Moral motivation in dictator games

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December 26, 2012

To the memory of Cecilie Rasmussen
who left this world far too soon.

The determined scholar and the man of virtue will not seek to live at the expense of injuring their virtue. They will even sacrifice their lives to preserve their virtue complete.

— Confucius —

If virtue, therefore, does not consist in propriety, it must consist either in prudence or in benevolence.

— Adam Smith —

Acknowledgements

I began the NHH PhD-program in economics in August 2007 with a recommendation from my lecturer Kjetil Bjorvatn. Kjetil became my mentor, and in 2009 he introduced me to the experimental group at NHH, now known as the Choice Lab. The people at the Choice Lab are surely among the most active and successful researchers in Norway. Even so, they all gave generously of both their time and experience. My supervisor Alexander W. Cappelen and co-supervisor Erik Ø. Sørensen have been involved in just about every step toward the completion of this dissertation. I have also benefitted much from advice from my co-supervisor Sigve Tjøtta at the University of Bergen. Alexander and Erik are co-authors of one of the papers presented here, together with Bertil Tungodden. It's been very inspiring to work with them.

Each of the papers presented in this dissertation has depended on support from lab assistants, technical and administrative staff, as well as attendants at PhD-workshops and various international conferences. I am happy to say that I have never been disappointed by the work of anyone involved. Whatever shortcomings remain are mine alone. Though I hesitate to mention names, a special thanks goes to Xu Zhao, who invited me to SJTU to do parts of my research there.

The NHH department of economics has been very supportive of my work. It also encouraged me to spend time abroad, both for conferences and for research visits to U.C. Berkeley and SJTU Antai College. My research has received financial support from NHH, Professor Wilhelm Keilhaus Minnefond, Norges Bank's fund for economic research, and the Institute for Research in Economics and Business Administration (SNF).

Colleagues, friends and family, inside and outside the NHH environment, provided the moral support and and social environment which kept me showing up at the office. Alief Rezza, whom I shared office space with throughout the years, played a crucial role here. Lukáš Lafférs and Zuzana Laffértsová have stayed with my family for some time and contributed in many ways.

Last, but certainly not least, I am indebted to my lovely wife Kiki (Jiehong Kong). The PhD-program brought us together, and without her love and support I would not have completed the program.

Trond Halvorsen
Bardu, December 2012

Contents

List of Figures

List of Tables

Chapter 1

Introduction

1.1 Research topic

In the year 2000, visitors to Galleria Fabia Calvasina in Milan, Italy, could enter an art installation and fill their pockets with as much cash as they wanted. The responsible artist, Marianne Heier,[1] had placed a year's worth of savings, totaling 5,173,000 Italian Lira (2,672 EUR), behind heavy curtains and allowed the audience to stay alone with the money without any form of external control. Although taking the money would have been easy, the visitors faced the dilemma of taking something that Heier had worked hard to earn. At the end of the five-hour-long exhibition, only 4.4% of the money had disappeared.

Heier's art project, called "Cracking Concrete," as a reference to the source of the endowment (Heier had been employed in various low-paying jobs in order to accumulate her savings), exemplifies a phenomenon that economists have studied extensively, but still struggle to agree upon: Why is it that people sometimes appear to disregard their selfish motives on behalf of moral sentiments? After all, standard economic theory predicts not only that there would be no money left, but also that Heier faced strong incentives against setting up the installation in the first place.

This doctoral dissertation studies people's motives in sharing situations. In three papers, it asks whether people have moral preferences, and to what extent moral behavior is influenced by concerns other than moral motives. The discussion is based upon new evidence from economic experiments that are specifically designed to address these questions. The following section explains some of the benefits of the experimental method, before Section 1.3 looks at how some economists have included moral concerns in their models. Section 1.4 discusses how entitlements can be induced in experiments, and Section 1.5 covers the role of social motives for sharing in anonymous settings. The case for using simple experiments is laid out in Section 1.6. Finally, each paper is summarized in Section 1.7.

[1] Marianne Heier is one of the select few invited to suggest a decorative concept for the new NHH building, scheduled for completion in 2013.

1.2 Economic experiments as a research method

Everyday life is riddled with confounding influences on behavior. This makes it difficult to identify and ascertain the impact of moral motivation by analyzing naturally occurring situations. For example, if Heier's audience had doubts about their privacy or the authenticity of the money, then they would had fewer incentives to steal. It's also not clear whether the primary moral reason for leaving the money was a concern for Heier's financial situation, or a reluctance against interacting with a work of art. In order to deal with such confounds, social scientists have developed a host of laboratory and field experiments.

The experimental method is gradually gaining popularity among economists. A primary reason for this is that it requires fewer and less stringent assumptions than other research methods in order to inform economic theory about causal relationships. In an experimental setting, researchers have a large degree of *control* over the participants' environment. Thereby, researchers can exogenously add and remove elements in an effort to learn about their impact on behavior, or in an attempt to isolate the motives that are the focus of the study. For example, researchers may establish complete anonymity so that participants may reveal their private preferences without concerns about being scrutinized. With control over the environment, the only assumption that is required for inference is that *randomization* works.

Randomization refers to the process by which participants are randomly assigned to different treatment groups. The purpose of randomization is to create a valid counterfactual which can be used as basis for measuring treatment effects. To see why randomization matters, consider how one would go about estimating the effect of business education on income. A naïve approach would be to compare the income of people with and without business education. This method is likely to give a faulty answer because it does not account for other differences between the two samples. For example, men may be more likely to earn a business degree than women, and, if men are generally paid more than women, this would make business education seem more profitable than it really is. This gender problem could be solved by

restricting the study to contain only men (or women). However, it is likely that there will also be non-observable differences between the samples, meaning that they can not be dealt with in the same manner. This would be the case if, for instance, those who opt for a business degree are more willing, on average, to sacrifice other benefits in order to achieve higher wages.

One way of handling non-observable characteristics is to minimize the likelihood that there will be systematic differences between the samples, besides the treatment. This can be achieved by randomly selecting the people who are given business education. As long as the samples are large enough, and the selection process is truly random, randomization will eliminate all sample differences.[2] Any remaining differences in income levels can then only be attributed to the difference in business education.

1.3 Moral motivation in economic theory

Standard economic theory assumes that all people are exclusively concerned with maximizing their own private utility, and that utility only arises from private materialistic consumption. Though the standard theory is seldom thought to be based on realistic assumptions, it is popular because it is seen as having substantial explanatory and predictive power when it comes to economic outcomes (Friedman, 1953). In addition, relatively little information is required to predict people's behavior. This makes the theory extremely portable.

Adam Smith provided an early argument for the standard theory when he noted that we do not address the baker's benevolence in order to get bread, but rather his self-interest (Smith, 1776). Smith also provided a moral rationale for why people should be allowed to maximize their own selfishness: "By pursuing his own interest, he frequently promotes that of the society more effectually than when he really intends to promote it" (Ibid., book IV, p. 364). The argument is based on a belief that specializing in one's own

[2]While one can not know for certain that the distributions of non-observable factors are equalized by randomization, the strength of this assumption can be gauged by testing whether there are observable differences between the groups.

work will lead to technological advances and skill accumulation that will have positive spill-over effects to the wider economy. In other words, Smith thought that a capitalist economy would bring about a more efficient use of the available resources and therefore promote overall welfare better than a feudalistic economy would.

Four decades earlier (in 1738), mathematician Daniel Bernoulli showed how private utility, U, can be expressed mathematically as a function that takes consumption, c, as its only argument (Bernoulli, 1954):

$$U = \log(c) \tag{1.1}$$

The concavity of Bernoulli's utility concept was inspired by a behavioral trait known as the St. Petersburg paradox. The paradox is that people's subjective valuations of a risky bet are often smaller than the bet's expected value. The paradox is (partly) solved by assuming that the utility function is concave, because this shape implies that people are risk averse.[3] More recently, economic experiments have identified other behavioral traits, many of which are not captured in the standard model. For example, there is considerable evidence indicating that people exhibit *other-regarding preferences*. In other words, individuals often make economic choices that suggest they also care about other people than themselves.

The most striking evidence of other-regarding preferences comes from dictator game experiments (Forsythe, Horowitz, Savin, and Sefton, 1994). In the standard version of this experiment, participants are paired and given a sum of money. One participant in each pair is then given the role as dictator with the authority to allocate the money within the pair as he (or she) sees fit. The other participant has no say in the decision and must accept the outcome that is decided for him. By ending the experiment after a single decision, and by not allowing the participants to learn each other's identity, strategic motives for sharing are removed. Even so, the typical result is that a majority of dictators share some of the money with the other participant.

[3]The bet that made the St. Petersburg paradox famous has an infinite expected value. Therefore, the concavity of the utility function can not explain finite subjective valuations for this particular bet.

Average offers are often 20 to 30% of the endowment. (Camerer, 2003; Engel, 2011). The main results are robust to variations in parameters, such as the stakes and the subject pool, and this has led many to conclude that the willingness to share without expecting anything in return should be reflected in economic theory.

There are many ways to capture a regard for others in a formalized theory. Levine (1998) includes the other's *utility* as an argument in the agent's utility function. A more indirect approach, reflecting the fact that a receiver's utility is private information, is to make the agent's utility function dependent on the *transfers* to the other (Andreoni, 1990). A third option is to make preferences dependent on *distributional aspects*, such as in models with inequality aversion or maximin preferences (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Engelmann and Strobel, 2004). Moral concerns can also be defined over *acts*, rather than outcomes (Brekke, Kverndokk, and Nyborg, 2003), and made *conditional* on the other person's behavior (Rabin, 1993; Charness and Rabin, 2002). Common for all these models is that they describe economic agents as facing trade-offs between private self-interest and moral concerns. By following this approach, the behavioral theories can be seen as refining, rather than replacing, the standard theory.

1.4 Real effort dictator games

Heier's "Cracking Concrete" installation resembles a dictator game experiment in many ways. Each visitor can be regarded as a dictator with the power to decide how much of the money to leave for the next visitor.[4] And even though other people in the gallery could observe who entered the installation, the fact that more than one person could enter effectively removed the possibility to identify those who took any money. The visitors could therefore act as if they were anonymous. However, in standard versions of the dictator game it is rare for dictators to share more than half of the money. If this behavior was replicated in "Cracking Concrete," then the displayed

[4]Depending on whether the audience knew when the exhibition would end, the last visitor decided the outcome for Heier or a potential next visitor.

money would quickly dwindle down and disappear. Instead, almost all the money was left for the artist at the end.

An important clue for understanding Heier's outcome lies in the title and preparation of her project. She made it clear that she had earned the money by doing laborious work, and economic experiments have shown that accountability may have an important impact on what people regard to be a fair distribution. Konow (1996) proposes that when an endowment is earned through discretionary means, the agent will have an entitlement that is proportional to the value of the factors he could influence. Likewise, he will not be held accountable for factors outside his control. The entitlement constitutes his fair share. This idea has since been tested in dictator games where the participants have to earn their money in stead of receiving it as a windfall.[5]

In general terms, when dictators earn the entire endowment alone, they share very little, if at all (Cherry, Frykblom, and Shogren, 2002; Oxoby and Spraggon, 2008). When the receivers are the ones earning it, good performers are, on average, given more than they would have received if the endowment had been decided exogenously, while poor performers are punished with slightly smaller offers (Ruffle, 1998; Oxoby and Spraggon, 2008). In situations where dictators get to allocate the combined earnings of both the dictator and the receiver, average offers typically reflect those differences in the individual earnings that are due to discretionary factors, but not differences that arise exogenously (Konow, 2000; Frohlich, Oppenheimer, and Kurki, 2004; Cappelen, Sørensen, and Tungodden, 2010).[6] However, many dictators are allocating less than the receiver's entitlement, presumably because it is in their narrow self-interest to keep more than their fair share.

[5]Even though Heier had strong entitlements to the money, the visitors had to trust that all subsequent visitors also would respect these entitlements in order to reach a fair allocation. If they believed that other undeserving visitors would take the money, then even fair-minded visitors would be better off by taking the money for themselves. Trust is explored experimentally by Berg, Dickhaut, and McCabe (1995); Croson and Buchan (1999); Birkeland, Cappelen, Sørensen, and Tungodden (2011).

[6]Cappelen, Drange Hole, Sørensen, and Tungodden (2007) find that choosing whether or not to invest in risky bets affects entitlements, even though the choices do not require any effort. They also find evidence of considerable heterogeneity in what information participants rely upon when they evaluate entitlements.

Cappelen et al. (2007) propose a theory of individual utility that incorporates entitlement concerns.[7] A simplified version of the model can be stated by defining utility, V, as a function of the consumption that can be financed by the amount that the agent keeps to himself, c, and the agent's entitlement, E. By writing the total endowment as X, the offer that a dictator will make is given by $X - c$. The specific form of the utility function is:

$$V = c - \frac{\beta(c - E)^2}{2X}, \tag{1.2}$$

where $\beta \geq 0$ is a parameter describing how much the agent is concerned about deviating from his entitlement. The amount of consumption that optimizes V, is given by c^*. The interior solution of c^* is:

$$c^* = E + \frac{X}{\beta}. \tag{1.3}$$

Equation 1.3 shows that the agent will always keep at least the amount he feels entitled to. Depending on β, he may also keep an extra amount because the utility he gains from consuming this extra amount is larger than the disutility of deviating from his fair share.[8] A crucial difference from Bernoulli's utility function, given in equation 1.1, is that c^* depends on the agent's perceived entitlement, and therefore on information about the source of the endowment.

The idea that economic decisions are made over a subjective perception, rather than an objective representation, of the world can explain other framing effects as well. For example, it is well documented that people are averse to losses, and that the definition of what constitute a loss can be manipulated by the framing of the situation (Kahneman and Tversky, 1979; Camerer, 2000). In Chapter 4, I investigate whether entitlements also influence the dictators' sense that offers induces losses with respect to what they have.

[7] See Cappelen, Konow, Sørensen, and Tungodden (forthcoming) for another application of the model.

[8] If $\beta < 1$, then the agent will keep the entire endowment.

1.5 Social motives for sharing anonymously

Clearly, altruistic acts are not always driven by moral motives alone. Social motives, differing from moral motives in that they depend on the judgment from those who observe the act, often provide a more intuitive explanation for displayed altruism. For example, charitable giving may be a way for the giver to buy himself a good reputation or to improve his legacy. In experimental economics it has generally been assumed that social motivation is eliminated by requiring that the participants behave anonymously. This assumption is seriously challenged by Dana, Cain, and Dawes (2006), who argue that "giving often reflects a desire not to violate others' expectations rather than a concern for others' welfare per se." They base this claim on experimental evidence showing that a large share of dictators are willing to pay the researchers money if that will keep the receivers uninformed about the experiment. Supporting evidence has since emerged in experiments by Dana, Weber, and Kuang (2007); Broberg, Ellingsen, and Johannesson (2007); Andreoni and Bernheim (2009); Lazear, Malmendier, and Weber (2012).

In order to meet the expectations of another person, it is first necessary to have an idea about what the other person's expectations may be. So-called second-order expectations may be shaped by any information that is available about the receiver. This includes instructions informing dictators that the receiver is another person in the same room, or that all participants are recruited by the same method. One of the findings of Dana et al. (2006) is that dictators commonly assume that the receivers are aware of their own role. This illustrates that a lack of information does not hinder dictators from forming beliefs about their counterpart.

Meeting the receiver's expectations may be seen as important because it symbolizes that the dictator understands and respects the receiver. On a similar note, Andreoni and Bernheim (2009) suggest that some dictators are primarily concerned with signaling their respect for social norms, such as equal divisions of windfall endowments. When dictators believe that their actions will be admired by others, they may experience a sensation of *pride* (Ellingsen and Johannesson, 2008b). On the other hand, failing to live up

to the receiver's expectations may create a sense of disappointment for the receiver, and a sense of *guilt* or *shame* for the dictator (Charness and Dufwenberg, 2006; Battigalli and Dufwenberg, 2007; Ellingsen, Johannesson, Tjøtta, and Torsvik, 2010).

Social motivation is a complex concept because it involves strategic reasoning.[9] Even amoral agents may seek to portray themselves as moral-minded if they believe that their actions are observed by individuals with moral preferences. In the extreme, it is possible to imagine an entire society where all acts of altruism arise from an expectation that other people care about fairness, while no one actually does so. A consequence of this potential phenomenon is that much of the existing experiments on sharing behavior offer little insight into the prevalence of moral preferences.

Chapters 2 and 3 investigate and discuss the relative importance of intrinsic moral motivation and extrinsic social motivation in anonymous dictator games – i.e., these chapters ask whether dictators who share do so voluntarily, or because they feel forced to do it. These chapters also provide evidence for whether it is the most or the least generous dictators who would most prefer to avoid the sharing situation, and whether or not guilt aversion engenders more influence on sharing than pride. Finally, these chapters explore the cultural dimension of altruism by conducting comparative experiments in both Norway and China.

1.6 What can be learned form dictator games?

In his meta-study, Engel (2011) identifies more than a hundred published versions of the dictator game. Not surprisingly, the list of factors that influence generosity is long. Since lab experiments are conducted in contexts that are different from out-of-lab settings, it is understandable if some people doubt what can actually be learned from behavior inside the lab. The issue is perhaps particularly relevant for dictator games because they are exceptionally

[9]Geanakoplos, Pearce, and Stacchetti (1989) develop a system called psychological game theory to analyze games where payoffs depend on the players' beliefs as well as their actions.

simple and stylized.

Levitt and List (2007) provide a critical discussion on the external validity of lab experiments. They point out that lab results may both over- and understate the prevalence of pro-social actions, since social norms, the nature and level of scrutiny, restrictions on the choice sets and the time horizon, as well as other factors differ across situations. However, Levitt and List do not deny that it is likely that these factors affect behavior in systematic ways. For example, they suggest that people are more likely to behave pro-socially in front of their children or if their behavior is being televised.

The question of external validity has inspired some researchers to compare dictator game behavior in lab and field environments. Stoop (2012) gives knowing and unknowing participants transparent envelopes containing two 5 euro bills. The envelopes are addressed to another person, and Stoop registers how many envelopes are sent to this receiver. About half of the envelopes are received, and statistical tests do not reveal any differences in behavior between the treatments. Using a within-subject design, Benz and Meier (2008) find that donations to charity funds from inside and outside the lab correlate, but that generosity is more accentuated in the lab. Similarly, Carlsson, He, and Martinsson (2009) also find that dictators giving to a charity are more generous in the lab than in the field, but in both settings offers are smaller if the endowment is earned rather than a windfall. Finally, Small and Loewenstein (2003) conclude that the effect of matching the receiver after (as opposed to before) the allocation decision is made is comparable in the lab and the field, but their design does not make it meaningful to compare the levels of generosity in the two settings. In sum, the evidence suggests that while one should be careful to extrapolate quantitative results from one context to another, there are still qualitative lessons to be learned in the lab.[10]

[10]Efforts are also being taken to test empirically whether dictator game behavior is correlated with broader outcomes in life. For example, Catherine Weinberger (www.econ.ucsb.edu/ weinberg/CCCS.html) is working on linking dictator offers from a 2002 experiment to labor choices for more than 550 college students. Similarly, a group of scientists at the Choice Lab at NHH (www.thechoicelab.no) is planning to track career developments for more than 500 middle school pupils who participated in dictator games in 2011.

It is notable that despite its simplicity, the dictator game was only invented after decades of running experiments in the laboratory. Early experiments tended to emulate markets, and the first oligopoly experiments were designed by Hoggatt (1959); Sauermann and Selten (1959). In these experiments, the decision units were "firms" facing complicated demand functions, and each firm could be controlled by a group of students. While such designs could establish whether the emulated markets were Pareto optimal, it was rather difficult to analyze the behavior of the individual participants. Fouraker, Siegel, and Harnett (1962) simplified these designs by studying bilateral monopolies where individual "sellers" posted prices that individual "buyers" could respond to by deciding their quantities. Already at this time, much of the economic realism was sacrificed for the sake of clarity.

Two decades later, Güth, Schmittberger, and Schwarze (1982) presented the first *ultimatum game*. The ultimatum game is similar to a dictator game, with the exception that the receiver is given the authority to turn down the dictator's offer. If the offer is rejected, then neither of the two receive any part of the endowment. This experiment mimics a sale which can generate both consumer and producer surplus, but only if the buyer decides to accept the seller's offer. By restricting the buyer to a maximum purchase of one unit, the ultimatum game can be seen as a further simplification of the oligopoly experiment of Fouraker et al. (1962). It is also a simplification of the sequential bargaining experiments conducted by Ståhl (1972). In these experiments, bargaining takes place over several rounds, and unless the participants manage to come to an agreement, the final round is an ultimatum game.

The game theoretical solution of the ultimatum game is for the seller to offer the lowest possible amount to the buyer. If buyers only care about private materialistic consumption, then they will not refuse the offer since that would leave them with nothing. However, though results differ with respect to the experimental environment, it is not uncommon for buyers to reject offers of 20% of the endowment, or for seller's to offer half of their endowment (Güth and Tietz, 1990). By helping to understand the motivations that are in play in the ultimatum game, the dictator game of Forsythe et al. (1994)

also provide insights into the reasoning in much more complex bargaining situations.

Few out-of-lab settings are so similar to the dictator game experiment as the "Cracking Concrete" art project. Even so, every one of us is almost consistently in situations where we can share our resources with others. And, almost just as often, we leave resources behind which could easily have been appropriated. It is to be hoped that the experiments presented in this dissertation will contribute to an improved understanding of the motives that influence allocation decisions, in the lab and outside.

