the spectator is an egalitarian treating the workers symmetrically, both of these outcomes make choosing prospect B equally unjustifiable. Therefore, if the spectator could consult both workers' fully informed guardians, she could not justify choosing prospect B and hence, she should always prefer the egalitarian prospect A.

Consulting the workers' guardians would be equivalent to having full information. It seems reasonable for the spectator to prefer making decisions with full information to making decisions without full information. The spectator in this case knows that she would strictly prefer prospect A to prospect B if she had full information, regardless of what that information would be. Therefore, it is rational for the spectator to choose prospect A, as this is to act as if she had full information. This is coined by Fleurbaey and Voorhoeve as the principle of full information.

Following this, the spectator, being an egalitarian, would choose prospect A ex post, and, as explained above, also choose prospect A ex ante. Thus, the spectator is fulfilling ex post egalitarianism and the dominance principle, but rejecting the principle of ex ante Pareto.

Through the analysis of the experimental data, we shed light on whether the majority of the egalitarian participants reject the ex ante Pareto principle or the dominance principle when they are put in a situation that forces them to inevitably reject one of them.

## **2.2 Paternalism**

A central question in politics, but also in personal relationships, is if, when, and to what extent someone has the right to intervene in someone else's life. When someone intervenes in someone else's life without their consent, this is often referred to as paternalism. Paternalism is defined as "the interference of a state or an individual with another person, against their will, and defended or motivated by a claim that the person interfered with

will be better off or protected from harm" (Dworkin, 2017).

There are several different types of paternalism. It is common to distinguish between hard and soft paternalism, hard and soft describing how strongly one intervenes in someone else's life. Soft paternalism for example involves forcing information on someone, so that they will not make a decision lacking knowledge regarding the potential consequences. Hard paternalism on the other hand could find it justifiable to prevent an action even if the persons involved have information regarding the potential outcomes. Another distinction, especially relevant for our case, is the distinction between moral paternalism and welfare paternalism. Welfare paternalism is the classic type of paternalism where the justification for interfering in another person's life is that it promotes the welfare of this person. Moral paternalism however, seeks to promote the moral welfare of this person (Dworkin, 2017). That is, the intervention is not justified as promoting the interests of the person, but rather promoting a moral ideal. Paternalism has received a lot of attention in recent years, culminating in the Nobel Prize in Economics being awarded to the economist Richard Thaler for "his contribution to behavioral economics", among which his work on nudging has been influential (Nobel Foundation, 2017). This field of research lies within what is commonly defined as soft paternalism.

In our analysis, we study how people constrain other people's freedom in order to promote an ideal that they consider to be morally superior. As our design is not aimed at tricking the workers into choosing a payment scheme that does not best promote their own good, it is not clear that the spectators are acting as welfare paternalists when not respecting the workers' individual preferences. In our design, there is no reason to believe that the spectator sees her choice as a choice between giving the worker the freedom to make a decision that does not best promote their own good, or acting paternalistically and help the worker make a better decision. It is not clear from an objective point of view that one of the payment schemes is better for the worker, it is only a matter of what the spectator considers morally superior. Thus, they are not paternalists in the classic sense, but rather moral paternalists.

Our hypothesis is that spectators violate the ex ante Pareto principle and implement the egalitarian payment scheme at the expense of individual freedom, as previous research has shown that people tend to be morally motivated in distributive choices (List (2007) and Jakiela (2015)).

## 2.3 Equity-efficiency trade-off

In welfare economics, both equity and efficiency are important ideals. It is commonly asserted that there is a trade-off between these two objectives, as increasing the focus on one of them results in reducing the focus on the other one. That is, securing equal outcomes comes at the expense of efficiency. Okun (1975) provides a hypothetical experiment demonstrating the salience of this trade-off in redistributive policies. Okun describes a situation in which there are inequalities and a redistributive policy is introduced involving taxing the individuals in the upper part of the income distribution and distribute the money to the individuals in the lower part of the distribution. However, in this redistributive process, the money are transported in a leaking bucket, resulting in part of the money disappearing during transportation. Hence, the amount that is distributed to the low income individuals is lower than the amount taken from the high income individuals. The leaking bucket is an analogy for the inefficiencies inevitably involved in redistributive policy. Hence, being an egalitarian involves being willing to reduce the total payoff of the individuals concerned in order to improve the payoff of the individuals worst off.

In our experiment, we mainly investigate how people act when confronted with a situation where they must choose whether to respect individual freedom or to ensure equality. However, we also include a treatment where the participants must choose between implementing equality or efficiency.

## 2.4 Norway versus the United States

One important aspect of our analysis is the difference between Americans and Norwegians. There is a large literature on international differences in attitudes towards inequality and redistribution, which is closely related to preferences in distributive choices. This literature consists of both large, non-incentivized representative surveys like the World Value Survey, the European Social Survey, the General Social Survey and the International Social Survey Programme, and of incentivized lab-experiments on non-representative samples (Barrett et al. (2016), Grimalda et al. (2016), Henrich et al. (2005), and Henrich et al. (2010)). Almås et al. (2016) uses an empirical approach that "(...) combines the strengths of the survey approach (large representative samples) and the lab experimental approach (incentivized choices)" in their study of social preferences in Norway and the United States.

There are several research papers looking at the differences in social preferences between the Scandinavian countries and the United States. The income inequality in the United



States is much larger than in the other OECD countries, and Americans are systematically more willing to accept inequality than Norwegians (Almås et al., 2016). Individual freedom is of great importance in the United States, while the Scandinavian countries are well-known for being socialist countries with a generous welfare state.

Following our hypothesis that the majority of spectators will implement the egalitarian payment scheme at the expense of individual freedom, we believe that the share implementing the egalitarian payment scheme will be greater in Norway than in the United States.

### 3 Design

To collect data, we recruited two types of participants: *workers* from an online international labor market and *spectators* from two leading international data collection agencies. The workers first worked on a real-effort task, before they were matched with another worker and asked to choose between two payment schemes. However, they were told that the payment for the task with a certain probability was going to be determined by a third party. After all workers had completed the task and chosen their preferred payment scheme, we recruited the persons who were going to be the aforementioned third party, i.e. the spectators. The spectators were randomly assigned to different treatments, before they were matched with a pair of workers and asked to choose which of the payment schemes that was to be implemented. The spectators' choice of preferred payment scheme are used in the analysis, while the workers' choice of preferred payment scheme were given as information to the spectators in some of the treatments.

The design enables us to create an experimental setting where the participants make real-world decisions in an incentive compatible environment. Traditionally, survey respondents have answered hypothetical questions, which means that their behavior may differ from how they would have acted had their actions had real world consequences. As an experimental design introduces such consequences, it reveals the respondents' true preferences to a greater extent than traditional surveys do.

The experimental design also enables us to compare the answers of the Norwegian and the American spectators and infer how they differ in their preferences. By using an experimental setting, we ensure that the spectators make the distributive choice in identical situations. If we did not use an experimental design, we would not know whether a difference in the answers from the Norwegian and American spectators was due to, for example, different costs of redistribution in Norway and the US, or truly due to Americans

and Norwegians having different redistributive preferences. By placing the spectators in identical situations, we are able to isolate differences in the spectators' answers to only stem from differences in their preferences and nothing else.

### 3.1 Workers

The workers were recruited through the international online marketplace Amazon Mechanical Turk (mTurk). mTurk is a crowdsourcing Internet marketplace where people and businesses, called requesters, can post tasks that can only be done by a human and not a computer. These tasks are called Human Intelligence Tasks (HITs), and workers on mTurk can browse and choose between thousands of HITs. The requesters set the amount they want to pay for their HITs and the number of workers they want to complete the HIT, and the workers get paid accordingly after having completed the HIT. It is also possible to pay the workers a bonus in addition to the fixed payment, for instance to reward certain workers.

We recruited 5140 workers for the Norwegian spectator sample, and 5260 workers for the American spectator sample. In both groups some workers submitted the HIT without having answered the survey, leaving us with respectively 5119 and 5231 workers.

The workers on mTurk who accepted the HIT first completed a task consisting of answering a short survey. They were then matched with another worker who had completed the same task and asked to choose between two different payment schemes. The only information they got about the other worker was that he or she had completed the same task. The payment schemes they could choose between were (I) an egalitarian payment scheme where both workers got paid 2 USD and (II) a non-egalitarian payment scheme where one of the workers got paid 5 USD while the other got paid 1 USD, and who received the high and low payment was decided by a random draw. All workers also got a participation fee of 1 USD regardless of choice of payment scheme. They were told that with a given probability, their choice of payment scheme would be implemented. Otherwise, it would be decided by a third party. The probability of getting their own choice implemented was 10%, independently of their preferred payment scheme.

The beauty of the design is that the way the workers choose the payment scheme is incentive compatible, as they can achieve the best outcome for themselves just by choosing in accordance with their true preferences. Because the workers' choice with a given probability will be implemented, they have an incentive to choose their preferred option. Contrary to traditional surveys where participants make decisions with hypothetical consequences, the design allows the spectators to make a decision with real world consequences for two

other people.

Cameron (1999) finds that the results from ultimatum games with hypothetical payoffs differ significantly from the games with real stakes. Hence, people do not necessarily reveal their true preferences in hypothetical choices. This might be due to people intentionally choosing differently than they would have done in a situation with real consequences, for instance to come across as more generous, more altruistic and nicer than they truly are. However, it might as well be due to people not knowing their true preferences, and thus unintentionally choosing differently than they would have done if their decisions had real world consequences. In our design, some workers might for instance believe that they are less risk averse than they are revealed to be when choosing between risky prospects with real world consequences. Another possibility is that participants are more susceptible to the experimenter demand effect when consequences are only hypothetical. The experimenter demand effect is when participants in experiments adapt their behavior to what they believe the experimenter wants, either consciously or unconsciously.

## 3.2 Spectators

We had two groups of spectators. The first group consisted of 2000 Norwegian spectators recruited through the data collection agency Norstat. The second group consisted of 2005 American spectators recruited through the data collection agency Research Now. The sample from the United States includes 5 extra spectators as the survey was not closed in time. However, these spectators were also matched with workers from mTurk and their choices had real world consequences. The spectators in both groups were nationally representative (18+ years old) on three observable characteristics: gender, age and geography.

There are several reasons why we chose to use data collection agencies to recruit the spectators. By recruiting spectators through data collection agencies, we obtained a sample of the general population. This is beneficial, as having nationally representative samples makes it more likely that the results are generalizable to the population as a whole. Many lab-experiments are conducted with students, which is likely to limit the external validity to the student population they are drawn from. As seen in Cappelen et al. (2015), the preferences of students may not be generalizable to the society at large. They find that "the representative participants differ fundamentally from students both in their level of selfishness and in the relative importance assigned to different moral motives". Hence, using a nationally representative sample is crucial for the external validity of our results, as we want the results to be generalizable to the broader population. Nationally

representative samples also make it possible to compare the spectators' choices across different countries, which we take advantage of in our analysis. Using data collection agencies also makes it easier to get large samples, increasing the statistical power of the analysis.

Using nationally representative samples is important for the external validity of the results, as we want the results to be generalizable to the population as a whole. The populations of interest in our case are the populations of the United States and Norway. Because we cannot run the experiment on all people in the United States and Norway, we use a subsample of the populations in the experiment. As these subsamples are random samples of the populations of interest, we can infer characteristics about the general population from the results of the experiment.

However, there is a risk that there is a selection bias even when using nationally representative samples. The samples are nationally representative on three observable characteristics, but apart from this we know little about the respondents. It would have been possible to use more observable characteristics when recruiting the sample, but there is a large number of important characteristics that are unobserved and thus impossible to use in the recruitment process. If, for instance, people who answer surveys are more egalitarian than the population as a whole, the answers would be more egalitarian than if the whole population were asked, and this would give biased results. It is however close to impossible to be certain that a sample is truly nationally representative on both observable and unobservable characteristics. This would require randomly drawing a large sample from the population, with mandatory participation ensuring a 100% compliance rate. However, as we have a large sample size that is nationally representative on three observable characteristics, our sample is likely to resemble the actual population to a large extent.

The spectators were divided into four different treatments, and each spectator was matched with a pair of workers and asked to make a distributive choice for these workers. The degree of information given to the spectators about the workers differed across treatments. However, all spectators were told that two workers had completed a task on an international online marketplace, that both workers had been paid 1 USD for participating and that it was now up to the spectator to decide between payment scheme (I) and (II), described in section 3.1. All spectators were also told that their choice was going to be implemented and thus have consequences for a real situation.

Because we did not want the spectators to think of the distributive choice as a mathematical task, we did not tell them what share of the workers was matched with a spectator and what share got their own choice implemented. We wanted them to consider the choice to

be a distributive choice where they were to implement the payment scheme they thought was right given the situation, not to try to calculate a "correct" answer. To make the information given to the workers and the spectators as equal as possible, the workers were only told that with a *given* probability, their choice of payment scheme would be implemented.