1.7 Summaries

1.7.1 Face-saving or fair-minded: What motivates moral behavior?

Co-authored with Alexander W. Cappelen, Erik Ø. Sørensen, and Bertil Tungodden

In this paper, we study the interactive roles of intrinsic moral motivation and extrinsic social motivation. We present a novel experimental design which varies the moral arguments for giving, as well as whether the receivers will be informed or not about the game. The main insight from this paper is that moral arguments are the key for understanding sharing behavior. Social motives are found to have a crowding-in effect, and are only relevant when the dictators have a moral reason to give. When the social motives are excluded because the receivers will not be told about the origin of the transfer, sharing behavior in the lab correlates with self-reported sharing behavior outside the lab and with political preferences. When dictators are given the option to change their receiver's information, we find that almost as many dictators prefer that the receiver know about the game, as those who prefer that the receiver be uninformed. This indicates that there may be substantial social gains from giving, as well as social costs.

1.7.2 Guilt aversion and social esteem in China: Evidence from a real effort dictator game

Here I ask to what extent the influence of extrinsic social motivation is dependent on the subject sample. I hypothesize that receiver expectations have more motivating power in societies where one's social image plays a more crucial role in everyday life. To test this idea, I translate the experiment in the first paper from Norwegian to Mandarin and conduct it with Chinese participants. The results of the second experiment indicate that the Chinese sample felt they had a moral obligation to share in a situation where the Norwegians did not think they had any reason to share. The information decisions are consistent with both guilt aversion and pride playing a role, but these motives do not affect the average levels of sharing to a statistically significant extent. When compared to the previously obtained results from Norway, the new data show that the influences of both intrinsic moral motivation and extrinsic social motivation depend on the participants' culture.

1.7.3 Are dictators loss averse?

Making use of the dynamic structure of real effort experiments, I investigate whether dictators are more willing to share from an earned endowment *before* it is actually earned, compared to *after* it is earned. The inspiration for the experiment comes from reports suggesting that people are loss averse with respect to their status quo wealth. Before a dictator performs an earning task, a commitment to share will effectively lead to a reduction in the gain he is about to receive. However, after passing the earning task, any offer will have to be subtracted from his endowment and is therefore more likely to be perceived as a loss. The experiment is conducted with two sets of instructions, whereof the first asks dictators to record the amount they wish to *give* and the second asks for the amount they wish to *receive*.

The timing of the allocation decision, relative to the earning task, has no influence on the offers from the male participants. The female participants react on the timing to a statistically significant degree, but in opposite ways depending on which instructions are used. The conclusion is that dictators

in real effort dictator games are not loss averse with respect to their status quo wealth.

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Chapter 2

Face-saving or fair-minded: What motivates moral behavior?

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Abstract: We study the relative importance of intrinsic moral motivation and extrinsic social motivation in explaining behavior in the dictator game. The key feature of our experiment is that we introduce a novel treatment design that manipulates these two dimensions of the distributive problem. In one set of treatments, we manipulate the moral argument for sharing, in another we manipulate the information given to the recipient about the context and the dictator's decision. The paper offers four main findings. First, we provide evidence of intrinsic moral motivation being of fundamental importance. Second, we show that extrinsic social motivation matters and is crowding-in with intrinsic moral motivation. Third, we find that extrinsic social motivation generates behavior that is consistent with some participants being motivated by guilt and shame and others by social esteem and pride. Fourth, we show that the sharing behavior in the dictator game is strongly associated with self-reported charitable giving outside the lab and with political preferences.

2.1 Introduction

A prominent idea in behavioral economics is that people are morally motivated, and the introduction of moral preferences (Kahneman, Knetsch, and Thaler, 1986a,b) has generated important work in most fields of economics.[2] The most influential piece of empirical evidence underlying this development has been the observation that in lab experiments people consistently give away a substantial share of money in the dictator game. The dictator game was introduced by Forsythe et al. (1994), and since then more than a hundred dictator games have been published from all parts of the world (Engel, 2011). A key feature of the dictator game is that it rules out selfish reasons for sharing, and the most common interpretation of generosity in the dictator

[2]Some examples include: political economy of redistribution (Alesina and Angeletos, 2005), bargaining (Bruyn and Bolton, 2008), game theory (Rabin, 1993), public good provision (Fischbacher and Gächter, 2010), contracts (Fehr, Hart, and Zehnder, 2011), labor markets (Charness, 2004), general equilibrium theory (Dufwenberg, Heidhues, Kirchsteiger, Riedel, and Sobel, 2011), development (Karlan, 2005), incentive theory (Ellingsen and Johannesson, 2008a), and axiomatic utility theory (Karni and Safra, 2002).

game has therefore been that people are intrinsically morally motivated. A recent important literature (Dana et al., 2006, 2007; Broberg et al., 2007; Andreoni and Bernheim, 2009; Lazear et al., 2012), however, has questioned this interpretation, arguing that in the dictator game people may be motivated by the fact that their decision is observed by an anonymous recipient: "Just knowing that one is the anonymous dictator that the receiver will think badly of can be sufficient to compel giving" (Dana et al., 2006, p. 201). Thus, sharing in the dictator game does not necessarily only reflect intrinsic moral motivation, but may also be driven by extrinsic social motivation.[3]

To understand the underlying motivation of moral behavior is of crucial importance in order to provide better models of human decision-making, and the present paper seeks to address this issue by studying the relative importance of intrinsic moral motivation and extrinsic social motivation in the dictator game. The key feature of our experiment is that we introduce a novel treatment design that manipulates these two dimensions of the distributive problem. In one treatment variation, we manipulate the moral argument for sharing, in another we manipulate the information given to the recipient about the context and the dictator's decision.

We manipulate the moral argument for sharing by changing the conditions of the recipient, where we focus on entitlements and needs, which have been suggested to be the moral considerations that account for the largest fraction of giving in the real world (Konow, 2010). In the baseline treatment, the recipient is a student who has not contributed to the money that is to be distributed, whereas in two other treatments we introduce an entitlement argument and a needs argument for sharing, respectively. In the entitlement treatment, the recipient is a student who has contributed to the same extent

[3]The distinction between intrinsic and extrinsic motivation has a long history in psychology and sociology, and has more recently also been introduced in economics, see for example Frey and Oberholzer-Gee (1997); Gneezy and Rustichini (2000); Benabou and Tirole (2003). In the economic literature, the focus has been on the interaction between the individual's intrinsic motivation to perform a task for its own sake and the extrinsic motivation of doing the task to achieve an external monetary reward. In the present study, the focus is on the interaction between the individual's intrinsic moral motivation to share because he or she considers it the morally right thing to do and the extrinsic social motivation to share because it gives an external social reward.

as the dictator; in the needs treatment, the recipient is a poor microfinance client in a developing country. To study the role of information, we implement these three treatments in a 3×2 design, where in one set of treatments the recipient is given complete information about the context and decision made by the dictator (in the following referred to as treatments with complete information), and in the other set of treatments is given no such information (in the following referred to as treatments with no information). This design allows us to study intrinsic moral motivation by comparing sharing behavior in the baseline treatment to sharing behavior when there is a moral argument for sharing, and to study extrinsic social motivation by comparing the treatments where the recipient is given complete information to the treatments where the recipient is given no information. Furthermore, this design also allows us to study whether introducing an extrinsic social motive for sharing is crowding-in or crowding-out the intrinsic moral motivation.

After the dictators have decided how much to give away, but before this is revealed to the recipients, the dictators are given the opportunity to switch to the other information condition. Dictators in the complete information treatments can decide that no information is given to the recipient, and dictators in the no information treatments can decide that complete information is given to the recipient. Their information choices allow us to explore in more detail the nature of the extrinsic social motivation. In particular, we can study whether the extrinsic social motivation for giving is consistent with participants being motivated by guilt and shame or by social esteem and pride, where the crucial distinction between these two sources of motivation in the present study is that guilt and shame generate disutility and social esteem and pride generate positive utility.[4] The information choice also sheds light on why some people actively seek to avoid sharing situations, which has been observed both in the lab (Dana et al., 2006; Broberg et al., 2007; Lazear et al., 2012) and in the field (DellaVigna, List, and Malmendier, 2012). In the last part of the experiment, we collect background information and ask

[4]This distinction is consistent with the models offered in the recent economic literature on extrinsic social motivation, see for example Battigalli and Dufwenberg (2007); Ellingsen and Johannesson (2008a); Andreoni and Bernheim (2009); Ellingsen and Johannesson (2011), but clearly does not exhaust the differences investigated in this literature.

the participants to comment on what motivated their decision, which adds to our understanding of the decision making process underlying the observed behavior.

The paper offers four main findings. First, we provide evidence of intrinsic moral motivation being of fundamental importance for the sharing behavior of the participants. When there is no obvious moral argument for sharing, most participants do not give anything to the recipient, whereas they give away a substantial share when we introduce a moral argument. The importance of the moral argument is also reflected in the explanations made by the participants, where they emphasize both entitlements and needs considerations. Second, we show that extrinsic social motivation matters, and we identify a crowding-in effect in situations where there is a moral argument for sharing. Third, we show that the participants are divided on whether to give information or not to the recipients, which is consistent with some participants being motivated by guilt and shame and others by social esteem and pride. Fourth, we show that the sharing behavior in the dictator game is strongly associated with self-reported charitable giving outside the lab and with political preferences.

The rest of the paper is organized as follows: Section 2.2 presents the sample and the experimental design. Section 2.3 provides an overview of the treatment effects and relates them to the explanations provided by the participants, whereas Section 2.4 reports from a regression analysis. In Section 2.5, we show how the results from the second part of the experiment shed light on the nature of extrinsic social motivation, and in Section 2.6 we discuss related literature and how our findings relate to charitable behavior in the field.

2.2 Sample and design

We recruited participants among students at the Norwegian School of Economics (NHH), and 200 of them were randomly allocated to the role as dictator. In addition to the dictators, there was an equal number of recipients who did not make any decisions in the experiment, as we explain in

more detail below.

We had seven sessions that each lasted about 40 minutes and took place on the same day. Individuals were randomly allocated to treatments within sessions and each subject participated in only one session. All dictators received a show-up fee of 100 NOK (approximately 17.50 USD), in addition to what they earned in the distribution phase of the experiment. The experiment was double blind, i.e., neither participants nor experimenters could associate decisions with particular participants, and used a web-based interface.[5]

At the beginning of the experiment, all dictators were informed about the rules of the game, and given a description of how the game would proceed.[6] The experiment consisted of three phases: a production phase, a distribution phase, and a questionnaire phase. In the production phase the dictators were asked to work for 15 minutes on a task consisting of ticking off numbers in a matrix. They were told that they had completed the task when they had reached a threshold level of correct responses, and all participants managed to do so. We did not say anything in advance about payment for completing the task.

In the distribution phase, the dictators were randomly allocated into different treatments. In the base treatment (T1), they were informed that they had earned 200 NOK ($35) for completing the production phase. They were also told that they were matched with another student at NHH, randomly selected from the student body member registry. The dictators were then asked to decide how to share their earnings between themselves and this other person. They were informed that the money would be sent to the other person, after the experiment, together with the following letter explaining the

[5]Special care was taken so that the payment procedure ensured participant-experimenter anonymity. At the end of the experiment the computer assigned a payment code to each of the dictators, and a group of assistants, who were not present in the lab during the experiment, prepared envelopes containing the payments corresponding to each payment code. The assistants also made sure that it was impossible to identify the amount of money by simply looking at the envelope. After bringing the envelopes to the lab, the assistants immediately left and the envelopes were handed out in accordance with the payment codes.

[6]Instructions were given in Norwegian, see the web-appendix for an English translation.

context and the decision of the dictator: "You have been selected to receive x NOK from an economic experiment conducted at the Norwegian School of Economics (NHH). Your name has been randomly selected among the students at NHH. In this experiment a participant, who is also a student at NHH, has earned 200 NOK by performing a task. The participant was then informed that he (or she) had been matched with another person, randomly selected among the other students at NHH (i.e. you), and was asked to decide how much of the 200 NOK he wanted to give to you. Before he made his choice, he was shown a copy of this letter. He decided to give you x NOK, which is enclosed to this letter. If the envelope does not contain any money, however, the participant decided not to give you any of his earnings." To ensure that the dictators could trust that the transfer would actually take place if they decided to give away a share of the money, they were informed (in all treatments) that after the experiment, they could obtain an anonymous copy of the transaction from the accounting department as verification.[7]

In the other treatments we manipulated two dimensions of the distributive problem. In the treatments T2-T3, we manipulated the moral argument for sharing; in the treatments T1*-T3*, we manipulated the information given to the recipient about the context and the dictator's decision. In all other respects, the treatments were identical. In particular, in all treatments the dictator had to decide how much, out of 200 NOK, to transfer to a recipient.

In T2, we introduced an entitlement argument for sharing. We did so by letting the recipient be another student at NHH who had also signed up for the experiment, but who was randomly assigned the role as recipient and sent to a different room. The recipients were asked to do the same task as the dictators, again without any mentioning of payment for completing the task. When the recipients had completed the task, they were paid the show-up fee and told that they had completed the experiment. Each dictator in this treatment was matched with one such recipient, and then told that each had

[7]The participants would then have to send an e-mail with their payment code to the accounting department, which would verify that the transfer that had taken place. 1 out of 200 dictators did request a verification. The participants were also given the opportunity to provide anonymous comments on the experiment. In these comments no one expressed any doubt about the transfers taking place.

earned 100 NOK by completing the task. The dictator was also told that the recipient was not aware of this payment, but would be informed by the letter that would accompany the money that the dictator decided to transfer to the recipient.[8] Thus, in contrast to T1, the recipient in T2 could be seen as having the same entitlements as the dictator, a moral argument that could motivate sharing.

In T3, we introduced a needs argument for sharing. We did so by letting the recipient be a client in the microcredit institution PRIDE Tanzania.[9] Again, the context of both the dictator and the recipient was explained in detail in the letter that accompanied any money given away.[10] Thus, in

[8]The wording of the letter to the recipient in treatment T2 was as follows: "You have been selected to receive x NOK from an economic experiment conducted at the Norwegian School of Economics (NHH). Your name has been randomly selected among the students in the room you were sitting in during the experiment on Tuesday November 3. In this experiment a participant in a different room, who is also a student at NHH, has earned 100 NOK by performing the same task as you. The participant was then informed that he (or she) had been matched with another person, randomly selected among the other students that participated in the experiment (i.e. you). He was informed that you had completed the same task. He was also informed that you had earned the same amount, 100 NOK, but that you had not been informed about this. We then asked him to decide how much of the joint earnings of 200 NOK, he wanted to give to you. Before he made his choice, he was shown a copy of this letter. He decided to give you x NOK, which is enclosed to this letter. If the envelope does not contain any money, however, the participant decided not to give you any of the money that the two of you had earned."

[9]PRIDE Tanzania is the largest microcredit institution in Tanzania, with approximately 70 000 clients. The clients involved in the present study were all selected from a branch in Dar es Salaam. Norway is one of the richest and Tanzania one of the poorest countries in the world, a fact that is well-known by most Norwegians. GDP per capita is 47 times higher in Norway than Tanzania, see Table 6 in International Comparison Program (2008), and the Norwegian government and Norwegian donors are extensively involved in aid work in Tanzania.For a more detailed discussion of the clients and context of PRIDE Tanzania, see Berge, Bjorvatn, and Tungodden (2012).

[10]The wording of the letter to the recipient in treatment T3 was as follows: "You have been selected to receive x NOK (equivalent to y USD) from an economic experiment conducted at the Norwegian School of Economics (NHH) in Norway. Your name has been randomly selected among the clients in the micro finance institution PRIDE TANZANIA in Dar es Salaam in Tanzania. In this experiment a participant, who is a student at NHH, earned 200 NOK by performing a task. The participant was then informed that he (or she) had been matched with another person, randomly selected among the clients in PRIDE TANZANIA in Tanzania (i.e. you), and was asked to decide how much of his earnings he wanted to give to you. Before he made his choice, he was shown a copy of this letter. He decided to give you x NOK (equivalent to y USD), which is enclosed to this letter. If the envelope does not contain any money, however, the participant decided not to give you any of the money that the two of you had earned."

contrast to T1, the recipient in T3 could be seen as having greater need for the money, also a moral argument that could motivate sharing.

The second treatment variation manipulated the information given to the recipient. The treatments T1*-T3* correspond to treatments T1-T3 in all respects, except for the recipient not receiving any information about the context and the decision made by the dictator. The non-informative letter accompanying any money transferred would only state the following basic information: "You have been selected to receive x NOK from an economic experiment conducted at the Norwegian School of Economics (NHH)." Thus, the recipient would not know that the money he received reflected a choice made by another person or have any information about the amount of money actually available in this experiment.[11] If extrinsic social motivation is an important source of motivation in the dictator game, we would expect to see less sharing in the treatments in which no information was given to the recipient.

Table 3.1 summarizes the six treatments in the experiment. By comparing treatment T1* to treatments T2*-T3*, we can study whether the introduction of a moral argument in itself provides motivation for sharing, since in these treatments we have excluded the possibility that the dictator gives away money because her decision is observed by an anonymous recipient. By comparing treatments T1-T3 to the corresponding treatments T1*-T3*, we can study whether social concerns motivate sharing in the dictator game, since the only difference across these two sets of treatments is the information given to the recipient. In particular, we can study the role of information both in a situation where there is no obvious moral argument for sharing, by comparing T1 and T1*, and in situations where there are clearly moral arguments for sharing, by comparing T2-T3 and T2*-T3*.

[Table 3.1 about here.]

In the second part of the experiment, to shed some further light on the external social motive for sharing, we announced that the dictators had the

[11] If the dictator decided not to send any money in these treatments, we did not send a letter to the recipient. This is just an extreme version of the recipient not being given any information about the context and the dictator's decision.

opportunity to switch to the other information condition.[12] Dictators in the treatments T1-T3 were given the opportunity to choose that no information would be given to the recipient and dictators in the treatments T1*-T3* were given the opportunity to choose that complete information would be given to the recipient. The dictators were also told that they could revise their dictator decision, if they decided to switch to the other information condition. Dictators who decided not to switch, were asked the hypothetical question of what they would have transferred to the recipient if they had been presented with the other information condition initially. If an underlying motivation for sharing when the decision is observed by a recipient is to reduce guilt and shame, we would expect some participants in treatments T1-T3 to change to the no information condition. Correspondingly, if an underlying motivational factor for sharing in social situations is social esteem and pride, then we should expect some participants in treatments T1*-T3* to change to the complete information condition.

In the final part of the experiment, the dictators were asked background questions about their age, years of business training, gender, political preferences, and charitable giving. They were, on average, 22 years old, had two years of business training, and 35% of them were females. The reported political preferences show less support for the left-wing coalition government than in the population at large, which is as expected at a business school.[13] On charitable giving, 67.5% reported having donated less than 500 NOK in the previous year, and 32.5% reported having donated 500 NOK or more. By comparing share given to self-reported political preferences and charitable donations, we can study whether generous lab behavior is associated with particular political views or generous behavior outside the lab.

[12]The announcement was completely unexpected for the dictators, so the introduction of this possibility could not have affected their initial dictator choices. This is also consistent with the anonymous comments given by the participants, where no one mentions that they had foreseen this possibility.

[13]23.5% reported having voted for the left-wing coalition government in the previous election, 17.5% for centrist parties, 54.5% for right-wing parties, 1.5% for other parties, and 3% did not respond to this question.

2.3 Descriptive statistics

Table 2.2 reports the average share given in each of the six treatments. Looking first at the left column, we observe that participants matched with students who have not worked give away 11.6% when the recipient receives no information (T1*). As shown in Figure 2.1, a large majority of the participants do not share anything in this treatment, and many of them explain this by the absence of a moral argument for giving. In particular, the participants highlight the absence of an entitlement motive, "The other participant has not done anything to deserve the money" (participant 20), but some also mentioned the absence of a needs motive, "[The] other participant is most likely not in economic need" (participant 103).[14] In contrast, only a few students motivate their choice by reference to selfish considerations, participant 91 being an exception, "I wanted to keep as much as possible myself."[15] Thus, in this treatment, most participants seem to find moral and selfish considerations to be aligned and to justify not giving away anything.

[Table 2.2 about here.]

[Figure 2.1 about here.]

The other two treatments with no information given to the recipient introduce moral arguments for giving, i.e. entitlements and needs, and in both cases the average share given increases considerably. When the recipient is another student who can also be seen as having entitlements to the money that is to be distributed (T2*), we observe from Table 2.2 that share given increases to 21%; when the recipient is a needy microcredit client (T3*), the share increases to 43.3%. Furthermore, when comparing T1* and T2* in Figure 2.1, we observe a substantial decrease in the average share of participants keeping everything for themselves (from 65.7% to 51.5%) and a corresponding increase in the average share of equal splits (from 8.6% to

[14] The explanations are translated from Norwegian.

[15] We observe from Figure 2.1 that one participant gives away everything in this treatment, explaining this by reference to the following exotic consideration, "Karma. It is rewarding to be generous" (participant 263).

27.2%). The equal splits are, typically, motivated by entitlement considerations, "We have done the same job and therefore each of us deserves half of the money" (participant 22). In contrast, the most striking feature when comparing T1* and T3* is the large increase in the share of participants giving away everything (from 0.3% to 26.7%), which is explained by reference to the other person being more needy, "I feel that the person in Tanzania has more need for the money than I have" (participant 295). In sum, the observed treatment differences and the explanations of the participants provide evidence of entitlements and needs considerations being crucial in motivating their behavior, even in situations where the recipient has no information at all about the distributive situation and the choice made by the dictator. Interestingly, in contrast to the baseline treatment, many participants also include selfish considerations in the explanation of their choice when there is a moral argument for sharing. This suggests that the dictators in these treatments engage in a trade-off between moral and selfish considerations when deciding how much to share with the recipients. The explanation of participant 106, who gave away 50 NOK in T2*, may serve as an illustration of this line of reasoning, "My choice was based on selfish reasoning, where I asked myself 'What do I get out of this?' Still the other person has done a job, and deserves some form of reward."

By comparing the left and right columns in Table 2.2, we can study the causal impact of information on share given. Interestingly, we observe that giving the recipient information about the context and the dictator's decision does not increase share given in the baseline treatment (T1 versus T1*), 11.6% versus 11.4%, and the explanation of participant 384 sheds light on why this is the case, "I see no reason for giving anything to the other person. I am the one who has signed up for the experiment and I am therefore of the opinion that I deserve all the money. This I consider fair and I have no problem being open about it." Thus, as long as the participants consider it morally unproblematic not to give away money, the information provided to the recipient appears to be of minor importance.[16]

[16]The finding in T1* is in line with Cherry et al. (2002), who show that dictators genearlly are unwilling to share when bargaining over money that they have earned themselves.

In the treatments where there is a moral argument for sharing, on the other hand, information appears powerful and increases average share given: from 21.0% to 29.3% when comparing T2* and T2, and from 43.3% to 60.2% when comparing T3* and T3. This shows that information provided to an anonymous recipient matters for dictators, in line with the explanation of participant 236 who divided equally in T2, "This was the fair division for both participants, i.e., myself and the other part. The fact that she would know that the money comes from me strengthens my decision not to take all the money myself," and by participant 190 in T3, who gave away 75%, "I felt that taking everything for myself would hurt the person receiving the letter, and it would have been unethical of me since he or she was in greater need for the money." Thus, the role of information appears to interact with the presence of a moral argument for sharing; information only motivates behavior in the presence of a moral argument.

2.4 Intrinsic versus extrinsic motivation

Table 2.3 presents regressions where the dependent variable is the share given by the dictator. To focus on the relative importance of introducing a moral argument and information, respectively, we introduce two dummy variables, "Moral" and "Information," where "Moral" takes the value one in the treatments where there is a moral argument for sharing (T2, T2*,T3, T3*) and "Information" takes the value one in the treatments where the recipient received complete information (T1,T2,T3).

[Table 2.3 about here.]

Columns 1-3 confirm the impression from the descriptive analysis. The introduction of a moral argument for sharing has in itself a large and significant effect on the share given, it increases from 11% in the baseline to 38% in the treatments where there is a moral argument for sharing ($p < 0.001$,

Our experimental data, however, suggests that this behavior does not reflect selfishness, but rather the absence of a moral argument for sharing and the presence of a moral entitlement argument for keeping all the money.

"Moral" in column 1). The introduction of information also increases the share given, from 24% in the treatments where the recipient receives no information to 32% in the treatments where the recipient receives complete information ($p = 0.096$, "Information" in column 2). This effect, however, is completely driven by the treatments where there is a moral argument for sharing. As can be seen from column 3, the effect of information in the baseline treatment is negligible ($p = 0.981$, "Information" in column 3), whereas it is substantial and statistically significant in the moral treatments ($p = 0.053$, "Information" + "Moral × Information" in column 3). The estimated interaction effect "Moral × Information" is almost identical to the effect of information in the treatments where there is a moral argument for sharing, but only close to statistically significant ($p = 0.12$, "Moral × Information" in column 3). Overall, the regressions in columns 1-3 show that intrinsic moral motivation is crucial for explaining sharing behavior in the dictator game, but also that extrinsic social motivation creates a crowding-in effect when there is a moral argument for sharing and the recipient is given information about the context and the decision made by the dictator.

In column 4, we introduce self-reported background variables, which only marginally affect the estimated treatment effects. Interestingly, we observe a positive association between the share given and both charitable giving outside the lab and political preferences. Participants who report donating 500 NOK or more to charity the previous year give, on average, 8 percentage points more to the other participant ($p = 0.137$, "Charity" in column 4) and participants reporting that they voted for the left-wing coalition government in the last election give away, on average, 10 percentage points more ($p = 0.078$, "Left-wing" in column 4). As shown in column 5, these associations become even stronger when we only consider the no information treatments ($p = 0.046$ and $p = 0.052$, "Charity" and "Left-wing" in column 5), the charitable and left-wing individuals then give away almost twice as much as the rest of the participants. This suggests that sharing behavior in the no information treatments reflects an intrinsic moral motivation that also motivates charitable giving outside the lab and voting behavior. In the complete information treatments there is no such association, as observed in

column 6.

With respect to age and years of business training, we only find an association when complete information is given to the recipient. In these treatments, there is a significant negative association between the share given and years of business training and a significant positive association between the share given and age ($p < 0.001$ and $p < 0.001$, "Business training" and "Age" in column 6). There is no such association in the no information treatments, which suggests that business training and age, in opposite directions, significantly affect the extrinsic social motive for sharing but have no impact on the intrinsic moral motivation. Finally, we observe that the estimated gender coefficient is small and insignificant in all specifications.

In sum, the regressions in 4-6 show that the sharing behavior in the experiment is associated with behavior outside the lab and personal characteristics, but also highlights that these associations are sensitive to the presence of extrinsic social motivation.

2.5 Opting in and out of information

When introducing the opportunity to switch to the other information condition, we observe that some dictators prefer the recipient to receive complete information, whereas others prefer that the recipient receives no information. As shown in Table 3.5, 43.1% of the participants in the treatments T1-T3 decide to change to the no information condition, and 44.9% of the participants in the treatments T1*-T3* decide to change to the complete information condition. In their justifications, the participants provide a wide range of reasons for their choices, including guilt and shame among those who decide to go from complete information to no information, and social esteem and pride among those who decide to go from no information to complete information. A share of the participants also voice the right to privacy as an argument for changing to the no information condition and the right to information (on behalf of the receiver) as an argument for changing to the complete information condition.

[Table 3.5 about here.]

Table 2.5 shows that the choice of information condition is systematically related to the share given in all treatments. The participants who decide to change to the no information condition give, on average, a much lower share than the rest, 21.9% versus 40.8% ($p = 0.004$, Mann-Whitney test of equality), whereas the participants who decide to change to the complete information condition give, on average, a much higher share than the rest, 30.2% versus 19.8% ($p = 0.104$, Mann-Whitney test of equality). These patterns suggest that different types of extrinsic social motivation are important for understanding behavior in the dictator game. A reasonable interpretation of the observed patterns is that some of the participants who give away a small share decide not to inform the recipient in order to avoid feelings of guilt and shame and some of the participants who give away a large share decide to inform the recipient to invoke feelings of social esteem and pride.

[Table 2.5 about here.]

Overall, very few of the participants who decide to switch to the complete information condition revise their initial dictator decision, 13.6% in T1-T3 and 11.3% in T1*-T3*, and as a result the revision in average share given is also marginal, from 21.9% to 20.5% in T1*-T3* and from 30.2% to 30.8% in T1-T3.[17] The fact that so few participants revise their dictator choices when given the opportunity to do so suggests that the initial decision has a powerful anchoring effect, which by most participants is justified by arguing that one should stand by one's decisions. This is also reflected in the responses of the participants who do not take the opportunity to change the information condition. To the hypothetical question of what they would have given away if they had faced the other information condition initially, these participants give answers that are very close to what they did in the dictator decision.

[17] Only 2 out of the 75 dictators who give away a positive share in the treatments T1*-T3* decide to keep everything for themselves when given the option of switching to no information condition.

2.6 Conclusion

The present study shows that intrinsic moral motivation is fundamental in explaining dictator game behavior, and that extrinsic social motivation only plays a role when there is a moral argument for sharing. In these cases, we observe a crowding-in effect of the extrinsic social motive, where both feelings of guilt and shame and of social esteem and pride seem to motivate sharing.

Our findings can shed light on why people in some cases prefer to avoid a sharing situation. It is commonly argued that dictator behavior reflects reluctant sharing, since many dictators prefer to avoid the sharing situation if given the opportunity to do so (Dana et al., 2006, 2007; Broberg et al., 2007; Andreoni and Bernheim, 2009; Lazear et al., 2012). For example, Dana et al. (2006) present results from an experiment where the participants are first asked to share 10 USD in a dictator game. After making their decision the dictators are offered an exit option where they receive 9 USD and the recipient stays uninformed and receives nothing. If the decision in the dictator game solely reflects intrinsic moral motivation, no participant should choose the exit option, as it is dominated in monetary payoffs by the dictator game. However, they find that a substantial fraction of the participants exit. How can this be explained? Our study suggests that this may reflect feelings of guilt and shame, but also highlights that the decision to exit does not necessarily reflect a reluctance to share with the recipient. In Dana et al. (2006), the dictator is only given the choice between sharing (in line with the initial dictator choice, and in which case the recipient is informed) and not sharing, in which case the recipient is not informed about the situation. In such a setting, it is not possible to infer how much of the initial sharing was driven by extrinsic social motivation. In the present study, we separate these two dimensions, by allowing dictators who prefer not to inform the recipients to still share with them. Strikingly, we observe very little reluctant sharing, most dictators who prefer not to inform the recipient of their choice nevertheless give away a substantial share of the money.

The present experiment can also shed some light on pro-social behavior outside the lab. In a novel field experiment on charitable giving in the US,

DellaVigna et al. (2012) show that social pressure is an important determinant of door-to-door household giving. Some of the patterns observed in this field experiment are in line with the observed behavior in the present study. First, they find that social pressure has greater effect for a local charity that is highly valued in the community than for an out-of-state charity, which corresponds to our finding that extrinsic social motivation plays a more important role when the dictator perceives that there is a moral argument for giving. Second, they observe that when a flyer with an opt-out opportunity is distributed in advance, households who give small donations prefer not to open the door, which corresponds to our observation that dictators who give a small share prefer not to inform the recipient about their generosity. Third, they observe that the opt-out flyer increases large donations, in line with what we should expect from the present experiment, where we observe that some dictators who give away a large share prefer to inform the recipient. This last point also suggests that the positive utility some people derive from being observed donating should be taken into account in welfare calculations of charitable door-to-door campaigns.

Finally, the present experiment highlights the fact that when studying whether lab behavior is associated with behavior outside the lab, it is important to have a clear understanding of the motivational forces at play in the experiment. In the treatments where the recipient is informed, there is no clear association between generous behavior in the lab and charitable giving outside the lab. This association only appears in the treatments that isolate the intrinsic moral motive for giving, in which we observe that dictators who give away more also report donating more to charitable organizations. Our design also reveals that intrinsically morally motivated individuals are not necessarily generous in the lab, they are only so if there is a moral argument for sharing, and even more if there is also an extrinsic social motive at play. Thus, the interaction between intrinsic moral motivation and extrinsic social motivation is essential for understanding moral behavior, both inside and outside of the lab.

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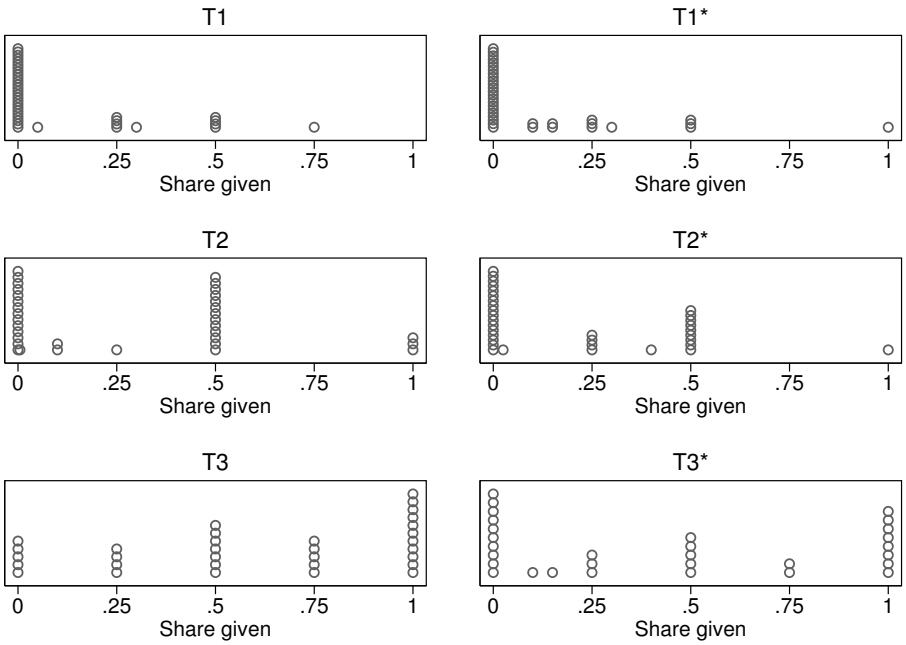
Figure 2.1: Distribution of share given



Note: The panels show, by treatment, the distribution of the share given by the dictator to the recipient. The treatments are defined in Table 3.1.

Table 2.1: Treatments

	Information	
Recipient	no	complete
Student – not working	T1* (n=35)	T1 (n=36)
Student – working	T2* (n=33)	T2 (n=34)
Client – needy	T3* (n=30)	T3 (n=32)

Note: The table presents the six treatments in the study. **Recipient** refers to the characteristics of the recipient: "Student – not working" means that the recipient was another student who had not been working, "Student – not working" means that the recipient was another student who had been working, and "Client – needy" means that the recipient was a microfinance client from Tanzania. **Information** refers to the information condition, where "no" means that the recipient received no information about the context and decision made by the dictator and "complete" means that the recipient received complete information about the context and decision made by the dictator. The number of participants in each treatment is given by the number in parenthesis.

Table 2.2: Treatment differences: Share given

	Information	
Recipient	no	complete
Student – not working	0.116	0.114
	(0.037)	(0.034)
Student – working	0.210	0.293
	(0.046)	(0.055)
Client – needy	0.433	0.602
	(0.076)	(0.065)
Total	0.245	0.326
	(0.033)	(0.036)

Note: The table shows average share given by treatment. The treatments are defined in Table 3.1. Standard errors in parentheses.

Table 2.3: Regression analysis

	All treatments				T1*-T3*	T1-T3
	(1)	(2)	(3)	(4)	(5)	(6)
Moral	0.27***		0.20***	0.18***	0.18***	0.28***
	(0.05)		(0.07)	(0.07)	(0.07)	(0.06)
Information		0.08*	-0.00	0.02		
		(0.05)	(0.08)	(0.07)		
Moral×Information			0.13	0.11		
			(0.09)	(0.09)		
Charity				0.08*	0.17**	0.03
				(0.05)	(0.07)	(0.07)
Left-wing				0.10*	0.16**	0.06
				(0.05)	(0.08)	(0.07)
Female				0.03	-0.01	0.04
				(0.05)	(0.07)	(0.07)
Age				0.04***	0.00	0.09***
				(0.01)	(0.02)	(0.02)
Business training				-0.08***	-0.03	-0.13***
				(0.02)	(0.03)	(0.03)
Constant	0.11***	0.24***	0.12**	-0.69**	0.03	-1.45***
	(0.04)	(0.03)	(0.05)	(0.28)	(0.39)	(0.40)
Information + Moral×Information			0.13**	0.14**		
			(0.06)	(0.05)		
Observations	200	200	200	200	98	102
R^2	0.135	0.014	0.157	0.239	0.188	0.334

Note: The table reports regressions where the dependent variable is the share given by the dictator. Columns (1)-(4) include all observations, column (5) includes all observations from treatments T1*-T3*, and column (6) includes all observations from treatments T1-T3. The treatments are defined in Table 3.1. 'Moral' is a dummy taking the value one if the dictator is in the treatments T2, T2*, T3, T3*, 'Information' is a dummy taking the value one if the dictator is in the treatments T1-T3, 'Charity' is a dummy taking the value one if the dictator has given 500 NOK or more to charitable organizations in the previous year, 'Left-wing' is a dummy taking the value one if the dictator voted for a party in the left-wing coalition government in the previous election, 'Female' is a dummy taking the value one if the dictator is a female, 'Age' is the age of the dictator in years, 'Business training' is years of business training of the dictator, and 'Information + Moral×Information' is the linear combination of Information and Moral×Information. Standard errors in parentheses ($* : p < 0.10$, $** : p < 0.05$, $*** : p < 0.01$).

Table 2.4: Opting in and out

	Choice of information	
Treatment	no	complete
T1	0.472	
	(0.084)	
T1*		0.400
		(0.084)
T2	0.411	
	(0.086)	
T2*		0.575
		(0.087)
T3	0.406	
	(0.088)	
T3*		0.367
		(0.089)
Total	0.431	0.449
	(0.049)	(0.051)

Note: The table reports, by treatment, the share of individuals that switched to the other information condition. The treatments are defined in Table 3.1. Standard errors in parentheses.

Table 2.5: Who opt in and out?

	Who opt in and out?		
Treatment	No switch	Choose no information	Choose complete information
T1	0.174	0.047	
	(0.058)	(0.024)	
T1*	0.088		0.157
	(0.049)		(0.056)
T2	0.368	0.186	
	(0.060)	(0.099)	
T2*	0.161		0.246
	(0.056)		(0.068)
T3	0.684	0.481	
	(0.074)	(0.115)	
T3*	0.347		0.582
	(0.089)		(0.130)
Total	0.307	0.219	0.302
	(0.032)	(0.053)	(0.053)

Note: The table reports the share given in the distributive choice, by treatment and by the choice of whether to switch to the other information condition. The treatments are defined in Table 3.1. Standard errors in parentheses.

2.7 Appendix

This document contains a translation of the instructions, screenshots, and letters that could be sent after the experiment.

Since the experiment was conducted using a web platform, the actual layout on the participant's computers could vary depending on the screen resolution and magnification (user adjustable).

With the exception of a short text that was read in the beginning of the experiment, instructions were presented on screen, and the leader of the experiment only encouraged the participants to follow these on-screen instructions. We enclose screenshots from the T2 treatment. Differences in screenshots between the T2 treatment and the others are explained in the paper. Full translations of the remaining letters are enclosed at the end.

2.7.1 Introduction to the experiment

Welcome to this experiment. My name is X and I shall be in charge of the experiment.

The results from this experiment will be used in a research project, and it is important that everyone follows the rules of conduct given to you. If you have questions or problems along the way, please raise your hand and we will come to you. You must not attempt to open other web-pages than those of the experiment. If you break these rules, you must leave the room. There will be waiting periods during the experiment, and it is important that your remain quiet in these.

You will be anonymous in the experiment.[18] It won't be possible for us, the other participants, or anyone else to find out what choices you make in the experiment.

When the experiment is finished, you will be given a payment code on the screen. You should write this code down on a form at your workstation. When you leave the room after the experiment, you will present this form, and you will be given an envelope with the money you have earned. The

[18]The text in italics, here and further down, was only read to the dictators.

envelope will be prepared by persons who will not be in this room when the envelopes are distributed. We do this to make sure that no-one will know how much each of you earned in this experiment.

The experiment has two parts, and I shall know explain what you will do in the experiment.

The first thing you shall do in this experiment is to work on a task that lasts for 15 minutes. The task is to find a certain number in a matrix with a large number of different numbers. You get one point each time you tick off the correct number in the table and you lose one point each time you tick off a wrong number. You can move to a new matrix at any time. You must collect 70 points within the time limit to complete the task. You will be informed about your number of points during the task.

If you finish the task before the time limit you will be told so. You can then relax and await further information.

Raise a hand if you have not understood the instructions ...

Now everyone have understood the instructions, and you will soon be given a new screen on the computer, and then you can start on the task.

Produksjonsoppgave

Du tjener et poeng for hvert korrekt tall du krysser av, og taper et poeng for hver feil avkryssing.

Produksjonen er ferdig når du når 70 poeng.

Du kan få frem en ny tabell når som helst ved å trykke på "send" knappen.

I tabellen under, kryss av for tallet **892**.