A spectator design has several advantages, but the most important for our analysis is that it enables us to cleanly identify the spectators' moral views. If the payment of the person who makes the distributive choice is affected by what he or she chooses, the choice will be affected by both self-interest and his or her moral views. When people make distributive choices involving themselves and others, we usually assume that they care about fairness, efficiency and their own wealth payoff, where the first two are related to their moral views. However, when using a spectator design, the spectators' concerns are limited to efficiency and fairness, as the spectators have no potential financial gains related to their decision. The spectators thus consider the fairness aspect, which would be to evenly distribute income between the two workers to avoid an unequal income distribution that is due to luck, i.e. to implement the egalitarian payment scheme. The efficiency consideration would favor the payment scheme that maximizes the size of the pie, i.e. to implement the non-egalitarian payment scheme. The information treatments in our experiment also give the spectators a third moral aspect to consider; respecting the workers' freedom of choice. Given our design, to respect the workers' freedom of choice is always to implement the non-egalitarian payment scheme.

If the workers were to decide with certainty which of the payment schemes that was to be implemented, it would be impossible to disentangle the effects of these considerations from one another. However, because the spectator is a third party with no financial interest in the outcome of his or her decision, we cleanly identify his or her moral views. The only thing that can give the spectator utility is to choose what he or she thinks is morally right, and thus the spectator design enables us to elicit the spectators' moral views and preferences.

### **3.3 Treatments**

The experimental design largely depends on randomization of the spectators into different treatments. The spectators are randomized into four different treatments described in further detail later in this section. The randomization ensures that the four groups are identical on both observable and unobservable characteristics, and thus the only difference between the groups is the treatment. The randomization of spectators into the

different treatments means that if the groups on average make different choices, we can infer a causal relationship between the treatment and differences between the groups' answers.

The law of large numbers says that if the same trial is performed a large number of times, the average value of the result will converge towards the expected value of the population as the number of trials increases. Therefore, the randomization of spectators into treatment groups, should on average make the groups equal with respect to both observable and unobservable characteristics.

As a preliminary effort, we provide an overview of the data by looking at the characteristics of the spectators. We acquired the data through a data collecting agency, and part of their job is ensuring that the final sample of respondents is nationally representative. However, it is still helpful to examine basic characteristics of the spectators, and especially whether the treatment groups are similar with respect to different characteristics.

With 500 spectators in each of the four treatment groups for both Norway and the United States, it could be that, by random, the spectators in each group are not equal on average. Hence, it is useful to compare the groups on observable characteristics as a simplistic test for representativeness across treatment groups. Table 3 and 4 show the mean and standard deviation of the percentage of spectators being male, the age of the participants, the household income and the share with higher education for each of the four treatment groups.

Table 3: Summary statistics - Norwegian sample

	Info - Ex ante		Info - Ex post		No info - Ex ante		No info - Ex post	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Male	0.49	0.50	0.48	0.50	0.46	0.50	0.50	0.50
Age	49.01	16.74	49.22	17.30	48.98	17.11	49.57	17.21
Household income	804 423	384 272	754 887	358 907	768 305	352 546	761 220	358 049
High education	0.62	0.49	0.63	0.48	0.63	0.48	0.58	0.49
Conservative	0.29	0.45	0.26	0.44	0.29	0.46	0.26	0.44
Observations	500		500		500		500	

Note: The table displays the descriptive statistics for the Norwegian spectator sample. The data points for the variable "Household income" were reported in intervals of 100 000 NOK. The mean and standard deviation are calculated using the upper bound of the intervals. The variable "High education" is an indicator variable equal to 1 if the individual has completed higher education(university/college). The variable "Conservative" is an indicator variable equal to 1 if the individual would have voted have voted for Høyre or Fremskrittspartiet.

Table 4: Summary statistics - American sample

	Info - Ex ante		Info - Ex post		No info - Ex ante		No info - Ex post	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Male	0.53	0.50	0.52	0.50	0.47	0.50	0.46	0.50
Age	48.17	15.58	45.76	14.71	42.11	19.18	42.38	19.76
Household income	106 576	52 186	106 487	50 435	109 202	49 131	107 926	51 208
High education	0.78	0.41	0.76	0.43	0.80	0.40	0.74	0.44
Conservative	0.38	0.49	0.34	0.47	0.36	0.48	0.35	0.48
Observations	500		500		502		503	

Note: The table displays the descriptive statistics for the American spectator sample. The data points for the variable "Household income" were reported in intervals from 0 to 25 000 USD, from 25 000 to 50 000 USD, and then in intervals of 50 000 USD. The mean and standard deviation are calculated using the upper bound of the intervals. The variable "High education" is an indicator variable equal to 1 if the individual has completed higher education(university/college). The variable "Conservative" is an indicator variable equal to 1 if the individual would have voted have voted for the Republican Party or the American Independent Party.

The randomization seems to have been successful, as it resulted in balanced baseline characteristics. Both the mean and standard deviation are very similar for all characteristics in both samples, and this suggests that both the randomization process and the sample sizes are satisfactory in making the treatment groups comparable.

We used a  $2 \times 2$  design where the spectators were divided into four treatments. The treatments were the following: *Ex ante information*, *Ex ante no information*, *Ex post information* and *Ex post no information*<sup>2</sup>. Our main focus is on the difference between ex ante information and ex post information, i.e. on a comparison between making the distributive choice ex post relative to ex ante in the information treatments.

### 3.3.1 Information versus no information

In the information treatments, the spectators were matched with a pair of workers who had both chosen the non-egalitarian payment scheme. The spectators in this treatment were informed about what the workers in their pair had chosen. In the no information treatment, the spectators were not informed about what payment scheme the workers in their pair preferred. We randomly allocated 1000 Norwegian spectators and 1000 American spectators to each of the two main treatment categories.

<sup>2</sup>The ex post treatment consisted of two subcategories: ex post A and ex post B. The categories are mirroring each other, the only difference being whether worker A or worker B received the high payment. The results from these two treatments are not statistically significant from each other, and we thus merge the results together.

We expected a large share of spectators to prefer the egalitarian payment scheme over the non-egalitarian payment scheme in the no information treatments, despite the egalitarian scheme imposing an efficiency loss. We were interested in how this share would change when the spectators got information that the workers themselves preferred the non-egalitarian payment scheme. Having both the information treatment and the no information treatment enables us to identify to what extent the spectators respect the workers' freedom of choice. The difference in the share of spectators choosing to implement the egalitarian payment scheme in the information and the no information treatments identifies the effect of having information about the preferences of the workers.

### **3.3.2 Ex ante versus ex post**

In the ex ante treatments, the spectators did not know whether worker A or worker B was going to be the one who received the high payment if they chose the non-egalitarian payment scheme, only that it was going to be decided by a random draw. In the ex post treatment, half of the spectators were told that worker A would receive the high payment and worker B the low payment if they chose to implement the non-egalitarian payment scheme, while the other half of spectators had the opposite distribution of payments. This means that in the ex post treatment, the random draw had taken place and the outcome was known to the spectators, while in the ex ante treatment the spectators were asked to choose between the egalitarian and non-egalitarian payment scheme without knowing the outcome of the random draw. Hence, the only difference between ex ante and ex post in both the information and no information treatment was whether the spectator knew who of the workers was going to receive the high payment if the spectator chose to implement the non-egalitarian payment scheme. It is the effect of knowing which worker will receive the high payment, i.e. the ex post effect, that is the main focus of our analysis.

Each spectator was only in either the ex ante or the ex post treatment, meaning that we do not observe the same spectator's behavior in different settings. However, as the spectators are randomized into treatments, the groups are on average statistically equal, and we can thus compare the results across treatments. This enables us to identify the share violating the dominance principle, which is the difference between the share implementing equality ex ante and ex post.

In the no information treatments, choosing the non-egalitarian payment scheme involves putting more weight on efficiency than equality. In the information treatments, choosing the non-egalitarian payment scheme could also be a result of respecting the workers' freedom of choice, as the spectators have information that the workers prefer the non-



egalitarian payment scheme. Since obeying the ex ante Pareto principle means preferring one prospect to another if all individuals concerned have a higher expected utility from that prospect, we are only able to identify spectators who are ex ante Paretians in the information treatments. This is the only treatment where the spectators can be sure that both workers have a higher expected utility from the non-egalitarian payment scheme. Thus, the spectators in the ex ante information treatment choosing to implement the non-egalitarian payment scheme are ex ante Paretians. As the ex ante Paretians are only revealed in the information treatment, we choose to focus on the ex post egalitarians in the ex post information treatment as the share of people that are ex post egalitarians, as opposed to the ex post egalitarians from the ex post no information treatment.

### 3.4 Survey design

In addition to the main question about the distributive choice, the spectators also had to answer several background questions. Norstat, the Norwegian data collection agency, has a standard set of background questions that all respondents are asked, and these questions are asked before the main survey. This means that all background questions were asked before the respondents were asked to make the distributive choice. To make the results from the Norwegian sample comparable to the results from the American sample, the American respondents also got the questions in this order.

### 3.5 Sample size

In statistical analysis, the number of observations is important for the precision of the estimates, and a large number of observations makes it less likely that the results are due to randomness and coincidences. If an analysis is based on a large number of observations, it is more likely that the results reflect the characteristics and preferences of the population.

To analyze whether the sample size is sufficient, we can calculate the statistical power of the experiment. The statistical power is the probability of correctly rejecting the null hypothesis when the null hypothesis is false. To maximize the power is equivalent to minimizing the probability of a type-II-error. The power of an experiment depends on three factors; the number of observations, the level of statistical significance required and the magnitude of the effect we want to detect. The higher the power, the more reliable are the results from the experiment. A power of 0.8, which implies a 20 % risk for a type-II-error, is commonly considered to be sufficient.

The main binary hypothesis test in our experiment is whether the share implementing equality is significantly different in the ex ante and the ex post treatments. For this test, the power of our experiment is 0.8454, and hence our experiment has a 84.54 % probability of correctly rejecting the null hypothesis. This must be considered sufficient.

In our study, we are mainly interested in the spectators' choices. Because we had 1000 spectators in the information treatment in both the Norwegian and the American sample, we needed at least 2000 workers who had chosen the non-egalitarian payment scheme for both samples. As 90%, and not all of the workers, got their payment scheme decided by a spectator, we needed at least 2222 workers to choose the non-egalitarian payment scheme for both samples to end up with 2000 workers getting their payment scheme decided by a spectator. As the spectators in the no information treatment did not know anything about the choices of their workers, it was irrelevant which payment scheme their workers had chosen. This means that if more than half of the workers chose the non-egalitarian payment scheme, we would need 4444 workers for each of the spectator samples.

To get a sufficient share of the workers to choose the non-egalitarian payment scheme we needed to set the payment in both the egalitarian and non-egalitarian payment scheme correctly. The choice between the two payment schemes involves choosing between a safe payment or a 50-50 possibility of receiving either a smaller payment or a higher payment compared to the safe one. According to standard economic theory, people's behavior in these kind of choices is given by expected utility theory. When choosing between a risky and a safe payment scheme, two important factors determine how desirable each payment scheme is for the individual making the decision. First of all, the expected value of the payment scheme is of importance, as monetary payments yield strictly positive utility. Additionally, risk aversion determines how the trade-off between the expected value of a prospect and the risk involved is made. A risk averse individual could turn down a prospect yielding a higher expected value to a lower, but safer prospect, without behaving irrationally. Risk aversion implies that the individual has decreasing marginal utility of money, that is, they are maximizing a concave utility-of-wealth function. So as the individual receives money, the utility gained from a given additional amount of money will decrease. This makes the level of the stakes important for how the individual weighs the risky payment scheme against the safe payment scheme.

If we look at the payment schemes we used in this experiment, the individuals could choose between a safe payment of 2 USD or a risky payment scheme yielding a payment of either 1 USD or 5 USD, each with a probability of 50 %. As the payment in the risky payment scheme has an expected value of 3 USD, a risk neutral individual would choose this over the safe payment of 2 USD. The choice can be seen with the safe payment as a reference point,

as this is the risk free option. That way choosing the safe payment scheme is turning down a 50-50 gamble of losing 1 USD or gaining 3 USD. According to expected utility theory, choosing the safe option must signify that you value the third dollar gained above the safe payment at most  $(1/3)$  as much as you value the last dollar of the safe payment. This sort of valuation of monetary amounts implies a ridiculously rapidly diminishing utility of wealth. When this is applied to situations involving larger stakes, the corresponding behavior would imply absurd levels of risk aversion. For instance, Rabin (2013) shows that turning down a 50-50 bet of losing 100 USD or gaining 110 USD, implies a degree of risk aversion leading to turning down a 50-50 bet of losing 1 000 USD and gaining any sum. Therefore, following expected utility theory, to get an equal number of workers choosing the egalitarian and the non-egalitarian payment scheme, the expected value of the two schemes should be approximately equal.

However, there is reason to believe that people do not always behave in accordance to expected utility theory, and that they exhibit risk averse behavior even in situations involving low stakes. We therefore ran three pilots varying the amounts in the two payment schemes before we started the main data collection. It was important that the amounts were such that some people preferred the risky, non-egalitarian payment scheme while others preferred the safe, egalitarian payment scheme, both among workers and spectators. As people are more risk averse over low stakes than predicted by expected utility theory, the expected value of the non-egalitarian payment scheme had to be substantially higher than the expected value of the egalitarian payment scheme.