892 ☐	118 ☐	892 ☐	241 ☐	956 ☐	241 ☐	920 ☐	223 ☐	454 ☐	241 ☐	313 ☐	592 ☐	144 ☐	313 ☐	592 ☐	144 ☐	313 ☐
368 ☐	956 ☐	698 ☐	223 ☐	368 ☐	144 ☐	223 ☐	454 ☐	220 ☐	144 ☐	368 ☐	864 ☐	313 ☐	956 ☐	698 ☐	698 ☐	956 ☐
592 ☐	864 ☐	144 ☐	698 ☐	454 ☐	118 ☐	486 ☐	313 ☐	223 ☐	241 ☐	592 ☐	956 ☐	144 ☐	892 ☐	454 ☐	956 ☐	118 ☐
864 ☐	223 ☐	144 ☐	892 ☐	920 ☐	486 ☐	368 ☐	920 ☐	144 ☐	698 ☐	920 ☐	864 ☐	220 ☐	454 ☐	486 ☐	956 ☐	144 ☐
313 ☐	223 ☐	220 ☐	892 ☐	892 ☐	313 ☐	956 ☐	592 ☐	368 ☐	313 ☐	486 ☐	956 ☐	454 ☐	892 ☐	241 ☐	313 ☐	144 ☐
592 ☐	313 ☐	892 ☐	892 ☐	892 ☐	368 ☐	118 ☐	920 ☐	486 ☐	698 ☐	864 ☐	223 ☐	486 ☐	368 ☐	144 ☐	223 ☐	220 ☐
368 ☐	313 ☐	956 ☐	241 ☐	368 ☐	223 ☐	920 ☐	144 ☐	956 ☐	241 ☐	241 ☐	144 ☐	144 ☐	698 ☐	220 ☐	241 ☐	118 ☐
241 ☐	698 ☐	592 ☐	956 ☐	454 ☐	956 ☐	486 ☐	118 ☐	118 ☐	220 ☐	220 ☐	118 ☐	698 ☐	592 ☐	368 ☐	118 ☐	454 ☐
223 ☐	864 ☐	920 ☐	118 ☐	368 ☐	454 ☐	486 ☐	698 ☐	486 ☐	920 ☐	864 ☐	920 ☐	454 ☐	864 ☐	592 ☐	486 ☐	313 ☐
864 ☐	220 ☐	313 ☐	698 ☐	892 ☐	956 ☐	698 ☐	241 ☐	144 ☐	220 ☐	698 ☐	592 ☐	486 ☐	956 ☐	368 ☐	313 ☐	698 ☐
920 ☐	956 ☐	220 ☐	144 ☐	368 ☐	956 ☐	368 ☐	920 ☐	223 ☐	486 ☐	864 ☐	220 ☐	220 ☐	864 ☐	920 ☐	368 ☐	454 ☐
368 ☐	698 ☐	313 ☐	368 ☐	220 ☐	698 ☐	223 ☐	368 ☐	920 ☐	223 ☐	698 ☐	241 ☐	486 ☐	592 ☐	368 ☐	920 ☐	144 ☐

Sekunder igjen: 847.8 Send

Production task

You earn one point for each correct number you tick off, and lose one point each time you tick off a wrong number.
The production task is finished when you reach 70 points.
You can proceed to a new matrix any time by pressing the “submit” button.
In the matrix below, tick off for the number **892**.

[matrix]

Seconds left: 847.8 [Submit]

Figure 2.2: Production technology. Screenshot on left, translation to the right.

Introduksjon til andre del

Du klarte å nå produksjonsmålet i første del av eksperimentet og for dette har du tjent 100 kroner.

Du har tilfeldig blitt koblet sammen med en annen deltaker i dette eksperimentet som også er student ved NHH, men sitter i et annet rom. Denne personen har også tjent 100 kroner på å utføre den samme oppgaven som du har utført, men han eller hun har ikke fått beskjed om dette.

Denne personen vil ikke blir koblet sammen med andre deltakere enn deg. Du vil ikke få vite hvem denne personen er og denne personen vil ikke få vite hvem du er.

Du vil bli bedt om å bestemme hvordan du ønsker å dele det beløpet du og den andre deltakeren har tjent til sammen, 200 kroner, mellom deg selv og ham (eller henne). Etter at eksperimentet er avsluttet vil den personen du har blitt koblet sammen med bli tilsendt et brev. I dette brevet vil vedkommende få opplyst at han (eller hun) tilfeldig har blitt trukket ut til å være mottaker i dette økonomiske eksperimentet. Personen vil også få beskjed om at han har blitt koblet sammen med en deltaker i eksperimentet (dvs. deg), at både du og han hver har tjent 100 kroner på oppgaven dere utførte, og at du har blitt bedt om å bestemme hvor mye av de pengene dere har tjent til sammen han skal få. Pengene du velger å gi vil bli lagt ved brevet. Dersom du velger ikke å gi noe til denne personen, vil brevet sendes uten penger.

Din utbetaling fra eksperimentet blir din oppmøtekompensasjon pluss det beløpet du beholder for deg selv. Når eksperimentet er ferdig vil du på skjermen få oppgitt en utbetalingskode, som du skal skrive ned. Når du forlater lokalet vil du oppgi koden og motta en konvolutt med dine penger. For å sikre anonymitet vil konvoluttene være forberedt av personer som ikke befinner seg i rommet når konvoluttene deles ut. Ingen av oss som er i rommet vil derfor vite hvilket beløp som er i konvolutten du mottar.

På utbetalingsskjemaet finner du kontaktinformasjon til en person i administrasjonen på NHH. Ved å oppgi din utbetalingskode til denne personen vil du, om ønskelig, få tilsendt en anonymisert kopi av brevet som ble sendt til mottakeren og en kopi av bilaget fra NHHs regnskap som bekrefter at beløpet du bestemte deg for å gi faktisk ble sendt til mottakeren.

Før du går videre får du anledning til å se på det brevet som vil bli sendt til mottakeren. Når du har sett på dette brevet vil du få anledning til å gå videre.

Se på brev

Instructions for second part

You reached the production target in the first part of the experiment and for this you have earned 100 NOK.

You have been randomly matched with another participant in this experiment who is also a student at NHH, but in a different room from us. This person has also earned 100 NOK for doing the same task as you, but has not been informed about this.

This person will not be matched with other participants than you. You will not be told who this person is, and this person will not be told who you are.

You will be asked to determine how you want to distribute the amount you and the other participant have earned together, 200 NOK, between yourself and him (or her). After the experiment is finished, the person you are matched with will be sent a letter. In this letter this person will be informed that he (or she) randomly have been drawn to be a recipient in this experiment. The person will also be informed that he has been matched with another participant (i.e. you), and that both you and him both earned 100 NOK for the task you did, and that you have been asked to determine how much of the earnings from the experiment he should have. The money you decide to distribute to him will be enclosed to the letter. If you decide to give nothing to this other participant, the letter will be sent without money enclosed.

Your payment from the experiment will be your show up fee plus the amount you decide to keep for yourself. When the experiment is finished you will be given a payment code on screen that you should write down. When you leave the room, you must report this code and will receive an envelope with your money. To ensure anonymity, the envelopes will be prepared by persons who will not be in the room when the envelopes are distributed. Therefore, none of us inside the room will know what amount is in the envelope you receive.

On the payment form you will also find contact information for a person in the administration at NHH. By reporting your payment code to this person you will, if you want, be sent an anonymized copy of the letter sent to the other participant and a copy of the receipts in the accounts of NHH that confirms that the amount you decided to distribute to the recipient is actually paid.

Before you go on you will be given the opportunity to view the letter that will be sent to the recipient. When you have looked at this letter you will be given the opportunity to go on.

[Look at letter]

Figure 2.3: Instructions. Screenshot on left, translation to the right. After the participant has looked at the letter a new button appears to make it possible to go on.

NHH

Navn Student NHH
Adresse

Bergen, 03.11.2009

Kjære Navn,

Du har blitt trukket ut som en mottaker i et økonomisk eksperiment gjennomført på Norges Handelshøyskole (NHH). Ditt navn er tilfeldig trukket ut blant studentene som var i det rommet du satt i under dette eksperimentet, tirsdag 3. november.

I eksperimentet tjente en deltaker i et annet rom, som også er en student ved NHH, 100 kroner på å utføre samme oppgave som du utførte den dagen. Vedkommende fikk så beskjed om at han (eller hun) var blitt koblet sammen med en annen person som var tilfeldig trukket blant studentene som deltok i eksperimentet (dvs. deg). Han fikk beskjed om at du hadde utført den samme oppgaven og klart produksjonsmålet. Han fikk også beskjed om at du hadde tjent det samme beløpet, 100 kroner, men at du ikke hadde blitt informert om dette. Vi ba deretter den andre om å bestemme hvor mye av pengene dere hadde tjent til sammen, 200 kroner, han ville gi til deg. Før han gjorde dette valget fikk han også se en kopi av dette brevet.

Han valgte å gi deg ... kroner, og disse pengene er lagt ved dette brevet. Hvis det ikke er noen penger i konvolutten, betyr det at deltakeren valgte ikke å gi deg noe av pengene dere tjente.

Hvis du har spørsmål knyttet til eksperimentet kan du sende en mail til undertegnede (trond.halvorsen(at)nhh.no), som er administrativt ansvarlig for eksperimentet.

Mvh

Trond Halvorsen

Trond Halvorsen
PhD student, institutt for samfunnsøkonomi

Norges Handelshøyskole
Helleveien 30
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Norway
Tlf/Tel: +47 55 95 90 00
Faks/Fax: +47 55 95 91 00
nhh.postmottak@nhh.no
www.nhh.no
Bankkonto 7694 0500 350
Bank Account No64 7694 0500 350
NORWEGIAN SCHOOL OF ECONOMICS AND BUSINESS ADMINISTRATION

Dear Name,

You have been selected to receive x NOK from an economic experiment conducted at the Norwegian School of Economics (NHH). Your name has been randomly selected among the students in the room you were sitting in during the experiment on Tuesday November 3.

In this experiment a participant in a different room, who is also a student at NHH, has earned 100 NOK by performing the same task as you. The participant was then informed that he (or she) had been matched with another person, randomly selected among the other students that participated in the experiment (i.e. you). He was informed that you had completed the same task. He was also informed that you had earned the same amount, 100 NOK, but that you had not been informed about this. We then asked him to decide how much of the joint earnings of 200 NOK, he wanted to give to you. Before he made his choice, he was shown a copy of this letter.

He decided to give you x NOK, which is enclosed to this letter. If the envelope does not contain any money, however, the participant decided not to give you any of the money that the two of you had earned.

If you have questions regarding the experiment, you can send an e-mail to the signatory (trond.halvorsen(at)nhh.no), who is administratively responsible for the experiment.

Yours sincerely,

Trond Halvorsen
PhD student, Department of Economics

Figure 2.4: Informative letter for T2 and T2*. Screenshot on left, translation to the right.

Valg av fordeling

Du er, som vi allerede har orientert deg om, tilfeldig blitt koblet sammen med en annen deltaker i dette eksperimentet som også er student ved NHH, men sitter i et annet rom.

Denne personen vil etter eksperimentet motta brevet du nettopp har sett. Dersom du vil se brevet på nytt, klikk her

Se på brev

Du og den andre deltakeren har tjent til sammen 200 kroner på oppgaven dere har utført.

Skriv inn hvor mye av dette beløpet du ønsker å gi til den andre deltakeren:

Til den andre:

Send beslutning

Choice of distribution

You are, as we have already informed you, randomly matched with another participant in this experiment who is also a student at NHH, but in another room.

After the experiment, this person will receive the letter you have just seen. If you want to see the letter again, hit the button below

[Look at letter]

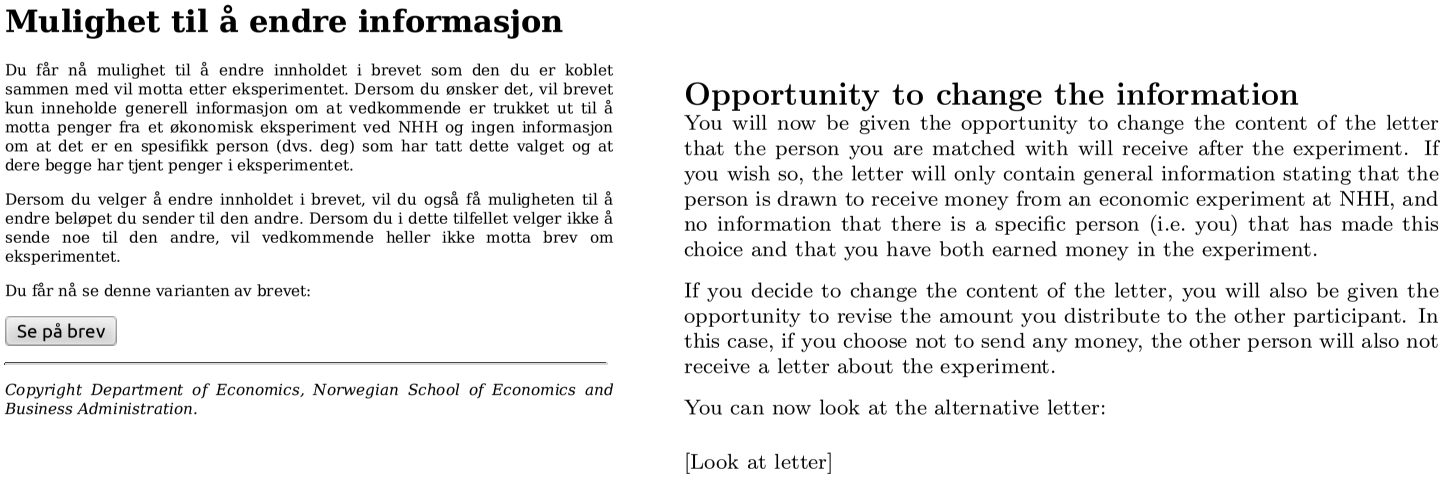
You and the other participant have earned 200 NOK in total for the task you have done.

Enter how much of this amount you would like to give the other participant.

To the other: [. . .]

[Submit decision]

Figure 2.5: Distribution choice. Screenshot on left, translation to the right.



Mulighet til å endre informasjon

Du får nå mulighet til å endre innholdet i brevet som den du er koblet sammen med vil motta etter eksperimentet. Dersom du ønsker det, vil brevet kun inneholde generell informasjon om at vedkommende er trukket ut til å motta penger fra et økonomisk eksperiment ved NHH og ingen informasjon om at det er en spesifikk person (dvs. deg) som har tatt dette valget og at dere begge har tjent penger i eksperimentet.

Dersom du velger å endre innholdet i brevet, vil du også få muligheten til å endre beløpet du sender til den andre. Dersom du i dette tilfellet velger ikke å sende noe til den andre, vil vedkommende heller ikke motta brev om eksperimentet.

Du får nå se denne varianten av brevet:

Se på brev

Opportunity to change the information

You will now be given the opportunity to change the content of the letter that the person you are matched with will receive after the experiment. If you wish so, the letter will only contain general information stating that the person is drawn to receive money from an economic experiment at NHH, and no information that there is a specific person (i.e. you) that has made this choice and that you have both earned money in the experiment.

If you decide to change the content of the letter, you will also be given the opportunity to revise the amount you distribute to the other participant. In this case, if you choose not to send any money, the other person will also not receive a letter about the experiment.

You can now look at the alternative letter:

[Look at letter]

Figure 2.6: Screenshot on left, translation to the right. After the participant has looked at the letter a new button appears to make it possible to go on.

NHH

Navn Student NHH
Adresse

Bergen, 03.11.2009

Kjære Navn,

Du har blitt trukket ut til å motta kroner ... i forbindelse med et økonomisk eksperiment gjennomført på Norges Handelshøyskole (NHH). Ditt navn er tilfeldig trukket ut fra et utvalg av studentene på NHH

Hvis du har spørsmål knyttet til eksperimentet kan du sende en mail til undertegnede (trond.halvorsen(at)nhh.no), som er administrativt ansvarlig for eksperimentet.

Mvh

Trond Halvorsen
PhD student, institutt for samfunnsøkonomi

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nhh.postmottak@nhh.no

www.nhh.no
Bankkonto 7694 0590 350
Bank Account N064 7694 0590 350

Dear Name,

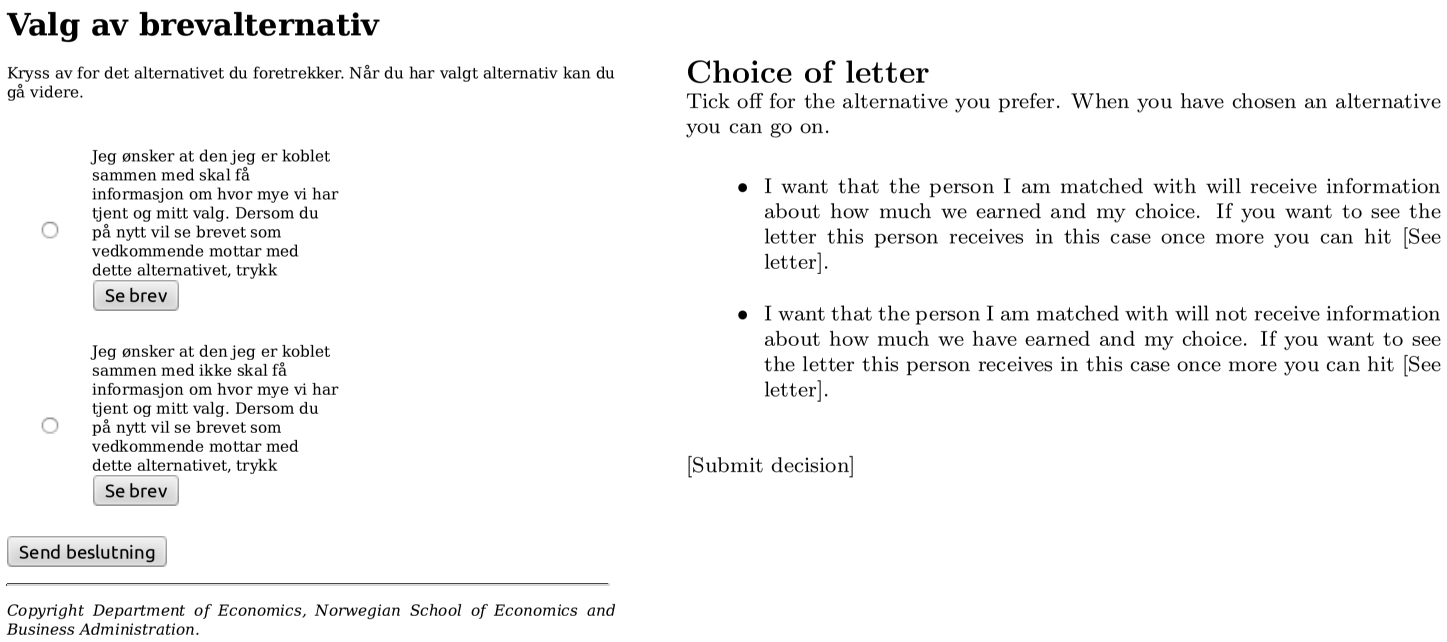
You have been selected to receive x NOK from an economic experiment conducted at the Norwegian School of Economics (NHH). Your name has been randomly selected among a sample of students at NHH.

If you have questions regarding the experiment, you can send an e-mail to the signatory (trond.halvorsen(at)nhh.no), who is administratively responsible for the experiment.

Yours sincerely,

Trond Halvorsen
PhD student, Department of Economics

Figure 2.7: Non-informative letter (applies in treatments T1, T1*, T2, and T2*). Screenshot on left, translation to the right.



Valg av brevalternativ

Kryss av for det alternativet du foretrekker. Når du har valgt alternativ kan du gå videre.

Jeg ønsker at den jeg er koblet sammen med skal få informasjon om hvor mye vi har tjent og mitt valg. Dersom du på nytt vil se brevet som vedkommende mottar med dette alternativet, trykk

Se brev

Jeg ønsker at den jeg er koblet sammen med ikke skal få informasjon om hvor mye vi har tjent og mitt valg. Dersom du på nytt vil se brevet som vedkommende mottar med dette alternativet, trykk

Se brev

Send beslutning

Copyright Department of Economics, Norwegian School of Economics and Business Administration.

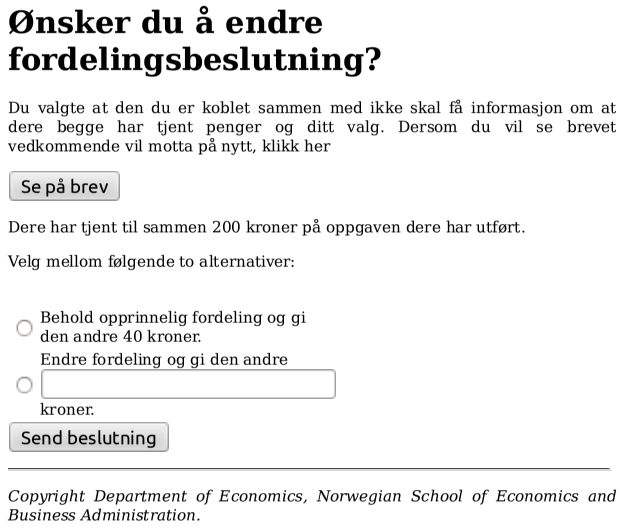
Choice of letter

Tick off for the alternative you prefer. When you have chosen an alternative you can go on.

- I want that the person I am matched with will receive information about how much we earned and my choice. If you want to see the letter this person receives in this case once more you can hit [See letter].
- I want that the person I am matched with will not receive information about how much we have earned and my choice. If you want to see the letter this person receives in this case once more you can hit [See letter].

[Submit decision]

Figure 2.8: Choice of letter. Screenshot on left, translation to the right.



Ønsker du å endre fordelingsbeslutning?

Du valgte at den du er koblet sammen med ikke skal få informasjon om at dere begge har tjent penger og ditt valg. Dersom du vil se brevet vedkommende vil motta på nytt, klikk her

Se på brev

Dere har tjent til sammen 200 kroner på oppgaven dere har utført.

Velg mellom følgende to alternativer:

- Behold opprinnelig fordeling og gi den andre 40 kroner.
- Endre fordeling og gi den andre [ ] kroner.

Send beslutning

Copyright Department of Economics, Norwegian School of Economics and Business Administration.

Do you wish to revise the distribution choice?

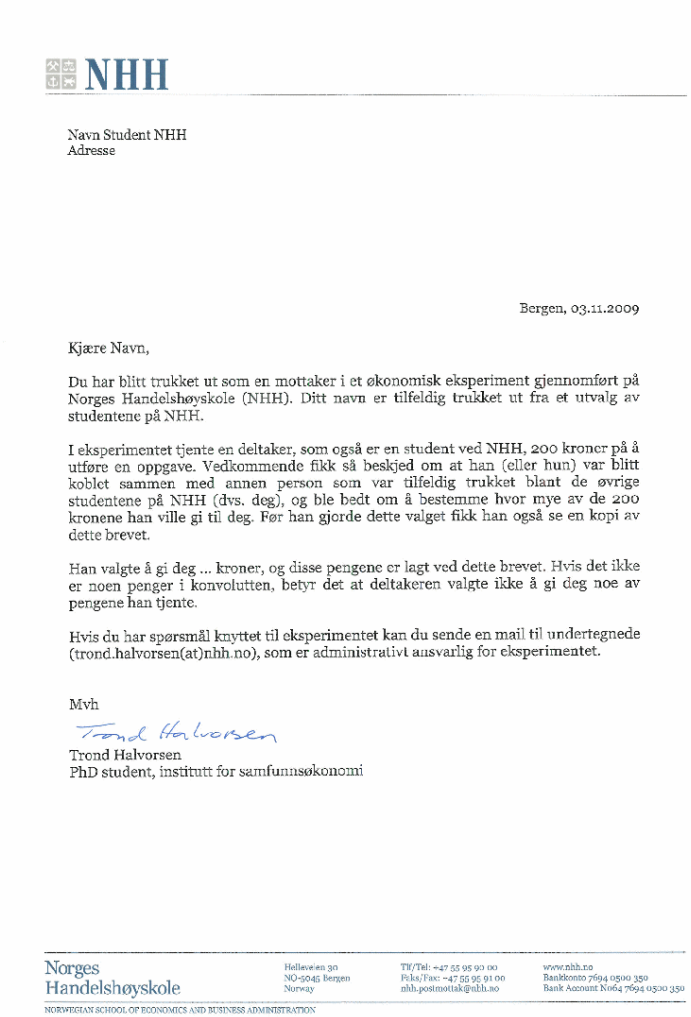
You chose that the person you are matched with should not be informed about that you have both earned money and your choice. If you want to see the letter again, hit the button
[See letter]

You have earned 200 NOK together for the task you have done.
Choose between one of the following alternatives:

- Keep original distribution and give the other participant 40 NOK.
- Change distribution and given the other participant [. . .] NOK.

[Submit decision]

Figure 2.9: Revising the distribution choice. Screenshot on left, translation to the right. (The 40 NOK amount reflects the choice made while taking screenshots, not a constant in the program.)



NHH

Navn Student NHH
Adresse

Bergen, 03.11.2009

Kjære Navn,

Du har blitt trukket ut som en mottaker i et økonomisk eksperiment gjennomført på Norges Handelshøyskole (NHH). Ditt navn er tilfeldig trukket ut fra et utvalg av studentene på NHH.

I eksperimentet tjente en deltaker, som også er en student ved NHH, 200 kroner på å utføre en oppgave. Vedkommende fikk så beskjed om at han (eller hun) var blitt koblet sammen med annen person som var tilfeldig trukket blant de øvrige studentene på NHH (dvs. deg), og ble bedt om å bestemme hvor mye av de 200 kronene han ville gi til deg. Før han gjorde dette valget fikk han også se en kopi av dette brevet.

Han valgte å gi deg ... kroner, og disse pengene er lagt ved dette brevet. Hvis det ikke er noen penger i konvolutten, betyr det at deltakeren valgte ikke å gi deg noe av pengene han tjente.

Hvis du har spørsmål knyttet til eksperimentet kan du sende en mail til undertegnede (trond.halvorsen(at)nhh.no), som er administrativt ansvarlig for eksperimentet.

Mvh

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Dear Name,

You have been selected to receive x NOK from an economic experiment conducted at the Norwegian School of Economics (NHH). Your name has been randomly selected among the students at NHH.

In this experiment a participant, who is also a student at NHH, has earned 200 NOK by performing a task. The participant was then informed that he (or she) had been matched with another person, randomly selected among the other students at NHH (i.e. you), and was asked to decide how much of the 200 NOK he wanted to give to you. Before he made his choice, he was shown a copy of this letter.

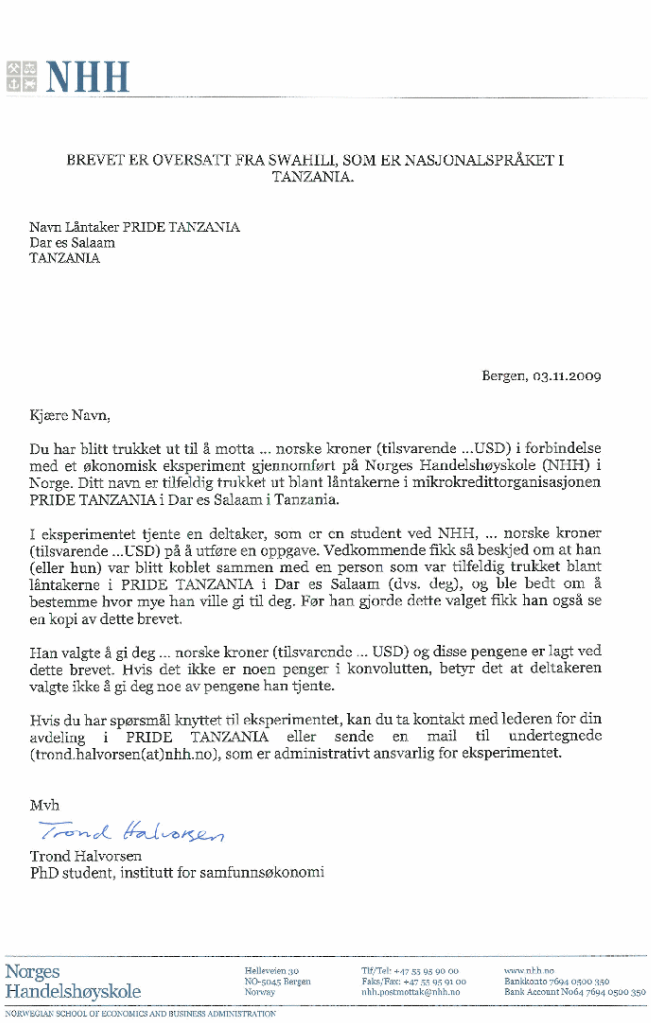
He decided to give you x NOK, which is enclosed to this letter. If the envelope does not contain any money, however, the participant decided not to give you any of his earnings.

If you have questions regarding the experiment, you can send an e-mail to the signatory (trond.halvorsen(at)nhh.no), who is administratively responsible for the experiment.

Yours sincerely,

Trond Halvorsen
PhD student, Department of Economics

Figure 2.10: Informative letter (applies in treatments T1, and T1*). Screenshot on left, translation to the right.



NHH

BREVET ER OVERSATT FRA SWAHILI, SOM ER NASJONALSPRÅKET I TANZANIA.

Navn Låntaker PRIDE TANZANIA
Dar es Salaam
TANZANIA

Bergen, 03.11.2009

Kjære Navn,

Du har blitt trukket ut til å motta ... norske kroner (tilsvarende ...USD) i forbindelse med et økonomisk eksperiment gjennomført på Norges Handelshøyskole (NHH) i Norge. Ditt navn er tilfeldig trukket ut blant låntakerne i mikrokredittorganisasjonen PRIDE TANZANIA i Dar es Salaam i Tanzania.

I eksperimentet tjente en deltaker, som er en student ved NHH, ... norske kroner (tilsvarende ...USD) på å utføre en oppgave. Vedkommende fikk så beskjed om at han (eller hun) var blitt koblet sammen med en person som var tilfeldig trukket blant låntakerne i PRIDE TANZANIA i Dar es Salaam (dvs. deg), og ble bedt om å bestemme hvor mye han ville gi til deg. Før han gjorde dette valget fikk han også se en kopi av dette brevet.

Han valgte å gi deg ... norske kroner (tilsvarende ... USD) og disse pengene er lagt ved dette brevet. Hvis det ikke er noen penger i konvolutten, betyr det at deltakeren valgte ikke å gi deg noe av pengene han tjente.

Hvis du har spørsmål knyttet til eksperimentet, kan du ta kontakt med lederen for din avdeling i PRIDE TANZANIA eller sende en mail til undertegnede (trond.halvorsen(at)nhh.no), som er administrativt ansvarlig for eksperimentet.

Mvh

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THE LETTER IS TRANSLATED FROM SWAHILI WHICH IS THE NATIONAL LANGUAGE OF TANZANIA

Dear Name,

You have been selected to receive x NOK (equivalent to y USD) from an economic experiment conducted at the Norwegian School of Economics (NHH) in Norway. Your name has been randomly selected among the clients in the micro finance institution PRIDE TANZANIA in Dar es Salaam in Tanzania.

In this experiment a participant, who is a student at NHH, earned 200 NOK by performing a task. The participant was then informed that he (or she) had been matched with another person, randomly selected among the clients in PRIDE TANZANIA in Tanzania (i.e. you), and was asked to decide how much of his earnings he wanted to give to you. Before he made his choice, he was shown a copy of this letter.

He decided to give you x NOK (equivalent to y USD), which is enclosed to this letter. If the envelope does not contain any money, however, the participant decided not to give you any of the money that the two of you had earned.

If you have questions regarding the experiment, you can contact the leader of your unit in PRIDE TANZANIA, or send an e-mail to the signatory (trond.halvorsen(at)nhh.no), who is administratively responsible for the experiment.

Yours sincerely,

Trond Halvorsen

PhD student, Department of Economics

Figure 2.11: Informative letter (applies in treatments T3, and T3*). Screenshot on left, translation to the right.

NHH

BREVET ER OVERSATT FRA SWAHILI, SOM ER NASJONALSPRÅKET I TANZANIA.

Navn Låntaker PRIDE TANZANIA
Dar es Salaam
TANZANIA

Bergen, 03.11.2009

Kjære Navn,

Du har blitt trukket ut til å motta ... norske kroner (tilsvarende ...USD) i forbindelse med et økonomisk eksperiment gjennomført på Norges Handelshøyskole (NHH) i Norge. Ditt navn er tilfeldig trukket ut blant låntakerne i mikrokredittorganisasjonen PRIDE TANZANIA i Dar es Salaam i Tanzania.

Hvis du har spørsmål knyttet til eksperimentet, kan du ta kontakt med lederen for din avdeling i PRIDE TANZANIA eller sende en mail til undertegnede (trond.halvorsen(at)nhh.no), som er administrativt ansvarlig for eksperimentet.

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NORWEGIAN SCHOOL OF ECONOMICS AND BUSINESS ADMINISTRATION

THE LETTER IS TRANSLATED FROM SWAHILI WHICH IS THE NATIONAL LANGUAGE OF TANZANIA

Dear Name,

You have been selected to receive x NOK (equivalent to y USD) from an economic experiment conducted at the Norwegian School of Economics (NHH) in Norway. Your name has been randomly selected among the clients in the micro finance institution PRIDE TANZANIA in Dar es Salaam in Tanzania.

If you have questions regarding the experiment, you can contact the leader of your unit in PRIDE TANZANIA, or send an e-mail to the signatory (trond.halvorsen(at)nhh.no), who is administratively responsible for the experiment.

Yours sincerely,

Trond Halvorsen
PhD student, Department of Economics

Figure 2.12: Non-informative letter (applies in treatments T3, and T3*). Screenshot on left, translation to the right.

Chapter 3

Guilt aversion and social esteem in China: Evidence from a real effort dictator game

Trond Halvorsen[1]

[1]I wish to thank the Shanghai Jiao Tong University (SJTU) Smith Experimental Economics Research Center, the Siyuan Commonweal Organization and Jiehong Kong, Fei Xie, Wenjing Xu, and Fangzhou Zhang for excellent research assistance. Binglin Gong, Xiangdong Qin, and Xu Zhao provided useful comments and advice. Additional comments from Tore Ellingsen, Dirk Engelmann, and Bertil Tungodden, as well as feedback from PhD workshop participants at the University of Bergen, helped to improve the quality of the paper. The entire work benefitted greatly from supervision by Alexander W. Cappelen and Erik Ø. Sørensen, but the author is solely responsible for any remaining mistakes. At the time of the experiment, the author enjoyed being a visiting scholar at the SJTU Antai College of Economics and Management. Funding for the experiment, provided by the Research Council of Norway (research grant 185831) and by Norges Bank's fund for economic research, is much appreciated.

Abstract: This paper studies how concerns for fairness arguments and receiver awareness interact when Chinese business students play a modified dictator game. The dictators give more to poor receivers than to their peers, but whether the receivers will be informed or not about the decision process has no statistically significant impact on average offers. When the dictators are surprised with an option to change the receivers' information, the information choices are consistent with the dictators being motivated by guilt aversion and social esteem. The results are discussed in light of previously obtained results from a study conducted at a business school in Norway.

3.1 Introduction

To what extent do people share in dictator games[2] because they are fair-minded, and to what extent are people merely concerned with wanting to appear as fair-minded? A series of recent papers (Dana et al., 2006; Broberg et al., 2007; Lazear et al., 2012; Cappelen, Halvorsen, Sørensen, and Tungodden, 2012) have shown that dictators are likely to share more when the receiver is aware of the choice situation, compared to when the receiver is uninformed. Standard social preference models (i.e., Fehr and Schmidt, 1999; Sobel, 2005; Cappelen et al., 2007) can not explain this tendency, because they implicitly assume that the receiver's information is irrelevant to the dictator. As a consequence, researchers and policymakers relying on the standard models may faultily attribute socially motivated generosity to private fairness preferences.

Even in double blind experiments, where neither the researchers nor other participants are able to infer the actions of a particular dictator, there are reasons to believe that the receivers' information is relevant to the dictators. One reason is that dictators may be guilt averse (Dufwenberg and Gneezy, 2000; Charness and Dufwenberg, 2006; Battigalli and Dufwenberg, 2007). That is, dictators may wish to avoid disappointing their receiver with respect to what the receiver expects to get. A second reason is that dictators may

[2]The dictator game is an experiment in which some participants are given the authority to decide the experimental outcome of another party.

be motivated by utility arising from signaling to the receiver that the sender is a fair-minded person (Andreoni and Bernheim, 2009). Even if the receiver will never learn the identity of the dictator, the dictator may wish to convey the message that fairness is important to some people.[3] Third, a dictator may also wish to give the receiver a positive surprise by sharing more than he believes that the receiver expects, so that the receiver may think highly of him. To the extent that sharing occurs because the dictator enjoys a feeling of being esteemed by others, his actions can be said to be driven by a preference for pride (Ellingsen and Johannesson, 2008b).

If a receiver is unaware that he may receive money, then there is little reason to think that he expects to receive anything. In this case, any amount that the dictator decides to share (including zero) is unlikely to disappoint. The situation, however, changes with informed receivers, since dictators now have valid reasons to believe that the receivers expect the dictator to share.[4] For example, substantial evidence from previous dictator games shows that positive offers occur frequently in this setting (Camerer, 2003; Engel, 2011).

In order to investigate the relative importance of intrinsic moral motivation and extrinsic social motivation, Cappelen et al. (2012) conducted a dictator game in Bergen, Norway, where we modified both the fairness claims of the receivers, as well as whether the receivers would be informed about the decision process or not. The results from that experiment were consistent with the view that information given to the receiver does influence the dictators' generosity, but the majority of sharing appeared to stem from concerns about the fairness claims. In addition, information had no impact on generosity when the receiver had no obvious claim to the money.

While the experimental design was especially suited for studying the influence of social motivation, one might argue that it is not surprising that it was found to play a relatively small role in the individualistic society of

[3]Without information about the decision process it is impossible for the receiver to identify intent, and this may affect the perceived value of the transfer. For example, Blount (1995) and Charness (2004) find that receivers appreciate gifts more when they are given voluntarily rather than exogenously.

[4]To see how a receiver could possibly expect to get anything, one has to depart from the common game theoretical assumption that every person only cares about his own materialistic outcome.

Norway.[5] In individualistic societies, people generally have greater freedom to act out their private desires, as they are less bound to the social groups to which they belong. By contrast, group loyalty plays a larger role in collectivist societies. It may therefore be the case that people are more reluctant to deviate from others' expectations, and that receiver awareness is more important, in collectivist societies. This is an important question because, as noted by Hofstede et al. (2010), "the vast majority of people in our world live in societies in which the interest of the group prevails over the interest of the individual."

Motivated by this concern, I modified the dictator game experiment performed by Cappelen et al. (2012) and conducted it with students from Shanghai Jiao Tong University (SJTU) Antai College of Economics and Management (Antai) in Shanghai, China.[6] By translating the instructions and the computer program from the original experiment, I obtained data that are highly comparable with those previously obtained at the Norwegian School of Economics (NHH).

There are several reasons why it is interesting to conduct the experiment in China. First, social anthropologists often highlight the importance of "face" (mianzi), a concept that is closely related to social esteem, in this country (Yutang, 1935; Pye, 1992; Kristoffersen, 2010). Second, in response to the World Values Survey statement "I make a lot of effort to live up to what my friends expect," the modal answer from Chinese respondents was "agree," while the modal answer from the Norwegian respondents was "strongly disagree."[7] Third, China's rapidly increasing economic significance generates a need to understand the motivations behind the economic decisions made by their elite business students.

The results of the experiment show that receiver awareness does not affect average offers in a statistically significant way. This finding is contrary to both the research hypothesis and the results obtained in Norway. After the dictators made their allocation choice, they were allowed to decide

[5]Norway is ranked as having the seventeenth most individualistic culture, out of 76 countries and regions, by Hofstede, Hofstede, and Minkov (2010).

[6]China is ranked at number 58 in Hofstede's individualism index.

[7]WVS 2005–2008 (most recent), question V66, http://www.worldvaluessurvey.org/.

whether the receiver should be given detailed information about the decision process or not. The information decisions show that the likelihood of the receiver getting detailed information is positively correlated with the amount of money that the dictator chose to give. This behavior is consistent with the idea that dictators are motivated by both guilt aversion and pride. Potential explanations for the seemingly contradictory behavior in the allocation and information decisions are discussed below.

The paper proceeds in the next section with a presentation of the experimental design and the cross-cultural controls. Section 4.4 presents the results, and interpretations are suggested in Section 3.4. Section 4.5 concludes the paper.

3.2 Experimental design

3.2.1 Overview

The experiment is a modified version of the real effort dictator game developed by Cappelen et al. (2012). As illustrated in figure 3.1, the experiment consists of five stages, and each participant makes three decisions. In addition to earning and distributing an endowment, the dictators are asked to decide how much information the receivers will get. The treatments form a 2×2 matrix with the dimensions being the receivers' neediness and the receivers' information about the decision process. Table 3.1 shows that the number of observations in each treatment is about the same in both the current (Antai) and the original (NHH) experiment.

[Figure 3.1 about here.]

[Table 3.1 about here.]

The experimental sessions took place in a computer laboratory at the SJTU Smith Experimental Economics Research Center (SSEERC) in November 2010. A total of 135 participants were recruited from undergraduate lec-

tures at Antai. Each of the participants was only permitted to attend once, and none of the participants had any prior experience with economic experiments. The participants sat in private cubicles throughout the experiment, and all interaction took place through a web-browser interface.

Seven sessions were conducted over two consecutive days, with all four treatments randomized within each session. Each session lasted about 45 to 55 minutes. The participants were asked not to discuss the experiment with anyone, and there are no statistically significant differences in the behavior between the first and the second day.

3.2.2 The production and allocation of earnings

At the initial stage, the dictators were asked to perform a task on a computer. The task entailed generating points by identifying and checking of three-digit numbers in matrixes.[8] If a dictator reached the target threshold, set to 70 points, within a 15 minute deadline, he was told that he had earned 40 RMB ($\approx$ 6 USD) and that he could share this money with another person. The information given about the receiving individual differed according to which treatment the dictator is assigned to.[9]

The receiving individuals were people whom were randomly chosen from lists of candidates, and were not contacted prior to the experiment. As a consequence, they did not participate in any other way except from acting as (potential) recipients for the dictators. While the researchers knew the full name and contact information of every receiver, this information was not disclosed to the dictators. The dictators and the receivers thus remained anonymous toward each other.

3.2.3 Treatment variations

In the treatments with informed receivers, the dictators were told that the receiver would be given an envelope containing a letter and the money that he decided to give. The letter explained that an economic experiment had been

[8] A screen shot of the production task is included in the appendix.

[9] The participants were not told that there were multiple treatments.

conducted at Antai, and that the receiver of the letter was randomly chosen. It stated that an Antai student had earned 40 RMB on a task, and that this person was free to decide the distribution of the money between him- or herself and the receiver. The letter also mentioned that the participant was shown a copy of the letter before deciding how much to give, and that if there was no money in the envelope it was because the participant chose not to give anything.

In the no-information treatments, the receivers were only given a very brief letter. This letter contained the same opening and ending as the detailed letter, but gave no details about where the money came from. The letters to the uninformed receivers simply stated that there had been an economic experiment at Antai, and that the receiver was randomly chosen. In these treatments, the dictators were informed that if they chose not to give away any money, then the receiver would also not get a letter.

To improve the credibility of the experiment, the dictators were told that they could receive an anonymized copy of the actual letter, as well as a receipt as proof of the transaction, by contacting the lab administration via e-mail after the session.[10] The dictators then had to view a full-screen picture of the relevant letter before proceeding to decide upon the allocation of the money.

An important finding in Cappelen et al. (2012) was that receiver awareness appeared to only play a role in allocation decisions where the dictator was given a clear reason for sharing his money. To investigate whether the Chinese students make similar considerations, the receivers were chosen from two different populations. One group of receivers consisted of random students from the same business school as the dictators. In these peer-treatments, the production task was intended to function as a legitimizing mechanism that the dictator could use as rationale to convince himself that it would be fair for him to keep all of the money (Konow, 1996, 2000; Cherry et al., 2002; Cappelen et al., 2010).