For this to happen, equality has to come with a cost. This also means that our design mirrors the real world, where redistribution normally comes with a relatively high cost. An example of redistribution that comes with a cost is taxes on goods and services. Taxes are widely used to redistribute income in society and even out inequality. In markets with perfect competition, a tax distorts the efficient market equilibrium and causes a deadweight loss, which inflicts an economic cost on society.

With the amounts we chose, about 40 % of the workers chose the non-egalitarian payment scheme and 60 % chose the egalitarian payment scheme. We thus had to recruit more than 4444 workers for both spectator samples to get a sufficient number of workers who had chosen the non-egalitarian payment scheme. This gave both more workers who chose the non-egalitarian payment scheme and who chose the egalitarian payment scheme. For 90 % of the additional workers who chose the egalitarian payment scheme, we recruited spectators on mTurk to decide the payment scheme. The distributive choices of these spectators are not included in the analysis, as they are not made by a nationally representative sample.

One potential drawback with our design is that the stakes are relatively small. It is reasonable to believe that people may have different preferences for amounts that are economically more significant. The highest potential payment in our experiment is lower than the minimum wage per hour in the US, which means that the stakes are relatively small. The external validity might thus be limited to economic choices where the amounts at stake are not too big. There has been done extensive research on how differences in stakes influence decision making, but the results have been ambiguous. A robust finding in the extensive literature on decision making in the ultimatum game has been that responders to a large extent reject low offers in experiments with low stakes (Andersen et al., 2011), and several researcher papers show that the results from the ultimatum game do not change drastically when the stakes increase (Cameron (1999), Slonim and Roth (1998), Munier and Zaharia (2002)). However, Andersen et al. find the opposite and report that "(...) sufficiently high stakes lead responder behavior to converge almost perfectly to full acceptance of low offers, even in the absence of learning.". It is thus hard to know whether the behavior we observe in our experiment is valid also for larger stakes. Nevertheless, most economic decisions in life involve small stakes, which means that our results can provide useful insights into many everyday decisions.

## 4 Empirical Strategy

We first provide a description of our main analysis of the effect of making the distributive choice ex post, before we present a description of the heterogeneity and robustness analysis. Finally, we describe the analysis of the effect of information.

### 4.1 Main analysis

The focus of this paper is on the results from the information treatments, and we therefore only use data from these treatments when estimating the main empirical specification. We assume that there in the ex post treatment is no reason for the spectators' choice to depend on whether worker A or worker B is the one receiving the high payment. We would like to stress that there in neither of the treatments was an objective reason for the spectators to prefer either of the workers to receive the high payment. The spectators were told that the workers had completed the same task, and there was no mentioning of different levels of effort or performance.

The main empirical specification used in the analysis is:

$$e_i = \alpha + \alpha_P P_i + \delta N_i + \gamma \mathbf{X}_i + \epsilon_i \quad (1)$$

where  $e_i$  is a dummy indicating if spectator  $i$  implemented the egalitarian payment scheme.  $P_i$  indicates if spectator  $i$  was in the ex post treatment.  $N_i$  indicates if spectator  $i$  was from Norway.  $\mathbf{X}_i$  is a vector including the background variables gender, political affiliation, age and level of education.

The empirical specification from equation (1) gives us that the share of spectators violating ex ante Pareto is  $\alpha$ , the share violating ex post egalitarianism is  $(1 - \alpha - \alpha_P)$ , and the share violating dominance is  $\alpha_P$ .

The ex ante treatment is the reference category in equation (1). The estimates should thus be interpreted relative to the ex ante situation, i.e. where the outcome of the random draw deciding who of the workers will receive the high payment in the non-egalitarian payment scheme has not yet taken place.

The estimated coefficients from equation (1) are the estimated causal effects of whether the spectator is assessing the situation ex ante or ex post. The estimated causal effect of being in the ex post treatment on the share who equalizes is given by  $\alpha_P$ .  $\delta$  gives the causal effect of being Norwegian rather than American.

## 4.2 Heterogeneity and robustness analysis

In the heterogeneity analysis we focus on gender, political affiliation and education. More specifically, we test whether there are differences in treatment effects between males and females, people with high and low education, and conservatives and non-conservatives. We assume level of education to be a proxy for socioeconomic status.

A person in the United States is classified as conservative if he or she would have voted for the Republicans or the American Independent Party, and a person in Norway is classified as conservative if he or she would have voted for Høyre or Fremskrittspartiet. Persons who would have voted for other parties are classified as non-conservative. A person is classified as having high education if his or her highest level of completed education is above high school.

We first estimate whether there are differences in the ex post effect in the subgroups when we specify for nationality, gender, political affiliation, age and level of education. The specification is as follows:

$$e_i = \alpha + \alpha_P P_i + \delta N_i + \alpha_P^B P_i B_i + \gamma \mathbf{X}_i + \epsilon_i \quad (2)$$

In addition to the variables used in equation (1), we include an interaction term  $P_i B_i$ .  $B_i$ , when interacted with  $P_i$ , indicates the background variable of choice, indicating that spectator  $i$  is either classified as being Norwegian, female, conservative, 50 years or older or having high education.

We then do the heterogeneity analysis of the ex post effect separately for Norway and the United States using the following specification:

$$e_i = \alpha + \alpha_P P_i + \alpha_P^B P_i B_i + \gamma \mathbf{X}_i + \epsilon_i \quad (3)$$

where  $B_i$ , when interacted with  $P_i$ , indicates the background variable of choice, indicating that spectator  $i$  is either classified as being female, conservative or having high education.

By running regressions of equations (2) and (3) with the different background variables, we can investigate whether the causal effect of being in the ex post treatment varies between the different subgroups. The estimated subgroup difference in the causal effect of being in the ex post treatment is  $\alpha_P^B$ .

For the heterogeneity analysis of the effect of being Norwegian for each of the three background variables, we use the following specification:

$$e_i = \alpha + \alpha^B B_i + \alpha_P P_i + \alpha_P^B P_i B_i + \delta N_i + \delta^B B_i N_i + \delta_P P_i N_i + \delta_P^B P_i B_i N_i + \gamma \mathbf{X}_i + \epsilon_i \quad (4)$$

where  $B_i$  indicates the background variable of choice, indicating that spectator  $i$  is either classified as being female, conservative, or having high education. In addition to the variables used in equation (1), we include the interaction term  $P_i B_i$  and two new interaction terms,  $B_i N_i$ , that is an interaction between the background indicator variable and the country indicator, and  $P_i N_i$ , which is an interaction between the treatment variable and the country indicator. We also include a triple interaction term,  $P_i B_i N_i$ , an interaction between the treatment indicator variable, the background indicator variable and the country indicator variable.

By running regressions of equation (4) with the different background variables, we can investigate whether the causal effect of being Norwegian varies between the different subgroups. The estimated subgroup difference in the causal effect of being Norwegian is  $\delta^B$  in the ex ante treatments and  $\delta^B + \delta_P^B$  in the ex post treatments.

Equation (4) can also be used to test the robustness of the main results from equation (1). If the main results are also true for all subgroups, this shows that the results are robust. For instance, we consider the result that people are more egalitarian in the ex post treatment to be robust if we, in both the United States and in Norway, for all background specifications, find a significant positive treatment effect of being in the ex post treatment. Using the variables from equation (4), this means that the results from equation (1) are robust if  $\alpha_P > 0$  (American spectators,  $B_i = 0$ ),  $\alpha_P + \alpha_P^B > 0$  (American spectators, subgroup  $B_i = 1$ ),  $\alpha_P + \delta_P > 0$  (Norwegian spectators, subgroup  $B_i = 0$ ) and  $\alpha_P + \alpha_P^B + \delta_P + \delta_P^B > 0$  (Norwegian spectators, subgroup  $B_i = 1$ ).

To further test the robustness of our results, we also run all regressions using a probit model. We compare the results from these regressions to the original results and see whether they vary dramatically in magnitude and significance.

### 4.3 Analysis of the effect of information

In the analysis of the effect of information, we estimate the effect of being in one of the information treatments on the willingness to implement the egalitarian payment scheme. As the spectators only receive information about the workers preferring the non-egalitarian payment scheme, we believe that the information will reduce their willingness to implement the egalitarian payment scheme.

The empirical specification is the following:

$$\begin{aligned}
 e_i &= \alpha + \alpha_P P_i + \delta N_i + \phi I_i \\
 &+ \phi_P P_i I_i + \phi_N N_i I_i + \gamma \mathbf{X}_i + \epsilon_i
 \end{aligned}
 \tag{5}$$

where  $I_i$  indicates if spectator  $i$  was in one of the information treatments. In addition to the variables used in equation (1), we also include an interaction between the ex post treatment indicator variable and the information treatment indicator variable,  $P_i I_i$ , and an interaction between the country indicator variable and the information treatment indicator variable,  $N_i I_i$ .

The coefficients from equation (5) estimates the causal effect of being in the one of the information treatments. The reference category is the no information treatments, and

the estimates should thus be interpreted relative to this treatment.  $\phi_P$  estimates the difference in the effect of information between the ex ante and ex post and  $\phi_P$  estimates the difference in the effect of information between Norway and the United States.

## 5 Results

We begin by providing an overview of the spectators' choices in the experiment in both Norway and the United States. We then move on to an analysis of the effect of being in the ex post treatment, the cross-country differences, the effect of information regarding the workers' preferences, and a heterogeneity and robustness analysis.

### 5.1 Main analysis

As we seek to investigate how people handle the conflict between the ex ante Pareto principle, the dominance principle and the ex post egalitarianism principle, we created an experimental setting where the spectators in the experiment made a distributive choice, inevitably resulting in the rejection of one of the principles. This enables us to identify which of the three principles the spectators rejected. Specifically, we are interested in the participants obeying the ex post egalitarianism principle and which of the two remaining principles they reject. Therefore, we focus on the information treatments, as it is not possible to identify the spectators rejecting the ex ante Pareto principle using the no information treatments. Hence, in the main analysis we only analyze the results from the treatments ex ante information and ex post information.

To identify the spectators obeying the ex post egalitarianism principle, we look at the ex post information treatment, as all spectators choosing to equalize payments between the two workers in the ex post treatment are ex post egalitarians. They prefer the certain equal outcome to the risky unequal one, even though the total payment to the workers is higher when payments are not equalized, but determined through the non-egalitarian payment scheme. That is, they are aware that the non-egalitarian payment scheme involves that the workers in total receive 6 USD (5+1), while they in the egalitarian payment scheme in total receive 4 USD (2+2). Additionally, the spectators in the ex post information treatment are informed that both workers prefer the non-egalitarian payment scheme over the egalitarian one. Hence, they are ex post egalitarians.

Figure 1 compares the share of spectators choosing the egalitarian payment scheme ex ante and ex post, for Norway and the United States. In addition, it shows the share who



equalizes when the Norwegian and American spectators are pooled together. The exact shares are summarized in Table 5. The share who equalizes is larger in Norway than in the United States in both treatments. For both countries, and thus also in the pooled results, the share implementing equality is larger ex post than ex ante. This is in line with what we would expect, as it seems reasonable to believe that more people see the outcomes of the random draw as unfair when they are confronted more directly with the inequality. In the ex post treatment, the spectators evaluate the payment schemes after the random draw has taken place. When confronted with the final outcomes, instead of the yet to occur inequality, the spectators might perceive the distribution as more unfair and become less willing to choose the non-egalitarian payment scheme.

Table 5 shows that 74.8 % of the Norwegian spectators are ex ante egalitarians, and this is in itself an interesting result. This means that a large share of the sample chooses not to respect the individual preferences of the workers. This is especially surprising given our design, as there is no reason for the spectators to presume that they are better suited to make the decision than the workers themselves. The spectators are aware that they have no additional information regarding the situation than the workers had when they chose between the two payment schemes. There is no obvious reason for the spectators to believe that the workers do not know their own good. The relatively small stakes involved make the consequences of the final payment scheme too small for the spectators to reasonably suspect that a worker is misjudging the potential downside of the non-egalitarian payment scheme. Therefore, it is not clear that there are any reasons for the spectators to suspect that the workers are behaving irrationally, and that it is in the workers' own best interest that their choice is overruled. Thus, spectators choosing the egalitarian payment scheme in the information treatment are egalitarians and moral paternalists.

Table 5: Share who equalizes (information treatments)

	Ex ante	Ex post
Norway	74.8 %	82.4 %
United States	61.8 %	66.6 %
Pooled	68.3 %	74.5 %

Figure 1 shows that even though the results largely follow the same pattern in both countries, there is a clear difference between the American and the Norwegian spectators in the share of spectators choosing to equalize payments in both treatments. There is a lower share of spectators choosing to equalize payments among the American spectators than among the Norwegian spectators, which could suggest that Americans are less egalitarian

than Norwegians in distributive choices. This will be discussed in further detail later in this section.

The dominance principle implies that if in every state of the world, the outcomes of one prospect are preferred to the outcomes of another prospect, then this prospect is preferred to the other. In our context, if we compare the ex ante information treatment to the ex post information treatment, the only difference between the treatments is that the random draw in the non-egalitarian payment scheme has taken place, and thus the degree of inequality is identical in both treatments. A rational spectator would perceive the ex ante and ex post treatments as identical situations, as she only cares about final states. Hence, according to the dominance principle, if a spectator prefers the egalitarian payment scheme ex ante, then this should also be the preferred payment scheme ex post.

As our spectators are only in one of the treatments, we cannot directly observe whether the same spectators choose differently depending on whether the distributive choice takes place ex ante or ex post. In our design, no single spectator can reject the dominance principle. It is only through a comparison of the ex ante and ex post that the dominance rejecting spectators are revealed. We therefore make the assumption that the spectators choosing the egalitarian payment scheme ex ante also would have chosen this payment scheme ex post. Ex post, the inequality has arisen in the non-egalitarian payment scheme, while it ex ante has yet to arise. Hence, the inequality is more evident ex post than ex ante, and there is no obvious reason why a spectator preferring the egalitarian payment scheme ex ante would not prefer the same payment scheme ex post. If anything, the reasons for choosing the egalitarian payment scheme seem stronger ex post than ex ante. Following this assumption, the share of ex post egalitarians who are changing their preferred payment scheme from non-egalitarian to egalitarian when going from ex ante to ex post is found by taking the difference between the shares choosing to equalize ex ante and ex post and divide it on the share of spectators equalizing ex post. The randomization of spectators into different treatments ensures that we can compare spectators across treatments in this manner. Out of the ex post egalitarians, the share rejecting the dominance principle is the share who changes their preferred payment scheme when the distributive choice goes from taking place ex ante to ex post. That is, they are choosing the non-egalitarian payment scheme in the ex ante treatment, but choosing the egalitarian payment scheme in the ex post treatment. In Figure 1, the share of spectators rejecting the dominance principle is the difference between the two bars. In Norway, only  $((0.824 - 0.748)/0.824 = 0.0922)$  9.22 % ex post egalitarians are rejecting the dominance principle.

The results shown in Figure 1 can also be used to calculate the share of egalitarians violating the ex ante Pareto principle. Obeying the ex ante Pareto principle implies respecting the individual preferences of the workers. If a spectator believes that the workers are taking a rational, utility maximizing decision when choosing between the two payment schemes, a spectator obeying the ex ante Pareto principle would prefer that the payment scheme preferred by both workers is implemented. This is because the fact that the workers chose the non-egalitarian payment scheme indicates that this scheme maximizes the expected utility of each worker. Additionally, the non-egalitarian payment scheme yields a higher expected monetary payoff ex ante. In the information treatments, the spectators are informed that both workers prefer the non-egalitarian payment scheme. Therefore, a spectator implementing the egalitarian payment scheme in the ex ante information treatment is violating the ex ante Pareto principle. Among the Norwegian spectators, 74.8 % choose the egalitarian payment scheme in the ex ante treatment, and hence more than  $(0.748/0.824 = 0.9078)$  90 % of the ex post egalitarians are rejecting the ex ante Pareto principle.

Table 6 shows the share of the ex post egalitarians who are rejecting the ex ante Pareto principle and the dominance principle, both for Norway and the United States. In both countries, an overwhelming majority of the ex post egalitarians are rejecting the ex ante Pareto principle, and the shares are relatively equal in the two countries. As mentioned earlier, our design forces the egalitarians to reject either the ex ante Pareto principle or the dominance principle. Thus, the share of spectators not rejecting the ex ante Pareto principle must be rejecting the dominance principle.

Table 6: Rejection of ex ante Pareto vs dominance

	Ex ante Pareto	Dominance
Norway	90.8 %	9.2 %
United States	92.8 %	7.2 %

Following this, our first result is that both Norwegians and Americans put more weight on equality than efficiency and individual freedom of choice combined. 74.8 % of the Norwegians and 61.8 % of the Americans reject the ex ante Pareto principle, and thus reveal that they do not respect the workers' choice of payment scheme. Choosing the other alternative than the one the workers prefer when the workers are the only ones affected, implies that they do not want to allow the workers to choose the risky prospect. These spectators are not egalitarians because they want to equalize payments after the inequality has arisen, but because they do not approve of the workers choosing the non-egalitarian payment scheme and thus risk receiving the low payment. In our design, the inequality

has arisen if the random draw in the non-egalitarian payment scheme has taken place, which is the case in the ex post treatment. It is then clearly stated who is the "winner" and who is the "loser" of the random draw. If the spectators had instead rejected the dominance principle, they would be egalitarians because they wanted to equalize payments after the inequality had arisen, even though they wanted to allow the workers to choose the non-egalitarian payment scheme when the inequality had yet to arise.

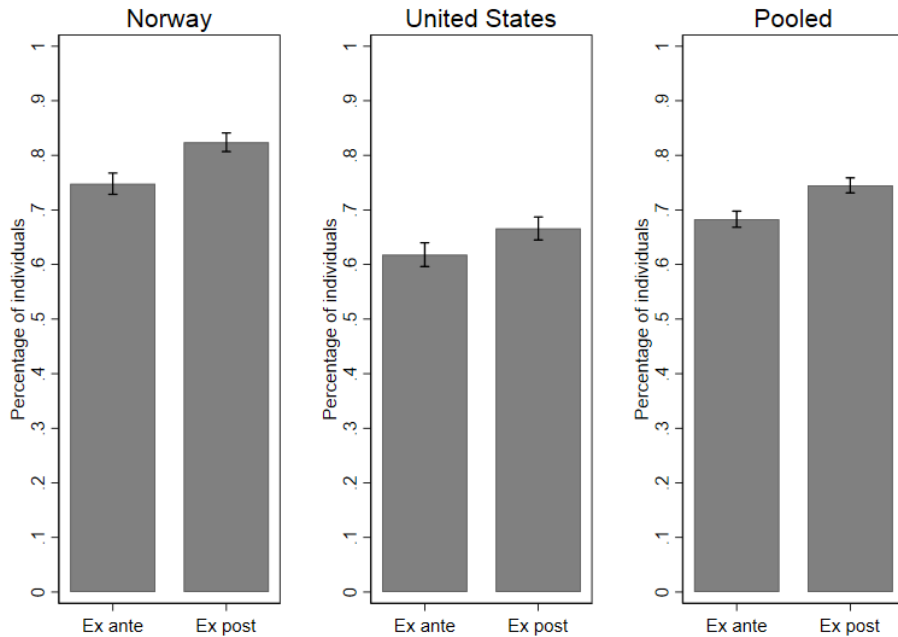


Figure 1: Share who equalizes (information treatments)

Table 7 reports the estimated coefficients from a regression of equation (1). We mainly consider the estimates to be statistically significant if they are significant at the 5 % level. The first two columns show the estimated coefficients for the Norwegian spectators, column 3 and 4 show the coefficients for the American spectators, and column 5 and 6 show the estimates for the two countries pooled together. The reference category is the ex ante information treatment. From the regression results, we find how the willingness to implement the egalitarian payment scheme is affected by the spectators being in the ex post treatment and by different background variables.

We start by looking at column 1 and 3 and compare the estimates for Norwegian and American spectators with "Ex post" as the sole explanatory variable. The estimated coefficient of the variable ex post, i.e. of being in the ex post treatment and knowing the outcome of the random draw in the non-egalitarian payment scheme, is 0.0760 ( $p = 0.003$ ) in Norway and 0.0480 ( $p = 0.114$ ) in the United States. The coefficient is statistically significant in Norway, while it is not significant in the United States. This coefficient is

the causal effect of being in the ex post treatment on the willingness to implement the egalitarian payment scheme, which means that being in the ex post treatment increases the willingness to implement the egalitarian payment scheme with 7.6 % in Norway. The estimates are relatively unchanged when we include background variables in the regressions (column 2 and 4), but the effect in the United States becomes statistically significant at the 10 % level ( $p = 0.079$ ).

From column 2 and 4, we see that being female increases the willingness to implement the egalitarian payment scheme with 11.5 % ( $p < 0.001$ ) in Norway and 8.0% ( $p = 0.008$ ) in the United States. Both Norwegians and Americans who are 50 years or older are significantly more willing than those under 50 to implement the egalitarian payment scheme, with 13.2% ( $p < 0.001$ ) in Norway and 15.4% ( $p < 0.001$ ) in the United States. The coefficient for high education is not significant in neither of the countries, and thus we do not find socioeconomic status to have a significant effect on the willingness to implement the egalitarian payment scheme. Being conservative has a significant effect on the willingness to implement the egalitarian payment scheme both in Norway and in the United States. In Norway, it reduces the willingness to implement the egalitarian payment scheme with 6.6 % ( $p = 0.026$ ), while it in the United States reduces the willingness to implement the egalitarian payment scheme with 6.9% ( $p = 0.024$ ). The effects of being female, above 50 years or conservative are thus systematic across countries.

The results from the pooled regressions are shown in column 5 and 6. The treatment indicator variable is significant at the 1 % level in both specifications ( $p = 0.002$  and  $p = 0.001$ ), indicating that being in the ex post treatment significantly increases the willingness to implement the egalitarian payment scheme. Column 6 shows the regression of our main empirical specification, equation (1), and we see that being in the ex post treatment increases the willingness to equalize payments with 6.7 % when the spectators from Norway and the United States are pooled together.

The significance of the effect of being in the ex post treatment varies in the different specifications in Table 7. While the effect of being in the ex post treatment is significant at the 1 % level ( $p = 0.001$ ) for the pooled results in column 6, the effect is only significant at the 10 % level ( $p = 0.079$ ) in the United States, shown in column 4. The corresponding estimate for Norway in column 2 is statistically significant at the 1 % level ( $p = 0.004$ ). In addition, the estimated effect is 7.3 % ( $p = 0.004$ ) in Norway and 5.3 % in the United States ( $p = 0.079$ ), indicating that the magnitude of the effect is slightly larger in Norway.

Our second result is thus that whether the spectators make the distributive choice ex ante or ex post significantly affects their willingness to equalize payments. In other words,

Norwegians' and Americans' willingness to implement the egalitarian payment scheme is affected by whether the random draw in the non-egalitarian payment scheme has taken place or not. However, while the effect is highly significant, it is relatively small. The fact that the spectators' willingness to equalize payments ex post is only 6.7 % higher than ex ante, is consistent with the ex post egalitarians largely respecting the principle of dominance, i.e. a large share is consistent in their choice of payment scheme regardless of whether the random draw has taken place or not.

The indicator variable "Norway" is also significant in both column 5 and 6, and we see that being Norwegian increases the willingness to implement the egalitarian payment scheme ex ante. In the main specification with all control variables included (column 6), Norwegians are estimated to be 12.0 % ( $p < 0.001$ ) more willing than Americans to implement the egalitarian payment scheme in the ex ante treatment.

The main result following from these findings is that Norwegians are significantly more egalitarian than Americans, even when they make distributive decisions in identical settings. As mentioned above, Norwegians are on average more willing to implement the egalitarian payment scheme than Americans ex ante. Relative to Americans, Norwegians put more weight on equality than on efficiency and the workers' individual freedom of choice. This is in line with what we would expect from earlier research on Norwegians' and Americans' preferences. Norwegians are typically found to be more willing than Americans to give up individual freedom to promote a common good, which is in line with Norwegians being more egalitarian.

What is driving this difference between Norwegians and Americans is beyond the scope of this thesis. It might be that Norwegians are less efficiency seeking than Americans, have less respect for individual freedom of choice, are more opposed to gambling, or are more concerned about equality. This would be an interesting question for future research.

Our main results from the analysis are the following:

- **Result 1:** The majority of both Norwegians and Americans reject the ex ante Pareto principle. However, the share of egalitarians is higher in Norway than in the United States, both ex ante and ex post.
- **Result 2:** Knowing the outcome of the random draw in the non-egalitarian payment scheme significantly increases the willingness to implement the egalitarian payment scheme.
- **Result 3:** Norwegians are significantly more willing than Americans to implement equality.