The second group of receivers consisted of random pupils at Yigang Middle School (Yigang), located in an economically disadvantaged region in

[10]No such requests were made at Antai, compared with only one request in the NHH experiment.

Gansu Province. The dictators were informed that this particular school receives educational support from the Siyuan Commonweal Organization, a charitable organization affiliated with the SJTU.[11] In an effort to minimize the differences between the treatments, the dictators who were matched with Yigang pupils also had to pass the production task in order to have money to allocate. Even though the receiving pupils were not asked to perform the production task, the differences in future prospects between the Antai students and the Yigang pupils suggests that the latter needed the money more and therefore deserved a share.

In the treatment overview in table 3.1, U-P and I-P refer to the treatments where the receivers are *peer* students from the same business school as the dictators. The treatments in which the receivers are *needy* persons are referred to as U-N and I-N.[12] The Us denote the treatments in which the cover letter contains limited information about the experiment, leaving the receivers *uninformed* about the decision process, while the Is denote receivers who would be *informed* of the process behind the transfer.

3.2.4 The information and revision decisions

The initial allocation decisions offer insight as to what extent receiver awareness motivates generosity, but they do not provide information about the relative influences of guilt aversion and pride. One way to differentiate between these two concerns is to exploit the fact that that guilt aversion makes it preferable for the dictator that the receiver remain unaware, while the sensation of being esteemed requires that the receiver learn about the experiment. This distinction is exploited in the experimental design by surprising the dictators with an information choice.

[11]The Siyuan Commonweal Organization helped deliver the experimental payments to the receivers at Yigang Middle School.

[12]In addition to using peer and needy receivers, Cappelen et al. (2012) had treatments with entitled peer receivers who performed the same earning task as the dictators. Entitled peer receivers are relatively costly in terms of the required experimental facilities and participation compensation. Additionally, the original experiment showed that need-based entitlements can be a stronger motivation for giving than merit-based entitlements. For these reasons, the treatments with entitled peer receivers were omitted from the current study.

After confirming their allocation decision, the dictators were given an option to change the content of their cover letter. Both the informative and the uninformative versions of the letter were displayed, and the dictators were asked to choose one of the letters to be used. If they chose to change their letter, they were also given the opportunity to revise their allocation decision. Dictators who chose not to change their letter were asked to state how much they would have given in the hypothetical situation where the other letter was to be used. This way, the required effort remained the same regardless of whether the letter was changed or not. As in the initial stage, the dictators were told that the uninformative letter would only be sent if the dictator chose to give away any money, while the informative letter would be sent regardless of whether there was any money in the envelope.

3.2.5 Payments

Cash payments for the dictators were prepared in envelopes by assistants in a separate room and were handed out based on computer-generated codes without the presence of those assistants. While single Chinese Yuan are available as both bills and coins, participants were paid exclusively in bills to avoid jingling coins from revealing non-selfish dictators. This way, no one was able to identify the actions of any specific participant, and participants were made aware of this fact before the experiment began.

3.2.6 Cross-cultural controls

Following Roth, Prasnikar, Okuno-Fujiwara, and Zamir (1991), the experimental design was edited with respect to the language, the stakes, and the experimenters in order to reduce the potential for confounding influences. In addition, special care was taken to maintain the comparability of the subject pools (Croson and Buchan, 1999).

Language effects were mitigated by involving separate parties in a two-way translation of the experimental instructions. The Norwegian instructions were initially translated into English before they were translated into Mandarin. The reverse translation was done by an assistant who is fluent in both

Mandarin and English, and familiar with Norwegian. Minor discrepancies between the versions were worked out in cooperation with the author, with particular effort to ensure the Mandarin version did not sound like a translation from a foreign text. As in the NHH experiment, the letters that were sent to the receivers were printed on paper containing the official letterhead of the school that the participants were recruited from. This was apparent in the pictures of the letters displayed to the dictators.

In the NHH experiment, participants received 100 NOK ($\approx$ 17 USD) to cover the alternative cost of participation, and earned an additional 200 NOK in the production phase. In the SJTU version, show-up compensation was set to 10 RMB ($\approx$ 1.5 USD). In both countries, the show-up compensation approximated the net hourly wage for students doing part-time work in local shops. The experimental endowment was changed to 40 RMB. This is lower than what a direct purchasing power parity conversion would suggest, reflecting the subsidized costs of living and eating on campus. The experimental endowment was about twice the amount normally paid to participants in experiments at the SSEERC, and can be regarded as salient to the participants.

Only native assistants were used to collect the data. The assistants trained with one of the conductors of the original NHH-experiment (the author) in trial sessions without subjects. Strict adherence to a written protocol aided in ensuring that the sessions unfolded in similar ways in both labs. The Norwegian researcher stayed out of sight during the entire experiment.

The original experiment of Cappelen et al. (2012) was conducted on business students. Because there is a concern that business students may behave atypically in economic experiments due to selection or training (Marwell and Ames, 1981), it was deemed preferable that the Chinese sample had a comparable educational background. The master's in management programs at Antai and NHH were both ranked by the *Financial Times* newspaper as among the top 50 programs in the world, in 2009 and 2010. They were also the highest-ranking master's in management programs in their respective countries.[13] These similarities suggest that both the topical and the qualita-

[13]The *Financial Times* rankings can be found online here:

tive differences in the participants' educational background are a relatively small.

3.3 Results

3.3.1 Sample comparison

To facilitate comparison with the original Cappelen et al. (2012) experiment, the relevant results from NHH are presented alongside the results from Antai. Table 3.2 shows that the Antai participants were about 2.5 years younger on average than the NHH participants. They had been engaged with their studies for 1.1 years less than the Norwegian sample on average, and while only 33.1% were female in the NHH sample, that proportion was 59.3% at Antai.[14] The difference in average age and years of study is primarily due to graduate students being invited to attend the experiment at NHH, but not at Antai.[15]

[Table 3.2 about here.]

3.3.2 The dictator decision

The average initial allocations are reported in table 3.3. The first thing to notice is that the Chinese dictators gave away a considerable share of their earned money in the treatment with uninformed peer receivers. On average, these receivers were awarded 20.1% of the earnings. In comparison, the Norwegian dictators gave 11.6% of their endowment in this setting, a percentage which is statistically significantly lower (Mann-Whitney p-value=0.000).

http://rankings.ft.com/businessschoolrankings/masters-in-management-2009 and here: http://rankings.ft.com/businessschoolrankings/masters-in-management-2010.

[14]These statistics for NHH only cover participants in the four treatments that were included in the design of the experiment at Antai.

[15]Antai graduate lectures are located at a different campus than the undergraduate lectures and the SSEERC laboratory. To limit the possibility that mismatches between the cost and compensation for attendance could affect the results, graduate students were not invited to participate.

This observation could be interpreted as indicating that the Chinese business students are more altruistic on average than their Norwegian counterparts. It could also indicate that some of the Chinese dictators perceived that they had fairness arguments for sharing, while the Norwegians perceived it differently.[16]

[Table 3.3 about here.]

[Table 3.4 about here.]

As expected, the average generosity increased when the receivers were presented as being relatively poor. When looking at table 3.4, we see that offers to the needy receivers were higher than offers to the peer receivers, regardless of whether the accompanying letter was to be informative or not. This pattern was also found in the Norwegian data. In the treatment with uninformed needy receivers, the Chinese dictators offered to give 60.1% of their earnings.[17]

Cappelen et al. (2012) concluded that receiver awareness increased average offers when the dictators felt there was a reason to share, and that it had no effect on offers when it was seen as fair to keep the entire endowment. This pattern is not evident in the data from China. In the Antai results, there are no statistically significant effects of receiver awareness on the average levels of sharing (see table 3.5). The informed peer receivers were provided 23.5% of the pie, while the informed needy receivers obtained 57.6%.

[Table 3.5 about here.]

[16] In the follow-up questionnaire, eight individuals reported having some form of altruistic motive for giving, while nine individuals commented that the receiver had a fair claim on some of the money.

[17] Even though allocations to informed needy receivers are about 60% on average in both the NHH and the Antai experiment, the underlying motivations may differ. In addition to need, the Norwegian dictators may have been motivated by efficiency concerns as the money sent to Tanzania would have higher buying power. On the other hand, the Chinese receivers may have benefitted from smaller social distance (Dana et al., 2007) as they had the same nationality as their dictators.

While the average offers were not affected by the content of the cover letter, sending detailed information appears to have had a positive effect on the share of dictators choosing to distribute their earnings evenly. As is illustrated in the histograms in figure 3.2, the effect is statistically significant in the peer treatments (Pearson's χ^2_1 p-value = 0.003), but not in the need treatments (Pearson's χ^2_1 p-value = 0.492). It is evident from figure 3.2 that this effect did not occur with the Norwegian sample.

The popularity of the egalitarian division is in line with the Andreoni and Bernheim (2009) model, which predicts that dictators will be eager to signal their fair-mindedness by choosing the 50/50 split. The key conditions that would incite this effect are that the receiver is given sufficient information to derive his share, and that the 50/50 split is seen as a relevant fairness ideal. Thus, it appears that a key difference between the Chinese and the Norwegian sample is the fairness ideal adopted in the setting with peer receivers. This may also help to explain why average levels of sharing were higher among the Chinese in this setting.

[Figure 3.2 about here.]

3.3.3 The information and revision decisions

Almost half (48.9%) of the dictators chose to change the content of their cover letter (see table 3.6). Changes occurred frequently in all treatments, but there was a tendency for the participants to prefer to inform the receivers about the details of the experiment. In all, 60.7% of the Chinese students chose to send the detailed letter, compared to the 47.4% of the NHH participants who made the same choice.

[Table 3.6 about here.]

The opportunity to revise the allocation decision does not appear to have

been an important motivation behind the letter changes. Table 3.7 shows that the average changes in offers are small and not statistically significant. Instead, the information decisions seem to be driven by guilt aversion and pride considerations. Table 3.8 displays average initial offers, according to what the dictators chose to do with their letter. It is clear that those who chose to remove the detailed information gave less on average than those who retained the detailed letter, and that those who added information gave more on average than those who stayed with the uninformative letter. These findings suggest that some participants who behaved relatively selfishly used the information option as a way to avoid disappointing their receivers. Similarly, the relatively generous dictators seemed to prefer that the receivers appreciate their generosity. The same pattern is evident in the Norwegian data.

[Table 3.7 about here.]

[Table 3.8 about here.]

3.4 Discussion

The results of the allocation and information decisions appear to provide contradicting evidence on the role of receiver awareness. If the Chinese students are concerned with how the receivers would interpret the transfers, as their information decisions suggest, it is not obvious why this concern did not affect the average offers in the first place. This section considers some potential explanations in the hope of inspiring future research to resolve the conundrum.

The fact that the average offer given to peer receivers did not change with information, despite the increase in offers of 50%, implies that a polarization of offers took place. It appears that some dictators were driven to reduce their offer, while other dictators were increasing theirs. This heterogeneity can be rationalized if one considers that the Chinese participants were torn between

two different fairness ideals: equity and egalitarianism. The dictators may have felt comfortable with balancing the ideals by offering a moderate amount to uninformed receivers, while they may have felt forced to take a stand as to which principle should dominate when confronted with informed receivers. While some clearly opted for the egalitarian alternative, others may have wished to emphasize the equity concerns. The Norwegians at NHH may have escaped this dilemma all together if they perceived that their cultural norm unambiguously identified equity as the dominating concern in this situation.

It is more difficult to explain the allocation choices in the need treatments. One theory is that there may be a social stigma attached to receiving a relatively large transfer.[18] That is, it may be considered acceptable to receive money up to the level that is shared with peer receivers, while excess amounts signals that the giver takes pity on the receiver. When detailed information is given to the needy receivers, the social stigma effect may prohibit the increased sharing that otherwise would occur because of guilt and pride effects. To complete this line of reasoning so that it also encompasses the NHH results, one could speculate that the Norwegian dictators paid less attention to the social stigma effect, as their receivers were of a different nationality.

Instead of asking why detailed information did not promote giving, one may wonder why the dictators in the no-information treatments failed to take advantage of that context. Perhaps a part of the answer is that the Chinese educational system actively promotes self-sacrifice in ways that have no equivalence in Norway. One example is "Learn From Lei Feng Day," held every March 5th in memory of the late communist soldier Lei Feng. On this day, pupils, students, and the general public are encouraged to follow Lei Feng's example by doing good deeds without seeking recognition. One consequence of the moral training may be that anonymous giving is seen as more virtuous and therefore is more potent at generating self-respect. The training could also play a part in promoting the egalitarian principle that traditionally is well grounded in the communist ideology. This may explain why the level of sharing to uninformed peer receivers was higher at Antai

[18]Thanks go to Dirk Engelmann for first suggesting this possibility to me.

than at NHH.

3.5 Conclusion

This paper reports results from a modified dictator game in which Chinese business students face different receivers under different circumstances. Receivers are either poor or one of the dictators' peers. The receivers will or will not be informed about why they receive their money. After the allocation decision is made, an information option is revealed which allows the dictator to decide whether or not the receiver will be informed about the origin of the transfer.

The main motivation for this study was to investigate whether extrinsic social motivation exerts an influence on allocation decisions in the collectivistic society of China in a way that is similar to the individualistic society of Norway. The results suggest that this is not the case. While receiver awareness has been found to generate higher levels of sharing in Norway (Cappelen et al., 2012), the average offers made by the Chinese sample did not depend on the receivers' information.

The primary concerns for the dictators in the Chinese sample appear to have been fairness and need considerations.[19] The dictators shared a relatively large share (20.1%) of their endowment with their uninformed peer receivers, and about three times more when the receivers were uninformed and needy. While there is some evidence in the data to support the signaling theory proposed by Andreoni and Bernheim (2009), this effect does not apply consistently throughout the experiment.

Even though the receivers' information did not affect the dictators' average generosity level, the level of generosity clearly affected the information sent to the receivers. The dictators who chose to withhold the information gave significantly less than those who chose to inform their counterpart.

[19]Note that some of the fairness considerations differed from those that traditionally have been studied in economics. For example, some participants reported that destiny had formed a relationship between them and the receiver, and that this was their reason for giving.

In general, this study illustrates the need for more research on the role that second order beliefs (the dictator's beliefs about the receiver's beliefs about the dictator) play in allocation decisions. In particular, more information is needed about why second-order beliefs some times do not translate into actions.

The different ways in which Chinese and Norwegian students responded to receiver awareness show how fairness norms that are relied upon in one culture can be much less influential in another culture. This serves as a reminder that intercultural engagements are not straight forward, and should encourage social scientists to explore the cultural scope of their findings.

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Visser, Michael S. and Matthew R. Roelofs (2011). "Heterogeneous preferences for altruism: Gender and personality, social status, giving and taking," *Experimental Economics*, 14(4): 490–506.

Yutang, Lin (1935). *My Country and My People*, Reynal & Hitchcock.

Figure 3.1: Overview of experimental stages

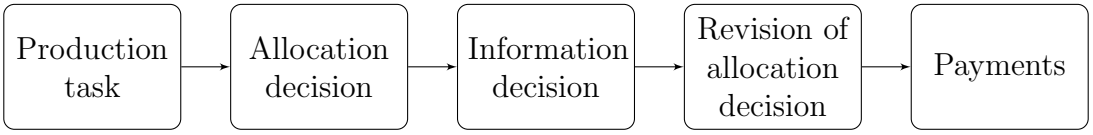
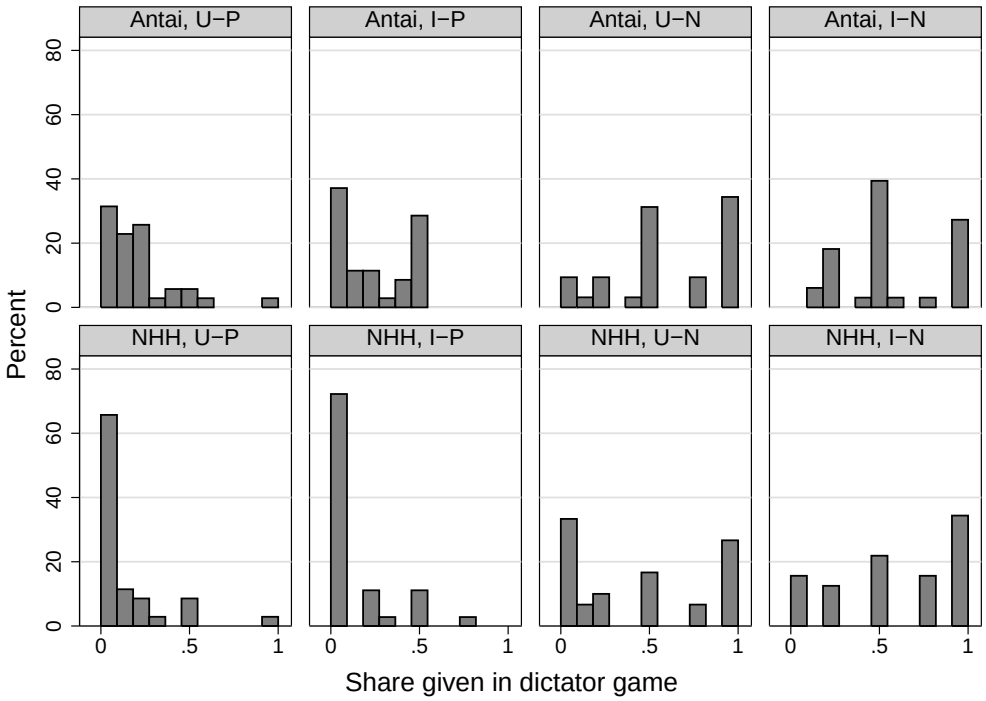


Figure 3.2: Histograms of initial offers



Note: The histograms illustrate the distributions of shares offered in the initial allocation decision. The top row presents the results from China, while the bottom row presents the results from Norway. The acronyms refer to the receivers in the different treatments as follows: U-P = uninformed peer; I-P = informed peer; U-N = uninformed needy; I-N = informed needy.

Table 3.1: Experimental treatments

	Information?					
Receiver	no	N_{Antai}	N_{NHH}	yes	N_{Antai}	N_{NHH}
Peer student	U-P	35	35	I-P	35	36
Needy person	U-N	33	30	I-N	32	32

Note: The four treatments vary according to the receivers' kind and whether or not the receivers will be informed about the experiment. The treatment names are acronyms describing the receivers as follows: U-P = uninformed peer; I-P = informed peer; U-N = uninformed needy; I-N = informed needy. The number of observations at each business school is reported to the right of the treatment names.

Table 3.2: Participant demographics

	Antai	**NHH**
Age	19.2	21.7
Study year	1.6	2.7
Female	59.3%	33.1%
N	135	133

Note: This table contains participants' average age, average years of study and proportion of female participants as reported by the participants in post-experiment questionnaires. N denotes the total number of participants in each experiment. The NHH numbers only include participants in the treatments that were also used at Antai.

Table 3.3: Average initial offers

	Antai Information?		**NHH Information?**	
Receiver	no	yes	no	yes
Peer Student	0.201	0.235	0.116	0.114
	(0.036)	(0.035)	(0.037)	(0.034)
Needy Person	0.610	0.576	0.433	0.602
	(0.060)	(0.052)	(0.076)	(0.065)

Note: Mean shares offered in the initial allocation decision. Standard errors in parentheses. Information indicates whether the receiver was to be informed or not about the details of the experiment. Receiver indicates the kind of recipient that was to receive the transfer. Antai and NHH indicate Chinese and Norwegian dictators, respectively.

Table 3.4: The role of fairness

	Information?					
	no			yes		
	diff	p_{MW}	p_T	**diff**	p_{MW}	p_T
Peer student vs needy person (Antai)	-0.409	0.000	0.000	-0.341	0.000	0.000
Peer student vs needy person (NHH)	-0.318	0.000	0.000	-0.488	0.000	0.000

Note: *P*-values for Mann-Whitney test and one-sided *t*-test (unequal variances) testing differences in mean share offered in the initial allocation decision between recipient groups. The results from China and Norway are presented in the top and bottom rows respectively. Negative differences indicate that the needy receivers were offered more on average than the peer group.

Table 3.5: The role of information

	Needy receiver?					
	no			yes		
	diff	p_{MW}	p_T	**diff**	p_{MW}	p_T
Informed vs uninformed (Antai)	0.034	0.510	0.251	-0.034	0.628	0.333
Informed vs uninformed (NHH)	-0.002	0.879	0.486	0.168	0.104	0.049

Note: *P*-values for Mann-Whitney test and one-sided *t*-test (unequal variances) testing differences in mean share offered in the initial allocation decision between recipient groups. The results from China and Norway are presented in the top and bottom rows respectively. Negative differences indicate that the uninformed receivers were offered more on average than the informed receivers.

Table 3.6: Shares of participants switching letters

	Information choice			
	Antai		**NHH**	
Treatment	Remove	Add	Remove	Add
U-P		57.1%		40.0%
I-P	37.1%		47.2%	
U-N		62.5%		36.7%
I-N	39.4%		40.6%	

Note: Shares of participants choosing to remove or add information in the cover letter. The treatment acronyms refer to the receivers' initial status as follows: U-P = uninformed peer; I-P = informed peer; U-N = uninformed needy; I-N = informed needy. Antai and NHH indicate Chinese and Norwegian dictators, respectively.