Table 7: Regression results on implemented equality (information treatments)

	Norway	Norway	United States	United States	Pooled	Pooled
Ex post	0.076*** (0.026)	0.073*** (0.025)	0.048 (0.030)	0.052* (0.030)	0.062*** (0.020)	0.067*** (0.020)
Norway					0.144*** (0.020)	0.120*** (0.020)
Female		0.115*** (0.025)		0.080*** (0.030)		0.098*** (0.020)
High age		0.132*** (0.025)		0.154*** (0.030)		0.143*** (0.019)
High education		-0.040 (0.026)		-0.029 (0.035)		-0.034 (0.021)
Conservative		-0.066** (0.030)		-0.069** (0.031)		-0.067*** (0.022)
Constant	0.748*** (0.019)	0.671*** (0.033)	0.618*** (0.022)	0.562*** (0.046)	0.611*** (0.018)	0.557*** (0.030)
$R^2$	0.009	0.063	0.003	0.043	0.030	0.075
Observations	1000	1000	1000	1000	2000	2000

Note: The table reports the results from six robust OLS regressions of implemented equality on different explanatory variables, including background variables. "Ex post" is an indicator variable taking the value 1 if the spectator is in the ex post treatment. "Norway" is an indicator variable taking the value 1 if the spectator is from Norway. "Female" is an indicator variable taking the value 1 if the spectator is female, "High age" is an indicator variable taking the value 1 if the spectator is 50 years or older, "High education" is an indicator variable taking the value 1 if the spectator's highest level of completed education is above high school and "Conservative" is an indicator variable taking the value 1 if the spectator is classified as conservative. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## 5.2 Heterogeneity and robustness analysis

In this section, we first provide a heterogeneity analysis of the effect of being in the ex post treatment. We then provide a heterogeneity analysis of the effect of being Norwegian using equation (4). The analyses investigate whether there are differences between the

subgroups. As mentioned in section 4.2, we focus on gender, education and political affiliation.

Table 8 reports the estimated coefficients from six extended versions of the main empirical specification, equation (1), providing a heterogeneity analysis of different subgroups with the countries pooled together. The interaction terms test whether the effect of being in the ex post treatment is different between subgroups, while the linear combinations estimate the effect of the ex post treatment for the specified subgroup.

Column 1 shows the estimated coefficients from the main empirical specification with an interaction term between the variables "Norway" and "Ex post". The estimated effect of being in the ex post treatment in the United States is a 5.2 % ( $p = 0.082$ ) increase in willingness to equalize payments, and the effect is significant at the 10 % level. The corresponding effect in Norway is 7.3 % ( $p = 0.004$ ), indicating that Norwegians are more affected by choosing ex post than Americans. The interaction between the indicator variables "Ex post" and "Norway" enables us to infer whether being in the ex post treatment affects Norwegians and Americans differently. The interaction term is not statistically significant, indicating that the difference in the difference is not significant, i.e. the effect of choosing ex post is not significantly different in Norway and in the United States.

Column 2-6 show the heterogeneity analysis of different subgroups. Column 2 is the heterogeneity analysis of gender. Both males and females are significantly affected by choosing ex post, and the magnitude of the effect is almost identical. For males, the willingness to equalize payments increases with 6.8 % ( $p = 0.019$ ), while it increases with 5.7 % ( $p = 0.028$ ) for females. The difference between males and females in the difference between choosing ex ante and ex post is not statistically significant. The corresponding differences for all other subgroups are also not statistically significant. Column 3 shows the heterogeneity analysis of political affiliation. Non-conservatives are 7.7 % ( $p = 0.001$ ) more willing to implement the egalitarian payment scheme when choosing ex post than when choosing ex ante, while choosing ex post has no significant effect on conservatives' willingness to equalize payments. Column 4 shows that people below the age of 50 are 7.7 % ( $p = 0.006$ ) more willing to equalize payments ex post than ex ante, while the effect of choosing ex post on the willingness to equalize payments is smaller, but only statistically significant at the 10 % level for people above the age of 50. Column 5 shows the heterogeneity analysis of education. For people with low education, their willingness to implement the egalitarian payment scheme is not significantly affected by choosing ex post, while people classified as having high education increase their willingness to equalize payments with 6.9 % ( $p = 0.004$ ) when choosing ex post rather than ex ante.



Table 8: Heterogeneity analysis on implemented equality (information treatments)

	(1)	(2)	(3)	(4)	(5)	(6)
Ex post	0.052* (0.030)	0.068** (0.029)	0.077*** (0.022)	0.077*** (0.028)	0.049 (0.033)	0.069 (0.055)
Norway	0.109*** (0.029)	0.120*** (0.020)	0.121*** (0.020)	0.120*** (0.020)	0.120*** (0.020)	0.110*** (0.030)
Norway x Ex post	0.022 (0.039)					0.022 (0.040)
Female x Ex post		-0.010 (0.039)				-0.012 (0.039)
Conservative x Ex post			-0.044 (0.041)			-0.041 (0.041)
High age x Ex post				-0.033 (0.039)		-0.028 (0.039)
High education x Ex post					0.020 (0.041)	0.021 (0.042)
Constant	0.563*** (0.032)	0.555*** (0.031)	0.548*** (0.031)	0.549*** (0.032)	0.564*** (0.033)	0.553*** (0.041)
Control variables	X	X	X	X	X	X
$R^2$	0.075	0.075	0.075	0.075	0.075	0.076
Observations	2000	2000	2000	2000	2000	2000
<i>lincom:</i>						
Ex post (B)	0.073*** (0.025)	0.057** (0.036)	0.032 (0.035)	0.045* (0.026)	0.069*** (0.024)	

Note: The table reports the results from six robust OLS regressions of implemented equality on different explanatory variables, including background variables. All background variables from Table 7 are included in the regression. The linear combination is the effect of being in the ex post treatment for subgroup B, which is the subgroup interacted with "Ex post" in the relevant column. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 9 and 10 show a heterogeneity analysis of the ex post effect on gender, political affiliation and socioeconomic status for Norway and the United States respectively. Hence, this is a thorough heterogeneity analysis of result 2, i.e. that choosing ex post significantly increases the willingness to equalize payments.

We start with the analysis of Table 9. From column 2, we observe that choosing ex post has a significant effect on both Norwegian males ( $p = 0.026$ ) and females ( $p = 0.062$ ), and the magnitude of the effect is almost the same. The estimated difference in the ex post treatment effect is not statistically significant ( $p = 0.570$ ), indicating that males and females in Norway are not affected significantly different by choosing ex post. Hence, we do not observe significant heterogeneity for these subgroups and result 2 holds for both males and females in Norway.

From column 3, we observe that knowing the outcome of the random draw has a large and significant effect on conservatives in Norway ( $p = 0.013$ ), while the effect on non-conservatives is less than half ( $p = 0.066$ ). The estimated difference in the ex post treatment is, however, not significant ( $p = 0.202$ ). For political affiliation, we thus do not observe significant heterogeneity in Norway and as for gender, result 2 holds for both subgroups.

Column 4 is the heterogeneity analysis of education, which we use as a proxy for socioeconomic status. Choosing ex post has a significant effect on Norwegians with high education ( $p = 0.008$ ), while the effect on Norwegians with low education is smaller and not statistically significant ( $p = 0.197$ ). The estimated difference in the ex post treatment is not significant ( $p = 0.473$ ). Thus, we do not observe a socioeconomic gradient in the willingness to equalize payments in Norway. However, result 2 does not seem to hold for Norwegians with low education.

Table 9: Heterogeneity analysis on implemented equality (information treatments, Norway)

	(1)	(2)	(3)	(4)	(5)
Ex post	0.073*** (0.025)	0.088** (0.040)	0.053* (0.029)	0.050 (0.039)	0.043 (0.052)
Female x Ex post		-0.029 (0.051)			-0.023 (0.051)
Conservative x Ex post			0.075 (0.059)		0.073 (0.059)
High education x Ex post				0.037 (0.051)	0.035 (0.051)
Constant	0.671*** (0.033)	0.664*** (0.036)	0.683*** (0.034)	0.683*** (0.037)	0.689*** (0.041)
Control variables	X	X	X	X	X
$R^2$	0.063	0.063	0.065	0.063	0.065
Observations	1000	1000	1000	1000	1000
<i>lincom:</i>					
Ex post (B)		0.059* (0.032)	0.128** (0.052)	0.087*** (0.033)	

Note: The table reports the results from five robust OLS regressions of implemented equality on different explanatory variables, including background variables. All background variables from Table 7 are included in the regression. The linear combination is the effect of being in the ex post treatment for subgroup B, which is the subgroup interacted with "Ex post" in the relevant column. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 10 provides the same heterogeneity analysis for the United States. From the second column, we observe that American females and males are almost identically responsive to the ex post treatment, but neither of these effects, nor the difference between them is statistically significant ( $p = 0.923$ ). It thus follows that result 2 does not hold for American males and females, however we do not observe significant heterogeneity between the subgroups.

From column 3, we observe that in the United States, choosing ex post has a large and significant effect on non-conservatives ( $p = 0.005$ ), while it has a slight negative, but not significant effect on conservatives ( $p = 0.571$ ). The estimated difference in the ex post treatment is significant ( $p = 0.026$ ), indicating that American conservatives and non-conservatives are differently affected by choosing ex post. We thus observe significant heterogeneity between conservatives and non-conservatives, and we also have that result 2 does not hold for American conservatives.

Column 4 is the heterogeneity analysis of socioeconomic status. In the United States, people with high and low education are close to identically responsive to the effect of choosing ex post, and the difference between them is not statistically significant ( $p = 0.919$ ). Thus, we do not observe a socioeconomic gradient in the willingness to equalize payments in the United States. However, result 2 does not hold for people with high and low education in the United States.

Table 10: Heterogeneity analysis on implemented equality (information treatments, United States)

	(1)	(2)	(3)	(4)	(5)
Ex post	0.053*	0.050	0.097***	0.047	0.090
	(0.030)	(0.042)	(0.035)	(0.061)	(0.075)
Female x Ex post		0.006			-0.002
		(0.060)			(0.060)
Conservative x Ex post			-0.125**		-0.125**
			(0.056)		(0.056)
High education x Ex post				0.007	0.011
				(0.070)	(0.070)
Constant	0.562***	0.563***	0.536***	0.565***	0.540***
	(0.045)	(0.047)	(0.046)	(0.054)	(0.058)
Control variables	X	X	X	X	X
$R^2$	0.043	0.043	0.047	0.043	0.047
Observations	1000	1000	1000	1000	1000
<i>lincom:</i>					
Ex post (B)		0.056	-0.027	0.054	
		(0.042)	(0.048)	(0.034)	

Note: The table reports the results from five robust OLS regressions of implemented equality on different explanatory variables, including background variables. All background variables from Table 7 are included in the regression. The linear combination is the effect of being in the ex post treatment for subgroup B, which is the subgroup interacted with "Ex post" in the relevant column. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

We use Table 11 for the heterogeneity analysis of the effect of being Norwegian, i.e. result 3. A table with the estimates of the linear combinations testing whether the effect of being Norwegian is significantly different for different subgroups is included in section 8.4 in the appendix. From the first column in Table 11 we observe that ex ante, both Norwegian males ( $p = 0.051$ ) and females ( $p = 0.001$ ) are significantly more willing to implement the egalitarian payment scheme than American males and females. However, the difference in how males and females are affected by being Norwegian in the ex ante

treatment is not significant ( $p = 0.364$ ). The pattern is the same ex post (males: ( $p = 0.002$ ), females: ( $p < 0.001$ ), difference: ( $p = 0.729$ )). This is in line with result 3, and we do not observe any heterogeneity between the subgroups.

From the second column, we observe that Norwegian non-conservatives ex ante are significantly more willing to equalize payments than American non-conservatives ex ante ( $p < 0.001$ ), while Norwegian conservatives ex ante only are slightly more willing to equalize payments than American conservatives ex ante, and the effect is not significant ( $p = 0.263$ ). However, the estimated difference of the effect of being Norwegian is not significant ( $p = 0.127$ ). Ex post, both Norwegian conservatives and non-conservatives are significantly more willing to implement the egalitarian payment scheme than American conservatives and non-conservatives in the same treatment. However, the effect of being Norwegian in the ex post treatment is much larger for conservatives, and the difference between Norwegian conservatives and non-conservatives is significant at the 10 % level ( $p = 0.075$ ). Thus, we do observe some heterogeneity ex post, but not ex ante. For all subgroups except for American conservatives ex ante, the estimates are in line with result 3.

From the last column, we observe that both Norwegians with high and low education are significantly more willing to implement the egalitarian payment scheme than Americans. This is true both ex ante and ex post. The effect of being Norwegian is not significantly different for people with high and low education (ex ante: ( $p = 0.671$ ) and ex post: ( $p = 0.979$ )). Hence, the estimates are in line with result 3 and we do not observe significant heterogeneity between these subgroups.

The main findings from the heterogeneity analysis are the following:

**Result 5:** In Norway, we do not observe significant heterogeneity in the ex post effect. However, in the United States, we have significant heterogeneity among conservatives and non-conservatives in the effect of being in the ex post treatment. Ex post, we observe significant heterogeneity for conservatives and non-conservatives in the effect of being Norwegian. However, for most of our subgroups, we do not observe significant heterogeneity.

- **Gender:** We do not observe any heterogeneity between males and females, neither in the effect of being in the ex post treatment nor in the effect of being Norwegian.
- **Political affiliation:** We observe significant heterogeneity between American conservatives and non-conservatives in the effect of the ex post treatment. We also observe significant heterogeneity between conservatives and non-conservatives in the ex post treatment in the effect of being Norwegian.

- **Education:** For education, we find no significant heterogeneity. This is true for both the effect of being in the ex post treatment and the effect of being Norwegian.

The results from table 11 can also be used in the robustness analysis. We test whether result 2 and 3 from the main analysis are robust by following the procedure described in section 4.

We first check the robustness of result 2, which is that being in the ex post treatment significantly increases the spectators' willingness to implement the egalitarian payment scheme. By inspecting the first three rows of linear combinations and the estimates for the variable "Ex post", we find that the effect of being in the ex post treatment is positive in all relevant subgroups except for conservatives in the United States where being in the ex post treatment decreases the willingness to implement the egalitarian payment scheme with 2.7 %. This estimate is, however, not statistically significant. Even though the remaining 11 subgroups in Table 11 all have positive estimates of being in the ex post treatment, the significance of these estimates vary between being significant at the 1 % level, to not being significant at the 10 % level for several other subgroups. Out of the twelve estimated coefficient, only six of them are significant using a 10 % level of significance. Nonetheless, the estimates do not vary substantially in magnitude, and for most subgroups the estimated effect lies between 4 % and 9 %. As half of the estimates are not significant, result 2 is not a robust finding.

We can also use Table 11 to check the robustness of result 3, which is that Norwegians are significantly more willing than Americans to implement the egalitarian payment scheme. By looking at the bottom three rows of linear combinations and the estimates for the variable "Norway" we see how the estimated effect varies across subgroups. For all 12 subgroups the estimated effect of being Norwegian is positive, and this effect is significant at the 10 % level for all subgroups except for conservatives in the ex ante treatment. For the majority of the subgroups there is a large and strongly significant effect. The result that Norwegians are significantly more willing to implement equality than American thus seems to be a robust result across different subgroups.

As the dependent variable in our regressions is a dummy variable, it is possible to use a probit model instead of a linear regression model estimated by using the ordinary least squares method (OLS), which we have used. While our dependent variable only takes the value of either 0 or 1, the ordinary least squares could make predictions for the value of the dependent variable that is outside of this interval. A probit model however, estimates the probability that the dependent variable equals 1 given the specified characteristics.

To further check the robustness of our estimation results, we also estimate Table 7, 8, 11 and 14 using a probit model. These estimation results are shown in Table 17, 18, 21 and 22 in section 8.5 in the appendix. If the results are robust they should not change drastically when going from an ordinary least squares to a probit model.

The estimates from Table 7 barely change when we use a probit model instead of OLS. The estimated coefficients only experience minor changes and the significance of the coefficients are not affected. The same is true for the results from Table 8. Compared to the original Table 11, the estimated coefficient for the variable "B x Norway" in column 2 goes from not being significant to being significant at the 10 % level when using a probit model, but the rest of the coefficients from the table do not experience changes in the significance and only experience minor changes in the estimated coefficients. For Table 14, the estimates of both the interaction term "Norway x Ex post" and "Norway x Information" changes the sign when going from the OLS to the probit model. However, the estimated effects are negligible and not statistically significant in any of the models. The rest of the estimated coefficients do not change dramatically and neither does the significance. As the results from our analysis only experience minor changes when going from an OLS to a probit model, our results seem to be robust.



Table 11: Heterogeneity analysis on implemented equality (information treatments)

	Gender (B=1 if Female)	Political (B=1 if Conservative)	Education (B=1 if High)
Ex post	0.049 (0.042)	0.096*** (0.035)	0.046 (0.061)
Ex post x Norway	0.038 (0.058)	-0.042 (0.045)	0.005 (0.072)
Ex post x B	0.005 (0.059)	-0.123** (0.056)	0.008 (0.070)
Ex post x B x Norway	-0.033 (0.078)	0.195** (0.081)	0.028 (0.086)
B x Norway	0.052 (0.057)	-0.088 (0.058)	-0.027 (0.063)
Norway	0.083* (0.043)	0.143*** (0.035)	0.126** (0.053)
B	0.077* (0.043)	-0.015 (0.038)	-0.031 (0.051)
Constant	0.574*** (0.037)	0.539*** (0.035)	0.560*** (0.049)
With controls	X	X	X
$R^2$	0.075	0.078	0.075
Observations	2000	2000	2000
<i>lincom:</i>			
Ex post (US, B)	0.055 (0.042)	-0.027 (0.048)	0.054 (0.034)
Ex post (Norway, not B)	0.088** (0.040)	0.054* (0.029)	0.051 (0.039)
Ex post (Norway, B)	0.060* (0.032)	0.125** (0.051)	0.087*** (0.033)
Norway (Ex ante, B)	0.135*** (0.039)	0.055 (0.049)	0.099*** (0.035)
Norway (Ex post, not B)	0.121*** (0.040)	0.101*** (0.032)	0.131*** (0.050)
Norway (Ex post, B)	0.140*** (0.036)	0.207*** (0.051)	0.133*** (0.032)

Note: The table reports the results from three robust OLS regressions on different explanatory variables, including background variables, and interaction terms with the subgroups specified in equation (4). B is an indicator variable equal to 1 if the spectator is female (column 1), is conservative (column 2), or has high education (column 3). All background variables from Table 7 are also included in the regression, except the background variable captured in B. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

### 5.3 Effect of information

The treatments where the spectators were given no information about the workers' preferences enable us to estimate the effect of knowing the workers' preferences by comparing the results from these treatments to the results from the information treatments. If a spectator chooses to implement the non-egalitarian payment scheme in the no information treatments, it is not out of respect for the workers' preferences, as the spectator does not know their preferences in this treatment. The effect the information about the workers' preferences has on the spectators' choice is revealed through the difference between the share of spectators choosing to implement the non-egalitarian payment scheme in the information and no information treatments. It seems reasonable to believe that the spectators choosing to implement the non-egalitarian payment scheme in the no information treatments choose this option out of efficiency reasons. The non-egalitarian payment scheme is the payment scheme that maximizes the size of the pie, and it is hard to see other reasons than efficiency making the spectators in the no information treatments choose this payment scheme over the egalitarian payment scheme.

However, in the information treatments, there are two reasons for choosing the non-egalitarian payment scheme. As in the no information treatments, the non-egalitarian payment scheme maximizes the size of the pie. In addition, choosing the non-egalitarian payment scheme involves respecting the workers' preferences. This is opposed to the situation in the no information treatments, where the spectators do not know the workers' preferences and thus they cannot know if they choose in accordance with the workers' preferences. It thus follows that the difference between the share implementing the egalitarian payment scheme in the no information treatments versus the information treatments is the share of spectators choosing to implement the non-egalitarian payment scheme as a result of getting an additional reason for choosing this payment scheme, i.e. respect for the workers' preferences. However, the information treatments do not enable us to distinguish between the spectators choosing the non-egalitarian payment scheme only because it implies respecting the workers preferences and the spectators choosing the non-egalitarian payment scheme because it is both efficient and implies respecting the workers' preferences. We assume that the spectators choosing the non-egalitarian payment scheme without information also would have chosen this payment scheme with information, as the information must be seen as favoring the non-egalitarian payment scheme. We can thus infer that the additional non-egalitarians in the information treatments relative to the no information treatments are the ones that would not have chosen the non-egalitarian payment scheme in the absence of the argument of doing so out of respect for the workers' preferences. However, we cannot identify whether this argument alone would have been

enough to make them choose the non-egalitarian payment scheme. Hence, the no information treatments enable us to estimate the share of non-egalitarians driven by efficiency considerations and the share driven by either a combination of efficiency and respect for the workers' preferences or only by respect for the workers' preferences.

From Table 12 we find the share of spectators choosing the non-egalitarian payment scheme who would not have chosen this payment scheme if efficiency was the only argument for doing so, i.e. the reduction in the share who equalizes when comparing the treatments with and without information. By comparing the difference between ex ante no information and ex ante information in Table 12, we find that receiving information regarding the workers' preferences reduces the share implementing the egalitarian payment scheme by 13.6 % in Norway and 11.5 % in the United States, giving an average of 12.5 %. Ex post, the share choosing the non-egalitarian payment scheme because they receive information regarding the workers' preferences is 11.2 % in Norway and 15.3 % in the United States, giving an average of 13.2 %. Norwegian spectators are thus more affected by information regarding the workers' preferences in the ex ante treatments than in the ex post treatments, while the opposite is true for Americans.

Table 12: Share who equalizes

	Ex ante no info	Ex ante info	Ex post no info	Ex post info
Norway	88.4 %	74.8 %	93.6 %	82.4 %
United States	73.3 %	61.8 %	81.9 %	66.6 %
Pooled	80.8 %	68.3 %	87.7 %	74.5 %

From Table 13 we see that both ex ante and ex post, a majority of the non-egalitarians in Norway choose the non-egalitarian payment scheme because they get additional information regarding the workers' preferences. The largest share is in the ex post treatments, with  $((0.936 - 0.824)/(1 - 0.824) = 0.636)$  63.6 %. In contrast, a majority of the non-egalitarians in the United States choose the non-egalitarian payment scheme only because of efficiency considerations. The smallest share is in the ex ante treatments, with only  $((0.733 - 0.618)/(1 - 0.618) = 0.301)$  30.1 %. This implies that for 69.9 % of the non-egalitarian Americans in this treatment, the non-egalitarian payment scheme being the efficient payment scheme is sufficient reason to choose it over the egalitarian payment scheme. Thus, the main motivation for choosing the non-egalitarian payment scheme is different in Norway and in the United States.

Table 13: Share of non-egalitarians choosing the non-egalitarian payment scheme because of the additional information regarding the workers' preferences

	Ex ante info	Ex post info
Norway	54.0 %	63.6 %
United States	30.1 %	45.8 %
Pooled	39.4 %	51.8 %

Table 14 reports the results from a regression on implemented equality using the data from the Norwegian and the American spectators in both the information and no information treatments. The table includes four regressions with different interaction terms. The no information treatment is the reference category in Table 14 and the estimates are therefore to be interpreted relative to this category.

Column 1 reports the estimated coefficients from a regression of equation (1) extended with a variable indicating whether the spectator was in one of the information treatments. Using the indicator variable "Information" along with interactions enables us to estimate the effect of information. From column 1, we see that being in the information treatments reduces the willingness to implement the egalitarian payment scheme by 12.9 % ( $p < 0.001$ ). This is in line with what we would expect, as being in one of the information treatments involves being informed that both of the workers have stated that they prefer the non-egalitarian payment scheme. Hence, compared to the no information treatments there is an additional reason to not implement the egalitarian payment scheme. The effect of being in the ex post treatment is statistically significant at the 1 % level in all four specifications. That is, there is a statistically significant effect of the random draw having taken place also when we include the no information treatments.

From column 2, 3 and 4, we see that the effect of knowing the workers' preferences is not significantly different depending on whether the spectator is in the ex ante or the ex post treatment or on whether the spectator is Norwegian or American. The effect of information in these specifications is however relatively unchanged compared to column 1, varying from 12.6 % to 13.6 %.

As in the results from Table 7, Norwegians are significantly more willing than Americans to implement equality across treatments. Specifically, column 1 shows that a Norwegian spectator is 11.7 % ( $p < 0.001$ ) more willing to implement the egalitarian payment scheme than an American spectator.

The main finding from the regression analysis is the following:

- **Result 4:** Knowing that the workers prefer the non-egalitarian payment scheme significantly reduces the willingness to implement the egalitarian payment scheme.

Table 14: Regression results on implemented equality (all treatments)

	(1)	(2)	(3)	(4)
Ex post	0.065*** (0.013)	0.067*** (0.016)	0.065*** (0.013)	0.067*** (0.016)
Norway	0.117*** (0.013)	0.117*** (0.013)	0.110*** (0.016)	0.110*** (0.016)
Information	-0.129*** (0.013)	-0.126*** (0.019)	-0.136*** (0.020)	-0.133*** (0.024)
Ex post x Information		-0.005 (0.025)		-0.005 (0.025)
Norway x Information			0.014 (0.025)	0.014 (0.025)
Constant	0.696*** (0.020)	0.695*** (0.021)	0.700*** (0.021)	0.699*** (0.022)
With controls	X	X	X	X
$R^2$	0.093	0.093	0.093	0.093
Observations	4005	4005	4005	4005

Note: The table reports the results from four robust OLS regressions of implemented equality on different explanatory variables, including background variables. All background variables from Table 7 are included in the regression. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## 6 Concluding Remarks

We have reported the results from a large-scale economic experiment on distributive preferences conducted with representative samples from Norway and the United States.

We find that a majority of both the egalitarian Norwegians and Americans are rejecting the ex ante Pareto principle. In other words, when they ex ante choose a payment scheme for two other people, they prefer the egalitarian payment scheme over the non-egalitarian payment scheme, even when the two people themselves prefer the non-egalitarian payment scheme. Rejecting the ex ante Pareto principle means that they are equalizing earnings before the inequality has arisen. Put differently, the majority of the egalitarians are not egalitarians simply because they want to redistribute earnings in a situation where inequalities have arisen. Rather, they are moral paternalists preventing workers from choosing a risky, non-egalitarian payment scheme.

When the spectators know the workers' preferences, we find the willingness to equalize payments to be dependent on whether the random draw in the non-egalitarian payment scheme has taken place. People become more egalitarian when they are confronted with the unequal distribution of income in the non-egalitarian payment scheme. That is, the timing of the inequality significantly affects people's preferences. They are more willing to restrict the workers from choosing the non-egalitarian payment scheme when the inequality has arisen, than when it is yet to arise.