Table 3.7: Revisions to the allocation decisions

	Information choice			
	Antai		**NHH**	
Recipient	Remove	Add	Remove	Add
Peer Student	-0.013	-0.020	-0.003	0.007
	(0.008)	(0.015)	(0.003)	(0.028)
Needy Person	-0.029	-0.056	-0.038	0.009
	(0.021)	(0.035)	(0.038)	(0.009)

Note: Mean changes in shares offered by dictators who switched their letter. Standard errors in parentheses. Antai and NHH indicate Chinese and Norwegian dictators, respectively.

Table 3.8: Who change their letter?

	Offered share					
	Antai			**NHH**		
Treatment	No change	Remove	Add	No change	Remove	Add
U-P	0.103		0.275***	0.088		0.157
	(0.028)		(0.053)	(0.049)		(0.056)
I-P	0.333	0.069***		0.174	0.047**	
	(0.041)	(0.025)		(0.058)	(0.024)	
U-N	0.500		0.676*	0.347		0.582*
	(0.102)		(0.073)	(0.089)		(0.130)
I-N	0.700	0.385***		0.684	0.481*	
	(0.060)	(0.066)		(0.074)	(0.115)	

Note: Mean shares offered in the initial allocation decision, organized according to the dictators' information decisions. Antai and NHH indicate Chinese and Norwegian dictators, respectively. The treatment acronyms refer to the receivers' initial type as follows: U-P = uninformed peer; I-P = informed peer; U-N = uninformed needy; I-N = informed needy. ***,** and * indicate differences from the relevant "no change" group at the 1%, 5% and 10% significance level, respectively.

3.6 Appendix

3.6.1 Instructions

The following is an English translation of the Mandarin instructions that were used:

INTRODUCTION

Welcome to our experiment. I am X, and will be responsible for today's experiment. The results of this experiment will be used as data for economic research. Please complete the experiment according to the rules. Don't communicate with each other during the experiment. If you have any questions during the experiment, please raise your hand, our staff will come up to you to answer your question. Please don't use any programs that are irrelevant to this experiment. Please switch off your mobile phone. If you violate the rules, you will have to leave the lab. Please keep quiet during the waiting time in the experiment and do not disturb others.

To keep the experiment anonymous, you will not be asked about your identity and name. In addition, neither our staff, other participants nor any other persons can discover the decisions you make in the experiment.

When the experiment finishes, there will be a code for picking up your payments on the screen. Please write down this code on the payment form on the desk. When you leave the lab, please hand the payment form to our staff. You will then obtain a corresponding envelope with your payment inside. The assistant that prepared the envelope will already have left the lab, so no one will know how much you finally get.

The experiment consists of two parts. I will now explain to you how to take part in the first part.

PART 1

In the first part, that is the labor part, you need to achieve a task within 15 min. In the task, you need to find the right number in a big form that contains different numbers. When you find one number, you will get one

point. If you make a mistake, you will lose one point. You can always skip the current form and continue with the next one. You need to find 70 correct numbers within the provided time. During the process, your current points and remaining time will appear on the screen.

If you finish the task before the provided time, there will be related information on the screen. Please remain quiet and wait for the second part.

Do you have any questions? If yes, please raise your hand. Our staff will come up to you to clarify... Everyone understands. There will soon be new content on the screen. The experiment begins immediately.

Note: Instructions in both the first and second part of the experiment were then presented on screen.

3.6.2 Selected illustrations

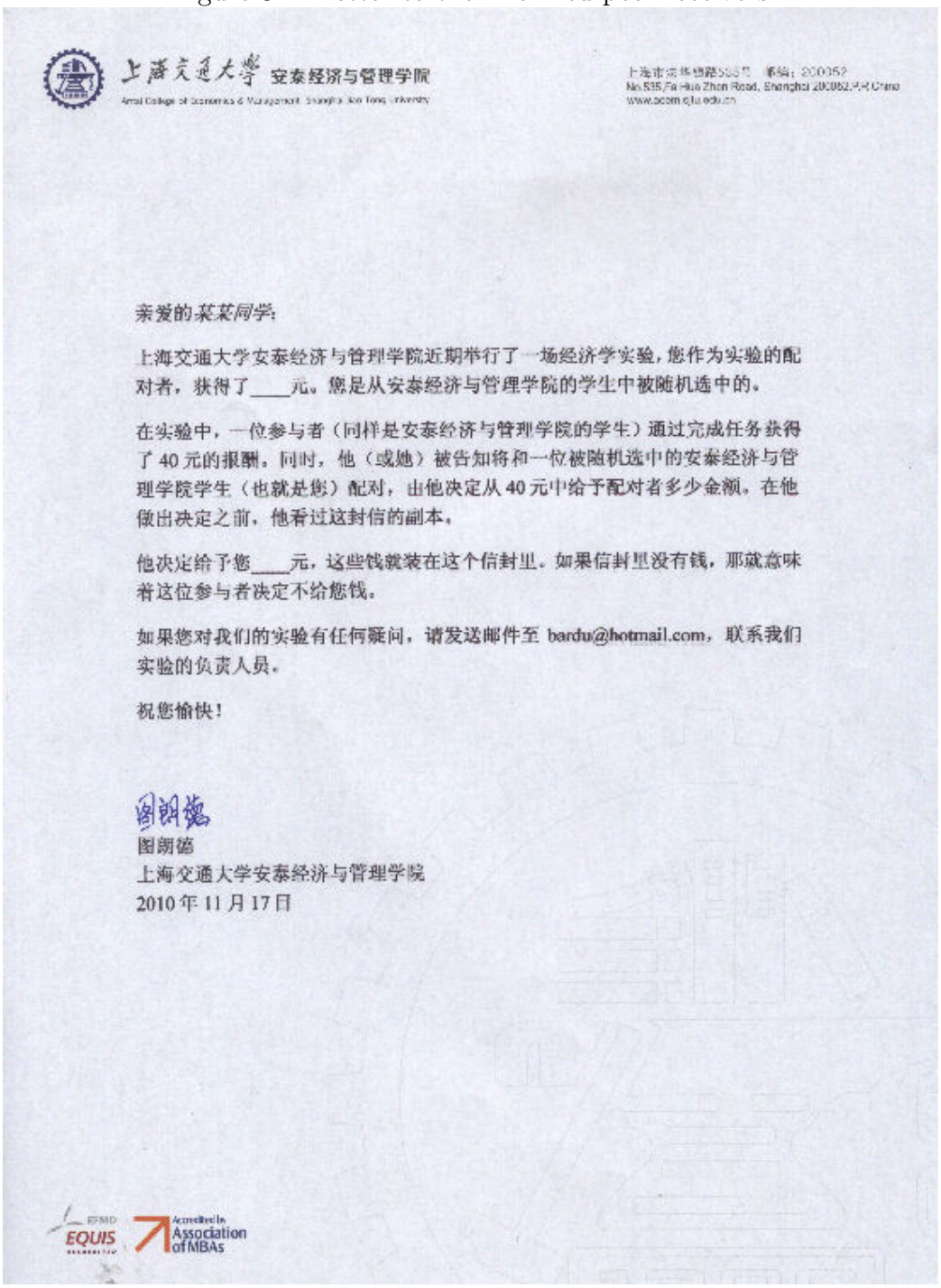
Figure 3.3 shows a screenshot of the task that the dictators faced in the production phase.

Figure 3.3: Production task

Translation:
Production phase
For every correctly chosen number, you earn 1 point; for every incorrectly chosen number, you loose one point.
When you have received a total of 70 points, the production task will be completed.
You can click on the "Submit" button below the table at any time. This will generate a new table.
In the table below, find and select the number **864**.

Remaining time:
You have earned 2 points, out of 70 points.

Figure 3.4: Letter to the informed peer receivers



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上海交通大学安泰经济与管理学院近期举行了一场经济学实验，您作为实验的配对者，获得了____元。您是从安泰经济与管理学院的学生中被随机选中的。

在实验中，一位参与者（同样是安泰经济与管理学院的学生）通过完成任务获得了40元的报酬。同时，他（或她）被告知将和一位被随机选中的安泰经济与管理学院学生（也就是您）配对，由他决定从40元中给予配对者多少金额。在他做出决定之前，他看过这封信的副本。

他决定给予您____元，这些钱就装在这个信封里。如果信封里没有钱，那就意味着这位参与者决定不给您钱。

如果您对我们的实验有任何疑问，请发送邮件至 bardu@hotmail.com，联系我们实验的负责人员。

祝您愉快！

图朗德
上海交通大学安泰经济与管理学院
2010年11月17日

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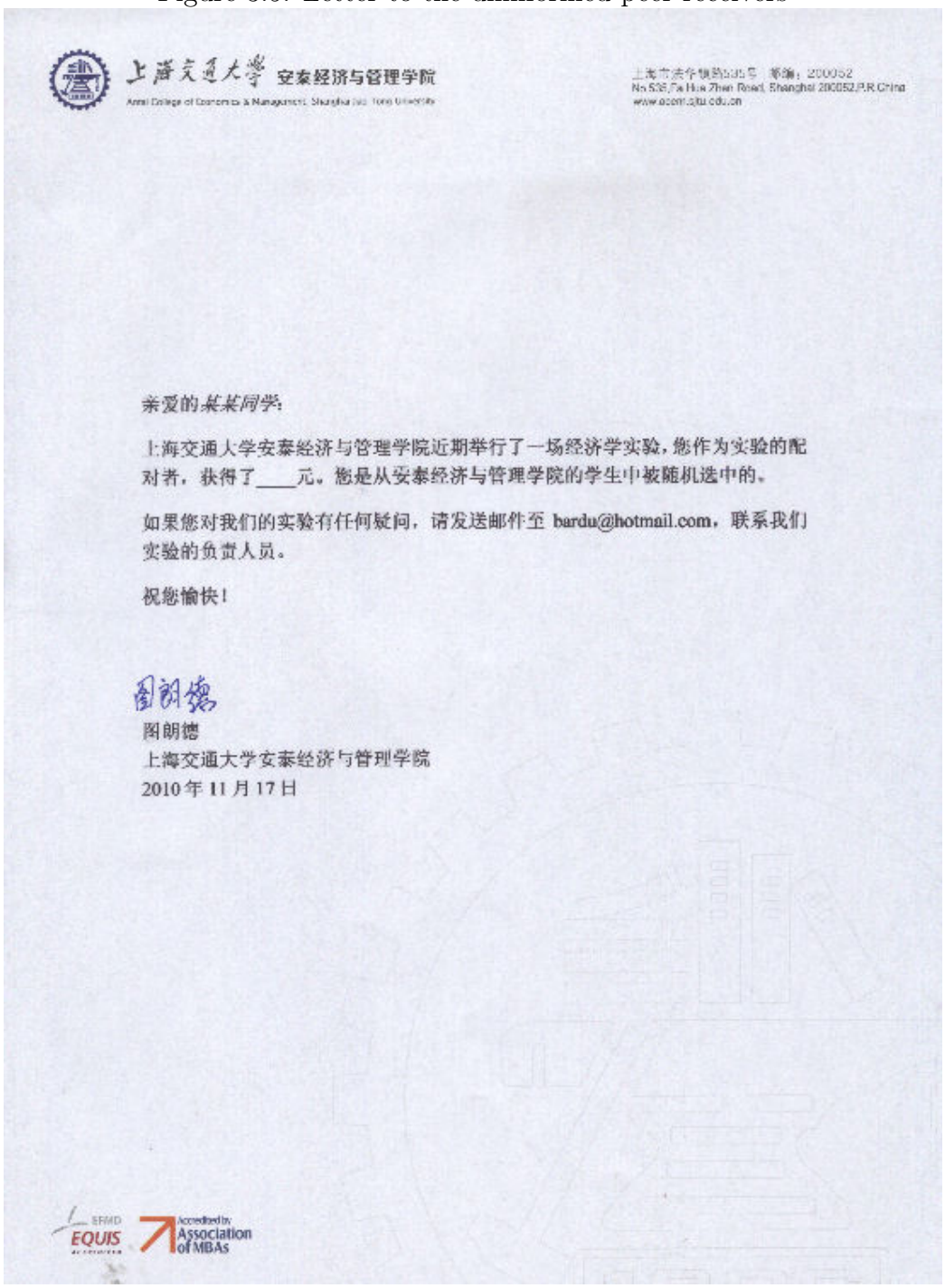
Figure 3.5: Letter to the uninformed peer receivers



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图朗德

图朗德
上海交通大学安泰经济与管理学院
2010 年 11 月 17 日

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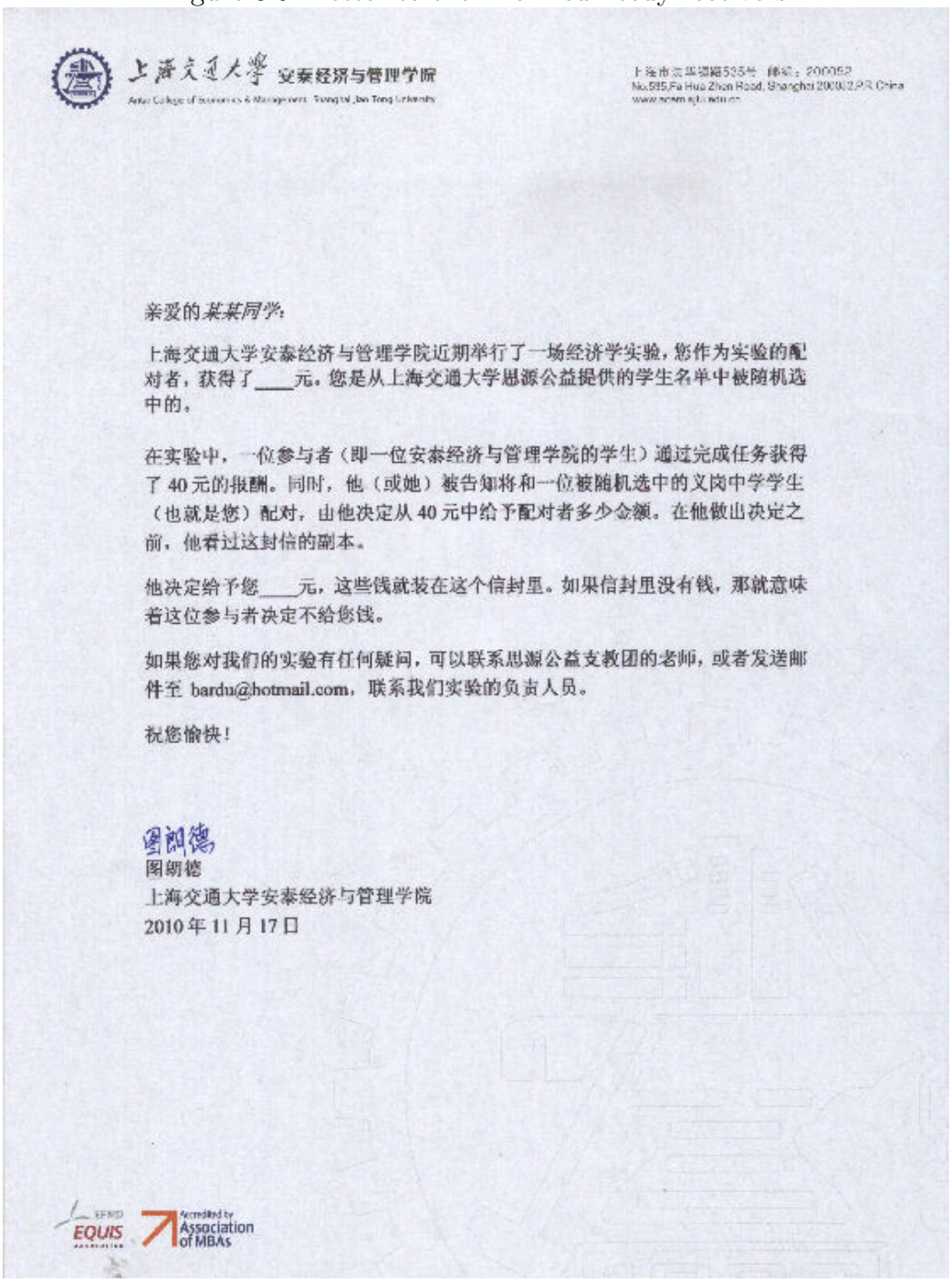
Figure 3.6: Letter to the informed needy receivers



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在实验中，一位参与者（即一位安泰经济与管理学院的学生）通过完成任务获得了40元的报酬。同时，他（或她）被告知将和一位被随机选中的义岗中学学生（也就是您）配对，由他决定从40元中给予配对者多少金额。在他做出决定之前，他看过这封信的副本。

他决定给予您____元，这些钱就装在这个信封里。如果信封里没有钱，那就意味着这位参与者决定不给您钱。

如果您对我们的实验有任何疑问，可以联系思源公益支教团的老师，或者发送邮件至 bardu@hotmail.com，联系我们实验的负责人员。

祝您愉快！

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图朗德
上海交通大学安泰经济与管理学院
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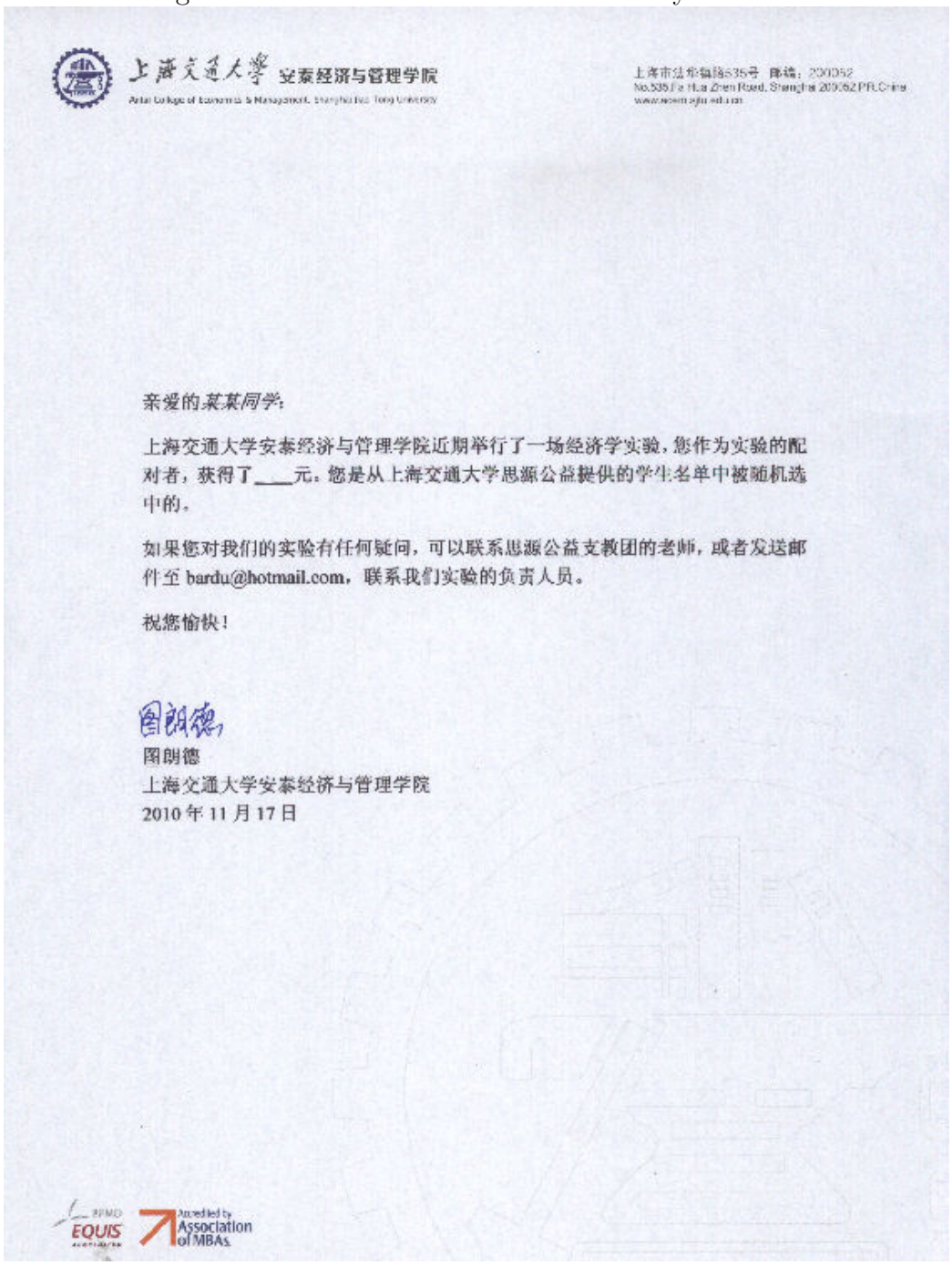
Figure 3.7: Letter to the uninformed needy receivers



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祝您愉快！

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2010 年 11 月 17 日

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Translations of letters:

Letter to the informed peer receivers

Dear classmate,

Shanghai Jiao Tong University Antai College of Economics and Management recently held an economic experiment. As a counterpart in the experiment, you receive x Yuan. You were randomly selected from the students at Antai College of Economics and Management.

In the experiment, the participant (who is also a student at Antai College of Economics and Management) earned 40 Yuan by achieving a task. At the same time, he (or she) was informed that a randomly selected student from the Antai College of Economics and Management (you) would be his counterpart and that he would decide the amount given to the counterpart. Before he made this decision, he already read a copy of this letter.

He decided to give you x Yuan. The money is in this envelope. If there is no money in the envelope, it means that the participant didn't give you any money.

If you have any questions about our experiment, please send an e-mail to bardu@hotmail.com to contact our staff.

Have a nice day!

Letter to the uninformed peer receivers

Dear classmate,

Shanghai Jiao Tong University Antai College of Economics and Management recently held an economic experiment. As a counterpart in the experiment, you receive x Yuan. You were randomly selected from the students at Antai College of Economics and Management.