Our results demonstrate cross-country differences between Norway and the United States when it comes to the willingness to implement the egalitarian payment scheme. In line with earlier research, we find that Norwegians are more egalitarian than Americans. However, among the egalitarians, the shares violating the ex ante Pareto principle and the dominance principle are relatively equal across the two countries.

We find that knowing the workers' preferences for the non-egalitarian payment scheme decreases the willingness to implement the egalitarian payment scheme. In Norway, a majority of the non-egalitarians choose the non-egalitarian payment scheme because they get additional information regarding the workers' preferences. For the rest of the Norwegian non-egalitarians, the efficiency argument is sufficient for them to prefer the non-egalitarian payment to the egalitarian payment scheme. In contrast, only a minority of the American non-egalitarians choose the non-egalitarian payment scheme because they get additional information regarding the workers' preferences.

We have shown that both Norwegians and Americans, when making distributive choices on behalf of others, put significantly more weight on equality, than choosing in accordance with the affected parties' preferences. We also find that people are willing to act as moral paternalists, even over small stakes, and when it comes with a cost.

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## 8 Appendix

### 8.1 Worker survey

#### 8.1.1 Task

The workers were randomly assigned to one of four different treatments. Within each treatment the workers were randomly assigned to one of five different age treatment. Below the hypothetical situation presented in the four different treatments are shown. The X's were replaced with either 6, 9, 12, 15 or 18, depending on the age treatment the worker was randomized into.

##### *Treatment 1*

Two X-year olds have agreed to bet a week's pocket money on a game of dice. They put equal amounts of money into the pot, and agree that whoever gets the highest dice roll will get the whole amount.

What would you do if you had to decide whether the X-year olds should be allowed to play or not?

- Alt 1: I would allow them to play
- Alt 2: I would not allow them to play

##### *Treatment 2*

Two X-year olds have agreed to bet a week's pocket money on a game of dice. They put equal amounts of money into the pot, and agree that whoever gets the highest dice roll will get the whole amount. Both rolled the dice and one of them got a higher dice roll and thus won the whole amount.

What would you do if you had to decide whether the X-year old who won should keep the whole amount or whether the amount should be equally divided?

- Alt 1: I would allow the winner to keep the whole amount
- Alt 2: I would divide the amount equally between them

##### *Treatment 3*

Two X-year olds have agreed to play a game with a week's pocket money at stake. They put equal amounts of money into the pot, and agree that whoever wins the game gets the

whole amount.

What would you do if you had to decide whether the X-year olds should be allowed to play or not?

- Alt 1: I would allow them to play
- Alt 2: I would not allow them to play

#### ***Treatment 4***

Two X-year olds have agreed to play a game with a week's pocket money at stake. They put equal amounts of money into the pot, and agree that whoever wins will get the whole amount. One of them won the game and thus got the whole amount.

What would you do if you had to decide whether the X-year old who won should keep the whole amount or whether the amount should be equally divided?

- Alt 1: I would allow the winner to keep the whole amount
- Alt 2: I would divide the amount equally between them

#### **8.1.2 Follow-up question**

Additionally, the workers were randomly asked either follow-up question A or B.

##### ***Question A***

You answered "Worker's answer from previous question here". What are your main reason(s) for this decision?

- (Open answer)

##### ***Question B***

You answered "Worker's answer from previous question here". Was any of the following considerations important for your decision? (1 = not important – 7 = highly important)

- The competence of individuals this age (1 = not important – 7 = highly important)
- The maturity of individuals this age (1 = not important – 7 = highly important)
- The appropriateness of betting money for individuals this age (1 = not important – 7 = highly important)

- The addictiveness of betting money for individuals this age (1 = not important – 7 = highly important)
- The unfairness of the inequality between the winner and the loser (1 = not important – 7 = highly important)

### 8.1.3 Statements

Please indicate to what extent you agree to the following statements (1 = highly agree - 7 = highly disagree)

- Parents should interfere with the choices of their children if it is in the best interest of the children (1 = highly agree - 7 = highly disagree)
- Teachers should interfere with the choices of the children they teach if it is in the best interest of the children (1 = highly agree - 7 = highly disagree)
- Adults in general should interfere with the choices of children if it is in the best interest of the children (1 = highly agree - 7 = highly disagree)
- The government should interfere with the choices of children if it is in the best interest of the children (1 = highly agree - 7 = highly disagree)
- The government should interfere with the choices of parents if it is in the best interest of their children (1 = highly agree - 7 = highly disagree)
- Children should be required to exercise because it is in the children's best interest (1 = highly agree - 7 = highly disagree)
- Children should be required to eat healthy because it is in the children's best interest (1 = highly agree - 7 = highly disagree)
- Children should be required to read books because it is in the children's best interest (1 = highly agree - 7 = highly disagree)
- The government should interfere with the choices of its citizens if it is in the best interest of the citizens (1 = highly agree - 7 = highly disagree)
- The government should require people to save for retirement because it is in people's best interest (1 = highly agree - 7 = highly disagree)
- The government should require motorcyclists to wear helmets because it is in the motorcyclists' best interest (1 = highly agree - 7 = highly disagree)

#### 8.1.4 Background questions

The workers were asked about their gender, year of birth, number of people in household, number of people in the household under the age of 18, the year of birth of all children in the household, occupation, sector, annual income, level of education, marital status, political affiliation and religious view.

#### 8.1.5 Choice of payment scheme

You have now completed your work on the assignment. We will now explain how you will be paid for this work. After you have completed this HIT, we will for each assignment match you with another participant who has completed the same assignment. The payments to you and the other participant is determined by a two-stage process. Below we explain this process in more detail.

##### *First stage:*

First, we would like to know which of the two payment schemes you prefer:

I: By a lottery where with equal probabilities one of you are paid 5 USD and the other is paid 1 USD for the assignment.

II: Both of you are paid 2 USD for the assignment.

With a given probability, your choice will determine how the two of you are paid.

I prefer:

- I
- II

We will ask the participant you are paired with to make the same choice and with a given probability, the choice of the other participant will determine how the two of you are paid.

##### *Second stage:*

If neither your choice nor the choice of the other participant is chosen to determine payments, we will ask a third party to determine the payment to the two of you. You will receive your payment for the assignment within three weeks and it will be paid separately from your fixed participation fee of 1 USD.

## 8.2 Spectator survey

This is the spectator survey as it was presented to the American spectators in our sample. The Norwegian spectators got the same survey, only translated to Norwegian.

### 8.2.1 Distributive choice

This section contains the distributive choice as presented to the spectators in the different treatments.

#### *Treatment 1 - Ex Ante:*

We will now ask you to make a choice that has consequences for a real situation. A couple of days ago two workers, A and B, were recruited from Amazon Mechanical Turk to participate in a study. They were each paid 1 USD for participating, but were also able to earn more during the study.

In the study, the two participants were asked to complete a task. After the task was completed the participants were asked which of the two following payments schemes they preferred:

- I: By a random draw it will be decided who of the two will receive 5 USD for the task and who will receive 1 USD for the task.
- II: Both will be paid 2 USD for the task.

The participants were informed that their answers with a certain probability would be drawn to determine the payment between them. Alternatively, it would be determined by a third party. Both participants answered that they preferred I, but their answer was not drawn to determine the payment - the payment will therefore be determined by a third party.

You are this third party, and we now want you to choose how the two participants will be paid. The participants will be paid according to what you decide within three weeks. You can choose between:

- I: By a random draw it will be decided who of the two will receive 5 USD for the task and who will receive 1 USD for the task.
- II: Both will be paid 2 USD for the task.

I choose: I or II (no other answers allowed)

***Treatment 2 - Ex Post Alternative A:***

We will now ask you to make a choice that has consequences for a real situation. A couple of days ago two workers, A and B, were recruited from Amazon Mechanical Turk to participate in a study. They each earned 1 USD by participating, but were also able to earn more during the study.

In the study, the two participants were asked to complete a task. After the task was completed the participants were asked which of the two following payments schemes they preferred:

- I: By a random draw it will be decided who of the two will receive 5 USD for the task and who will receive 1 USD for the task.
- II: Both will be paid 2 USD for the task.

The participants were informed that their answers with a certain probability would be drawn to determine the payment between them. Alternatively, it would be determined by a third party. Both participants answered that they preferred I, but their answer was not drawn to determine the payment - the payment will therefore be determined by a third party.

You are this third party, and we now want you to choose how the two participants will be paid. The participants will be paid according to what you decide within three weeks. You can choose between:

- I-A: Participant A will be paid 5 USD for the task and participant B will be paid 1 USD for the task
- II: Both will be paid 2 USD for the task.

I choose: I-A or II (no other answers allowed)

### ***Treatment 3 - Ex Post Alternative B:***

We will now ask you to make a choice that has consequences for a real situation. A couple of days ago two workers, A and B, were recruited from Amazon Mechanical Turk to participate in a study. They each earned 1 USD by participating, but were also able to earn more during the study.

In the study, the two participants were asked to complete a task. After the task was completed the participants were asked which of the two following payments schemes they preferred:

- I: By a random draw it will be decided who of the two will receive 5 USD for the task and who will receive 1 USD for the task.
- II: Both will be paid 2 USD for the task.

The participants were informed that their answers with a certain probability would be drawn to determine the payment between them. Alternatively, it would be determined by a third party. Both participants answered that they preferred I, but their answer was not drawn to determine the payment - the payment will therefore be determined by a third party.

You are this third party, and we now want you to choose how the two participants will be paid. The participants will be paid according to what you decide within three weeks. You can choose between:

- I-B: Participant A will be paid 1 USD for the task and participant B will be paid 5 USD for the task
- II: Both will be paid 2 USD for the task.

I choose: I-B or II (no other answers allowed)

### ***Treatment 4 - Ex Ante (No information):***

We will now ask you to make a choice that has consequences for a real situation. A couple of days ago two workers, A and B, were recruited from Amazon Mechanical Turk to participate in a study. They were each paid 1 USD for participating, but were also able to earn more during the study.

In the study, the two participants were asked to complete a task. After the task was completed the participants were told that the payment for the task was going to be determined by a third party.

You are this third party, and we now want you to choose how the two participants will be paid. The participants will be paid according to what you decide within three weeks. You can choose between:

- I: By a random draw it will be decided who of the two will receive 5 USD for the task and who will receive 1 USD for the task.
- II: Both will be paid 2 USD for the task.

I choose: I or II (no other answers allowed)

***Treatment 5 - Ex Post Alternative A (No information):***

We will now ask you to make a choice that has consequences for a real situation. A couple of days ago two workers, A and B, were recruited from Amazon Mechanical Turk to participate in a study. They each earned 1 USD by participating, but were also able to earn more during the study.

In the study, the two participants were asked to complete a task. After the task was completed the participants were told that the payment for the task with a certain probability was going to be determined by a third party.

You are this third party, and we now want you to choose how the two participants will be paid. The participants will be paid according to what you decide within three weeks. You can choose between:

- I-A: Participant A will be paid 5 USD for the task and participant B will be paid 1 USD for the task
- II: Both will be paid 2 USD for the task.

I choose: I-A or II (no other answers allowed)



### ***Treatment 6 - Ex Post Alternative B (No information):***

We will now ask you to make a choice that has consequences for a real situation. A couple of days ago two workers, A and B, were recruited from Amazon Mechanical Turk to participate in a study. They each earned 1 USD by participating, but were also able to earn more during the study.

In the study, the two participants were asked to complete a task. After the task was completed the participants were told that the payment for the task with a certain probability was going to be determined by a third party.

You are this third party, and we now want you to choose how the two participants will be paid. The participants will be paid according to what you decide within three weeks. You can choose between:

- I-B: Participant A will be paid 1 USD for the task and participant B will be paid 5 USD for the task
- II: Both will be paid 2 USD for the task.

I choose: I-B or II (no other answers allowed)

### **8.2.2 Statements**

Please consider to what extent you agree with the following statements (1 = completely disagree - 10 = completely agree)

- The society should aim to equalize income (1 = completely disagree - 10 = completely agree)
- The society should aim to ensure individual freedom in economic choices (1 = completely disagree - 10 = completely agree)

### **8.2.3 Background questions**

The spectators were asked about their age, gender, municipality, level of education, household income and political affiliation.

### 8.3 Argument for rejecting the principle of dominance

Below follows an argument from Nissan-Rozen (2017) for rejecting the principle of dominance when having to choose between the ex ante Pareto, ex post egalitarianism, and dominance principle.

Suppose there is a spectator choosing between prospect A and B that is an ex post egalitarian, specifically involving that she prefers the distribution (1,1) for certain over both of the unequal distributions (3,0) and (0,3), assuming that the spectator treats the individuals symmetrically. Additionally, if a prospect gives a higher payoff to at least one of the individuals, while leaving none of the individuals worse off, then the spectator prefers this prospect. That is, the spectator prefers (1.5,5) to (1,5). Consider table 15 presented by Nissan-Rozen.

Table 15: Payoff matrix: Rejection of dominance (II)

	$p(w_1)=0.5$	$p(w_2)=0.5$
A	1,1	1.5,5
B	3,0	1,5

In this situation, prospect A will be preferred both if  $w_1$  occurs and if  $w_2$  occurs, and thus the dominance principle yields that prospect A is preferred to prospect B. Consider now the reasons for preferring prospect A to prospect B. First, if  $w_1$  is the state of the world that occurs, A is preferred to B on egalitarian grounds even though it reduces individual 1's payoff by 2 units. The reason for choosing A must be that it increases individual 2's payoff by 1 unit. Secondly, if  $w_2$  would be the state of the world, individual 2 is indifferent between prospects A and B and hence, the reason for choosing A is that individual 1's payoff increases by 0.5 units. In sum, the spectator chooses prospect A for individual 2's best interest in the case of  $w_1$  and for individual 1's best interest in the case of  $w_2$ .

However, individual 1 would overall prefer that the spectator chooses prospect B, as his expected payoff is higher. Therefore, individual 1 do not prefer that the spectator chooses prospect A for his sake, as is the case with  $w_2$ . Since individual 1 has only a 0.5 units increase in payoff as a reason for preferring A, but a 2 units increase in payoff as a reason for preferring B, he would overall prefer that the spectator ignores the 0.5 units increase as an argument for choosing prospect A.

If the spectator follows this and does not take the aforementioned reason into account when choosing between prospects A and B, then there are two conflicting reasons for choosing A and B respectively. Choosing A yields a 1 unit increase for individual 2,

while choosing B yields a 2 unit increase for individual 1, both with a probability of 50%. Nissan-Rozen concludes that in this case the reason for choosing B overrides the reason for choosing A. This is because the dominance principle is sensitive to all reasons and fails to ignore reasons that the individuals would prefer were ignored. Therefore, he suggests that the dominance principle should be rejected.

## 8.4 Heterogeneity

Table 16: Additional hypothesis test for Table 11

	Gender (B=1 if Female)	Political (B=1 if Conservative)	Education (B=1 if High)
<i>lincom:</i>			
Difference(Ex post)	-0.028 (0.051)	0.072 (0.059)	0.036 (0.051)
Difference(Norway)	0.019 (0.054)	0.107* (0.060)	0.002 (0.059)

Note: The first row shows the result of a hypothesis test testing whether the sum of the coefficients of the variables "Ex post x B" "Ex post x B x Norway" is equal to zero. The second row shows the result of a hypothesis test testing whether the sum of the coefficients of the variables "B x Norway" "Ex post x B x Norway" is equal to zero. The coefficients can be found in Table 11.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

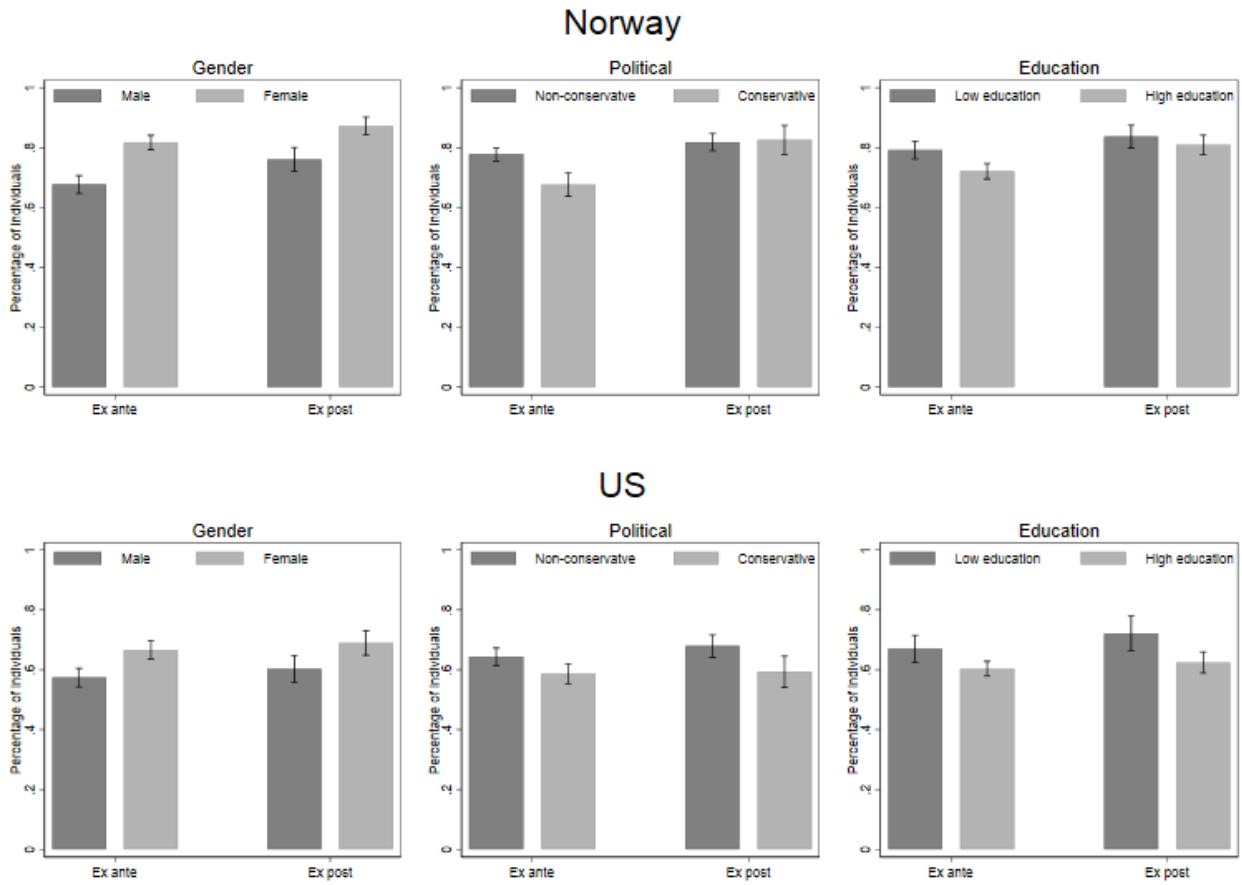


Figure 2: Share implementing inequality in different subgroups (information treatments)

## 8.5 Probit regressions

Table 17: Table 7 using a probit model

	Norway	Norway	United States	United States	Pooled	Pooled
Ex post	0.076*** (0.026)	0.072*** (0.025)	0.048 (0.030)	0.052* (0.030)	0.063*** (0.020)	0.063*** (0.020)
Norway					0.143*** (0.019)	0.120*** (0.020)
Female		0.110*** (0.025)		0.079*** (0.030)		0.095*** (0.019)
High age		0.129*** (0.025)		0.153*** (0.030)		0.141*** (0.019)
High education		-0.039 (0.026)		-0.029 (0.037)		-0.034 (0.022)
Conservative		-0.062** (0.027)		-0.069** (0.030)		-0.064*** (0.020)
Observations	1000	1000	1000	1000	2000	2000

Note: The table reports the results from six probit regressions of implemented equality on different explanatory variables, including background variables. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 18: Table 8 using a probit model

	(1)	(2)	(3)	(4)	(5)	(6)
Ex post	0.046*	0.063**	0.079***	0.069***	0.053	0.052
	(0.026)	(0.026)	(0.023)	(0.025)	(0.037)	(0.053)
Norway	0.102***	0.120***	0.121***	0.120***	0.120***	0.103***
	(0.027)	(0.020)	(0.020)	(0.020)	(0.0195)	(0.028)
Norway x Ex post	0.038					0.037
	(0.039)					(0.040)
Female x Ex post		-0.0014				-0.0032
		(0.039)				(0.039)
Conservative x Ex post			-0.049			-0.045
			(0.039)			(0.039)
High age x Ex post				-0.016		-0.0094
				(0.040)		(0.040)
High education x Ex post					0.014	0.020
					(0.043)	(0.044)
Control variables	X	X	X	X	X	X
Observations	2000	2000	2000	2000	2000	2000
<i>lincom:</i>						
Ex post (B)	0.083***	0.062**	0.030	0.053*	0.066***	
	(0.029)	(0.029)	(0.032)	(0.031)	(0.023)	

Note: The table reports the results from six probit regressions of implemented equality on different explanatory variables, including background variables. All background variables from Table 7 are included in the regression. The linear combination is the effect of being in the ex post treatment for subgroup B, which is the subgroup interacted with "Ex post" in the relevant column. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 19: Table 9 using a probit model

	(1)	(2)	(3)	(4)	(5)
Ex post	0.072*** (0.025)	0.075** (0.034)	0.055* (0.030)	0.053 (0.043)	0.037 (0.051)
Female x Ex post		-0.007 (0.051)			-0.003 (0.051)
Conservative x Ex post			0.057 (0.056)		0.058 (0.056)
High education x Ex post				0.028 (0.053)	0.029 (0.053)
Control variables	X	X	X	X	X
Observations	1000	1000	1000	1000	1000
<i>lincom:</i>					
Ex post (B)		0.068* (0.038)	0.112** (0.047)	0.082*** (0.031)	

Note: The table reports the results from six probit regressions of implemented equality on different explanatory variables, including background variables. All background variables from Table 7 are included in the regression. The linear combination is the effect of being in the ex post treatment for subgroup B, which is the subgroup interacted with "Ex post" in the relevant column. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 20: Table 10 using a probit model

	(1)	(2)	(3)	(4)	(5)
Ex post	0.052*	0.048	0.098***	0.049	0.092
	(0.030)	(0.040)	(0.036)	(0.064)	(0.076)
Female x Ex post		0.008			0.001
		(0.060)			(0.060)
Conservative x Ex post			-0.125**		-0.125**
			(0.055)		(0.055)
High education x Ex post				0.004	0.008
				(0.072)	(0.073)
Control variables	X	X	X	X	X
Observations	1000	1000	1000	1000	1000
<i>lincom:</i>					
Ex post (B)		0.056	-0.027	0.052*	
		(0.044)	(0.046)	(0.034)	

Note: The table reports the results from six probit regressions of implemented equality on different explanatory variables, including background variables. All background variables from Table 7 are included in the regression. The linear combination is the effect of being in the ex post treatment for subgroup B, which is the subgroup interacted with "Ex post" in the relevant column. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$



Table 21: Table 11 using a probit model

	Gender (B=1 if Female)	Political (B=1 if Conservative)	Education (B=1 if High)
Ex post	0.042 (0.035)	0.087*** (0.032)	0.042 (0.057)
Ex post x Norway	0.045 (0.053)	-0.023 (0.047)	0.021 (0.075)
Ex post x B	0.007 (0.053)	-0.110** (0.049)	0.005 (0.064)
Ex post x B x Norway	-0.015 (0.079)	0.173** (0.080)	0.027 (0.088)
B x Norway	0.068 (0.054)	-0.089* (0.053)	-0.040 (0.061)
Norway	0.070* (0.037)	0.137*** (0.033)	0.129** (0.052)
B	0.064* (0.037)	-0.012 (0.033)	-0.022 (0.045)
Control variables	X	X	X
Observations	2000	2000	2000
<i>lincom:</i>			
Ex post (US, B)	0.049 (0.039)	-0.023 (0.041)	0.047 (0.030)
Ex post (Norway, not B)	0.087** (0.039)	0.064* (0.034)	0.063 (0.049)
Ex post (Norway, B)	0.079* (0.043)	0.127** (0.054)	0.095*** (0.036)
Norway (Ex ante, B)	0.138*** (0.040)	0.048 (0.044)	0.089*** (0.032)
Norway (Ex post, not B)	0.115*** (0.038)	0.115*** (0.034)	0.150*** (0.054)
Norway (Ex post, B)	0.168*** (0.042)	0.019*** (0.051)	0.137*** (0.033)

Note: The table reports the results from three probit regressions on different explanatory variables, including background variables, and interaction terms with the subgroups specified in equation (4). B is an indicator variable equal to 1 if the spectator is female (column 1), is conservative (column 2), or has high education (column 3). All background variables from Table 7 are also included in the regression, except the background variable captured in B. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 22: Table 14 using a probit model

	(1)	(2)	(3)	(4)
Ex post	0.0651*** (0.0124)	0.0810*** (0.0189)	0.0652*** (0.0124)	0.0818*** (0.0191)
Norway	0.118*** (0.0126)	0.118*** (0.0126)	0.141*** (0.0195)	0.141*** (0.0196)
Information	-0.129*** (0.0122)	-0.116*** (0.0168)	-0.113*** (0.0162)	-0.0992*** (0.0201)
Ex post x Information		-0.0278 (0.0252)		-0.0290 (0.0253)
Norway x Information			-0.0382 (0.0256)	-0.0391 (0.0256)
Control variables	X	X	X	X
Observations	4005	4005	4005	4005

Note: The table reports the results from four probit regressions of implemented equality on different explanatory variables, including background variables. All background variables from Table 7 are included in the regression. The linear combination is the effect of being in the ex post treatment for subgroup B, which is the subgroup interacted with "Ex post" in the relevant column. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$