If you have any questions about our experiment, please send an e-mail to bardu@hotmail.com to contact our staff.

Have a nice day!

Letter to the informed needy receivers

Dear classmate,

Shanghai Jiao Tong University Antai College of Economics and Management recently held an economic experiment. As a counterpart in the experiment, you receive x Yuan. You were randomly selected from a name list provided by the Shanghai Jiao Tong University Siyuan Commonweal Organization.

In the experiment, the participant (who is a student at Antai College of Economics and Management) earned 40 Yuan by achieving a task. At the same time, he (or she) was informed that a randomly selected pupil in Yigang Middle School (you) would be his counterpart and that he would decide the amount given to the counterpart. Before he made this decision, he already read a copy of this letter.

He decided to give you x Yuan. The money is in this envelope. If there is no money in the envelope, it means that the participant didn't give you any money.

If you have any questions about our experiment, please contact the teacher from Siyuan Commonweal Organization or send an e-mail to bardu@hotmail.com to contact our staff.

Have a nice day!

Letter to the uninformed needy receivers

Dear classmate,

Shanghai Jiao Tong University Antai College of Economics and Management recently held an economic experiment. As a counterpart in the experiment, you receive x Yuan. You were randomly selected from a name list provided by the Shanghai Jiao Tong University Siyuan Commonweal Organization.

If you have any questions about our experiment, please contact the teacher from Siyuan Commonweal Organization or send an e-mail to bardu@hotmail.com to contact our staff.

Have a nice day!

Chapter 4

Are dictators loss averse?

Trond Halvorsen[1]

[1]I would like to thank Harald Nygård Berg, Bjørn Atle Reme, and Helge Sandvig Thorsen for their invaluable assistance with the experiment. Comments and suggestions from Alexander W. Cappelen, Shachar Kariv, Erik Ø. Sørensen, and Bertil Tungodden were very helpful. The paper also benefited from feedback at PhD-workshops at the University of Bergen and the Norwegian School of Economics. An earlier version of the paper was presented at the 6th Nordic Conference on Behavioral and Experimental Economics under the title: "The role of social cues in real effort dictator games." The funding for the experiment was provided by the Research Council of Norway (research grant 185831).

Abstract: This paper investigates whether individuals are loss averse with respect to their status quo wealth level in sharing situations. In a real effort dictator game, dictators are asked to share their earnings either *before* or *after* earning them. The instructions also variably emphasize the amount that the dictator will *give* or *receive* at the end of the experiment. This study finds that whether the money is already earned or not has no statistically significant effects on the average sharing behavior, regardless of which instructions are used. The results indicate that dictator game participants are not loss averse with respect to their status quo wealth level.

4.1 Introduction

Studies of choice behavior have shown that people often behave as if losses affect utility considerably more than gains do (Camerer, 2000). This phenomenon is known as loss aversion. Behavior consistent with loss aversion has been observed in both field settings and controlled experiments, and the concept explains regularities that appear as anomalies when analyzed with standard expected utility theories. Some examples are preference reversals when lotteries are framed as losses instead of gains (Tversky and Kahneman, 1981) and discrepancies between the willingness-to-pay and the willingness-to-accept for simple goods (Horowitz and McConnell, 2002).

Another well-documented behavioral trait is people's willingness to pay for fair outcomes (Konow, 2000; Cappelen et al., 2007). Fairness motives are often studied with dictator games, where interaction is anonymous and players singlehandedly decide the allocation of an asset between themselves and a counterpart (Forsythe et al., 1994). Average offers in dictator games typically range between 25 to 40% of the available endowment, with a large share of participants giving away 50% (Camerer, 2003; Engel, 2011). Variations in offer distributions between dictator game treatments indicate that people's generosity varies according to context.

Given that the willingness to share with others depends on the context, and that loss aversion plays a role in many other settings, it seems natural to ask whether loss aversion is also a concern in sharing decisions. In lay-man

terms, do people perceive it more costly to give away money that they have in their hand (a loss) than to commit to give from future earnings (a reduced gain)? The answer to this question may, for instance, have important implications for the optimal design of tax policies. Under the Norwegian tax code, the estimated income tax for wage earners is deducted before the earnings are received. On the other hand, self-employed individuals are required to pay their estimated income tax from their own bank account in four installments over the year. The difference in the timing of the tax payments suggests that wage earners see their taxes as reductions of gains, while the self-employed perceive their taxes as losses. This would mean that the per krone cost of paying income tax is experienced more intensely by self-employed individuals than by wage earners.

This paper presents results from a real effort dictator game where the participants decide how much to share either *before* or *after* they earn their money. If the participants are loss averse with respect to what they have earned, then earning the money should affect the way potential offers are evaluated by the two groups. Before the earning task, an offer constitutes a reduction of a gain, while after the earning task the same offer constitutes a loss. Loss averse participants are expected to be more willing to share in the Before treatment compared to the After treatment. The difference in willingness to share should be evident in both average offers and the fraction of participants choosing to share.

In order to evaluate the robustness of any influences from decision timing, two different formulations are used when the participants are asked to share. In each timing treatment, about half of the participants are asked to state the amount they wish to *give* away, while the second half are asked to state the amount they wish to *receive* themselves.

The results indicate that the dictators are not loss averse with respect to their status quo wealth level. The average offers were not statistically significantly different before and after the endowment was earned. The difference in timing also did not generate statistically significant differences in the shares of participants willing to offer positive amounts. The main results were the same regardless of whether the give or the receive formulation was

used to present the sharing decision.

Previous findings in experimental economics show that male and female participants may respond differently to contextual changes (Croson and Gneezy, 2009; Eckel and Grossman, 2008). This also appears to be the case in the current experiment. The female participants shared less after earning their money when the give formulation was used. This result could, in isolation, be seen as evidence of loss aversion. But, when the receive formulation was used, the offers from the female participants *increased* after the earning task. In contrast, the male participants do not appear to be affected by the timing of the decision at all.

Loss aversion theory offers no explanation for why the timing effect depends on context and gender in the way that is observed here. I therefore conclude that the changes in offers by the female participants are due to contextual influences other than loss aversion. If we assume that the results can be extrapolated to other sharing situations, this experiment shows that policy makers do not have to be concerned with loss aversion related to people's status quo wealth.

The next section relates this paper to the existing literature. The experimental design is described in detail in Section 4.3, and the results are covered in Section 4.4. Section 4.5 draws some conclusions.

4.2 Related literature

Loss aversion is perhaps best known to economists as a central concept of the prospect theory developed by Kahneman and Tversky (Kahneman and Tversky, 1979; Tversky and Kahneman, 1991, 1992).[2] Prospect theory assumes that people simplify decisions by evaluating outcomes in terms of the implied *changes* in wealth, rather than the resulting wealth *levels*. Sugden (2003) argues that an adequate theory of choice behavior should incorporate concerns for wealth levels as well as changes, and develops an axiomatic version of expected utility theory that incorporates loss aversion.

[2]See also Tversky and Kahneman (1981, 1986); Novemsky and Kahneman (2005).

The classifying of outcomes as gains or losses relies on a reference point. Kahneman and Tversky (1979) write that "the reference point usually corresponds to the current asset position, in which case gains and losses coincide with the actual amounts that are received or paid." Similarly, Sugden (2003) opts to "interpret an agent's reference point as her current endowments." The assumption that the current endowment is an important reference point has experimental support in Bateman, Kahneman, Monro, Starmer, and Sugden (2005) and forms the basis for the experiment in this paper.[3]

The implications of loss aversion for pro-social behavior has received little attention from researchers. A notable exception is Buchan, Croson, Johnson, and Wu (2005) who study the distributions of positive and negative outcomes in ultimatum games.[4] In their experiments, losses are either hypothetical or deducted from a 10 USD show-up fee. The authors find that both offers and demands are higher when bargains are over losses (proposers are more generous and receivers more demanding). The pattern is the same in four experiments from three different countries, suggesting that their results are relatively robust.

Small (2010) conducts a dictator game treatment where all participants start out with equal endowments. Once the roles are randomly assigned, the researchers remove the receivers' endowments. This loss of endowment generates higher levels of sympathy, as well as higher offers, from the dictators, compared to a treatment where the receivers never had any endowment to begin with.This experiment suggests that dictators are sensitive to other people's losses, but it does not establish whether dictators are loss averse with respect to their own endowment.

Other researchers have studied the effect of framing the dictator's choice as a *taking* option, rather than a *giving* option (Swope, Cadigan, Schmitt, and Shupp, 2008; Visser and Roelofs, 2011; Dreber, Ellingsen, Johannesson, and Rand, 2011).[5] In taking situations, all or half of the endowment is initially

[3]This paper will variably refer to "current endowments" as "status quo wealth."

[4]Ultimatum games are similar to dictator games, except that the receiver may decline the offer. If an offer is declined, then the dictator's endowment is returned to the experimenter.

[5]Experiments conducted by List (2007); Bardsley (2008); Cappelen, Nielsen, Sørensen,

allocated with the receiver, but the dictator still decides how the combined endowment is to be split. Any amount taken from the receiver could be seen as a gain for the dictator, and the shares left with the receiver could be seen as a reduction of the dictator's gain. This suggests that offers will be higher with a take frame, than with a give frame, if the dictators are loss averse. The results of these experiments are mixed, and inferences are hindered by an important confounding effect: The initial allocation of the endowment is intended to influence the perceived property rights. Dictators in taking treatments could be allocating more money to the receiver because they are loss averse, but also because "taking" is seen as less socially acceptable than "not giving" (Krupka and Weber, 2012).

In the give/take dictator games, entitlements to the experimental endowment are indicated with either language frames or by placing the endowment in labeled envelopes. Konow (2000); Cappelen et al. (2010) show that an alternative, and possibly more salient, method for establishing entitlements is to ask the participants to generate their endowment by taking part in an earning task. The authors' results suggest that, under ceteris paribus conditions, the principle of equal pay for equal work has broad support.

It appears that no previous dictator games contain treatments where the participants must earn their endowment after deciding on the allocation. Two related papers, namely Hoffman, McCabe, Shachat, and Smith (1994); Cherry et al. (2002), compare dictator game treatments with and without effort. In Hoffman et al. (1994) the role as dictator is assigned to the best performing participants, while in Cherry et al. (2002) the dictators are paid according to their performance in a quiz. In both cases, the average offers are statistically significantly lower when the participants have to exercise effort, compared to when roles and endowments are distributed randomly. But, as with the give/take experiments, there are (at least) two theories that can explain the result. On the one hand, the effort may have legitimized small offers by making the dictators more deserving. On the other hand, the effort

Tungodden, and Tyran (2013) represent a different class of experiments where a taking option is added to the dictator's strategy set. They find that this way of expanding the strategy-set lowers average offers. There are also several papers investigating the effects of give/take frames in public good games, starting with Andreoni (1995).

may have increased the sensation of having earned the endowment, making offers more likely to be coded as losses instead of reductions of gains. Both theories predict the observed reductions in average offers.

The current paper contributes to the literature by showing how one may test for loss aversion without the confounding influences of varying entitlements or deserts. In the experiment, all participants perform the same earning task in all treatments. This means that there is no difference in entitlements or deserts that can explain potential differences in sharing behavior. On the other hand, if there is no difference in sharing behavior, then the experiment strengthens the suggested interpretations of the experiments referred to above.

The paper also presents a novel mechanism for untangling a confounding issue regarding the reference point. It may be that the status quo only functions as a reference point to the extent that it corresponds with the agent's *expectations* about the future. The question of whether "present wealth" or "customary wealth" best captures the concept of a reference point was already raised by Markowitz (1952), but it has gained recent attention with the contributions of Köszegi and Rabin (2007); Gill and Prowse (2012). The current experiment distinguishes expectations from the status quo by announcing the expected outcome to the participants at the beginning of the experiment. This way, the status quo wealth can be changed without affecting the participants' expectations. The mechanism thus enables the current experiment to establish whether the status quo wealth serves as an important reference point in its own right.

4.3 Experimental design

This paper assumes that people are loss averse with respect to their current endowment when they consider sharing their money with others. By definition, an individual's current endowment is equal to the individual's *status quo wealth*, i.e., the current endowment does not include *expected income*.[6] The

[6]Given this definition, an individual's status quo wealth is likely to be a closer match with his most recently filed tax report than with his expected lifetime earnings.

experiment chosen to test the assumption is a modified version of the dictator game. Dictator games are well suited for studying preferences in sharing situations because strategic motives do not play a role in these games. The current version consists of an earning phase, a distribution phase, a post-experiment questionnaire, and anonymous payment procedures. The main treatment is a modification of the timing of the earning phase, relative to the distribution phase. Participants assigned to the Before treatments enter the distribution phase immediately before the earning phase, and vice versa for participants in the After treatments. The chronological order of the phases is shown in table 4.1.

[Table 4.1 about here.]

In the earning phase, the participants are asked to perform two nearly identical tasks on a computer. Both tasks involve identifying a specified three digit number 120 times in tables with several other numbers.[7] The only difference between the tasks is the number to be identified.[8] The time allotted for completing each task is 15 minutes. The participants are informed from the start that one of the earning tasks will yield a high amount, 175 NOK ($\approx$ 28 USD), and that the other will yield a low amount, 25 NOK ($\approx$ 4 USD). They are also told that a random draw will pick one of the two tasks to count toward the payment from the experiment.

The earning phase plays two roles. First, it defines the dictator's endowment as either expected income or status quo wealth. This distinction is crucial since expected income represents a gain, while status quo wealth is included in the reference point. Figure 4.1 illustrates how, for loss averse individuals, the utility impact associated with a reduction of a gain is smaller than the utility impact associated with an equally sized loss. The difference is due to the utility function being considerably steeper in the loss domain than in the gain domain. As a consequence, the cost of sharing with others is

[7] A screen shot of the earning phase is included in the appendix.

[8] The numbers 547 and 492 were used after pretests indicated that those numbers were equally hard to locate.

experienced more intensely if the offer comes from status quo wealth rather than expected income. If the dictators are loss averse, then they should be less willing to share after the earning phase.

[Figure 4.1 about here.]

The second role of the earning phase is to provide a reason for sharing. The production tasks are deliberately designed so that ability should be an irrelevant factor for the success rate. This feature limits the participants' opportunity to favor their own effort based on merit.[9] It is also intentional that the tasks should be perceived as boring, so that the monetary earnings will be the sole rewards. Results from previous experiments suggest that since all participants are required to perform the same tasks, most of the participants will think that the fairest distribution of the earnings will be for everyone to receive the same amount (Konow, 2000; Cappelen et al., 2010). It is therefore likely that the earning phase establishes a sense among the participants that the initial distribution of earnings is unfair. The sense of unfairness is expected to be independent of the experimental treatments, meaning that the benefit of sharing is the same in all the treatments.

In the distribution phase, the participants are matched so that one in each pair will receive a high payment and the other will receive a low payment. Before the outcome of the earning phase is revealed, every participant is asked to state how much he (or she) will be willing to share if he ends up as the high earner in his pair.[10] The participants are only given authority over their own earnings, meaning that every participant will be rewarded at least 25 NOK for passing the tasks. While this constrains the set of possible allocations of the total earnings, it ensures that the participants have a pecuniary incentive to work on the tasks. Both the earning and the distribution phases are explained to the participants at the beginning of the

[9] See Babcock, Loewenstein, Issacharoff, and Camerer (1995) and Dana et al. (2007) for discussions about self-serving bias in fairness considerations.

[10] Iriberri and Rey-Biel (2011) found that role uncertainty encourages altruistic behavior in dictator games. However, there is little reason to think that role uncertainty has any impact on the effects of loss aversion.

session, and the participants are encouraged to direct any questions that they might have to the assistants.

At the end of each session, a computer calculates payments for each participant based on the randomly chosen high earners' allocation decisions. The participants are then informed about their role and about their monetary outcome. Cash payments are prepared in envelopes by a research assistant outside the lab and handed out without this person being present. Computer-generated payment codes provide the link between the envelopes and the participants. The payment procedure makes sure that neither the experimenters nor other participants can observe the payments to any particular participant. Before the experiment begins, the participants are informed about the payment procedure, and that complete anonymity will be facilitated in the experiment.

Several researchers have commented on the sensitivity of dictator behavior with respect to context (Camerer and Fehr, 2003; Cox, Gotimer, Roy, Castellanos, Milham, and Kelly, 2010; Smith, 2010). Because dictator game behavior in general, and the influence of loss aversion on offers in particular, might depend on the way a sharing option is presented, two sets of instructions are used. Half of the participants in each timing treatment are given instructions which state that the high earner can increase the amount that the counterpart receives by choosing to give away some of his earnings. These participants are then asked to record the amount that they would like to give away, provided that they end up as high earners. In the instructions to the remaining participants, it is stated that the counterpart's payment can be increased if the high earner chooses to reduce the amount that he receives himself. In this version, the participants are asked to record the amount that they would like to receive from their own earnings. These control treatments will be referred to as Give and Receive treatments, corresponding to whether the dictator states the amount to be given or received. In total, the experiment has four different treatments, organized in a 2×2 design: Before-Give, After-Give, Before-Receive, and After-Receive.[11]

The experiment was conducted at the Norwegian School of Economics

[11]The participants are not informed about the treatment variations.

(NHH) in March 2010 with students from the NHH bachelor's and master's programs in economics and business administration. Participants were recruited via e-mail and signed up online in one of the available sessions. A compensation of 100 NOK ($\approx$ 16 USD) to cover the opportunity cost of participating was announced in the invitation, as well as the opportunity to earn an unspecified amount of money in the experiment.

Eight sessions were conducted in a single day, and each session lasted about 50 minutes, including registration and payment. The lab was set up in a classroom large enough to accommodate at least one free seat between each participant, and dividers were used to limit the participants' ability to observe each other's actions.[12] Treatments were randomly assigned to an equal number of participants within each session. Instructions and interaction took place through a computer interface, and all instructions were given in Norwegian.[13]

4.4 Results

4.4.1 Allocation decisions

Table 4.2 shows the demographic profile of the participants in each of the four treatments. In total, 197 students showed up for the experiment, of which 177 passed the requirements for being included in the analysis.[14] The average age of the participants was 22.9 years, and 40% were female. The participants were, on average, in their third year at NHH.

[Table 4.2 about here.]

[12]Keeping dictators and receivers in the same room has been found to increase the credibility of the experiment (Frohlich, Oppenheimer, and Moore, 2001).

[13]Screen shots of the production task and the allocation choice are included in the appendix.

[14]The computer program skipped the post-experiment questionnaire for the 16 participants in the first session due to empty workstations being logged on to the experiment. In addition, four participants were excluded because they did not pass the earning phase of the experiment. Excluding these 20 participants has no qualitative implications for the result of the analysis.

If the participants were loss averse, and the earning task shifted their reference point, then one would expect the average offers to be higher in the Before treatments than in the After treatments. One would also expect that a higher percentage of the participants would be willing to share some of their endowment in the Before treatments.

As reported in table 4.3, the participants in the Before treatments offered to share 10.9% of their endowment on average, while participants in the After treatments offered to share 9.6% on average. The difference is not statistically significant (Mann-Whitney p-value = 0.93). When the sharing decision came before the earning task, 56.7% chose not to offer anything. Contrary to what loss aversion would imply, this share decreased in the After treatments to 50.6%. The difference in shares of non-sharing participants is also not statistically significant (Pearson's χ^2_1 p-value = 0.42).

The aggregated results are robust with respect to both versions of the instructions. The difference in average offers is somewhat larger in the treatments where the Give formulation was used to present the sharing option, but it is still not statistically significant (Mann-Whitney p-value = 0.49). Where the Receive formulation was used, the difference is smaller, has the opposite sign, and remains statistically insignificant (Mann-Whitney p-value = 0.45). The fractions of non-sharing participants are lower after the earning task, regardless of which instructions were used. The largest difference occurred with the Receive formulation, with 64.4% keeping everything before the earning task, and 54.6% keeping all they had earned after the earning task. This difference is also statistically insignificant (Pearson's χ^2_1 p-value = 0.34). These results suggest that earning the money did not affect the participants' sharing behavior.

In all treatments, the maximum offers were 42.9% (75 NOK) of the dictator's endowment. An offer of 42.9% meant that the payments to the dictator and the receiver would be equal, since the receiver was sure to receive NOK 25 from his own earning task. This sure payment helps to explain why the average offers were somewhat lower than what is commonly observed in dictator games (Camerer, 2003). The average offer across all treatments was

10.2% of the dictator's endowment, meaning that the average receiver was paid 21.5% of the total earnings of his pair.

[Table 4.3 about here.]

Although the participants were allowed to offer any integer amount up to the full endowment of 175 NOK, figure 4.2 shows that the participants generally preferred to make offers that were a multiple of 25 NOK. In all, 89.3% of the offers were either zero, 25 NOK, 50 NOK, or 75 NOK. This behavior may be linked to the initial distribution of the earned endowments (175 NOK to the high earners and 25 NOK to the low earners). If the participants were rounding off their preferred offers, this may have affected the average levels of sharing, as well as the variances of the offer distributions. Even so, one should still expect to see less sharing in the After treatments, relative to the Before treatments, if the participants were loss averse in the sense that is assumed here.

[Figure 4.2 about here.]

4.4.2 Gender differences

Croson and Gneezy (2009); Eckel and Grossman (2008) have remarked that female dictator game participants generally appear to be more sensitive to contextual cues than are male participants. This is also evident in the current experiment, as there are distinct differences in the way that the male and the female participants responded to the timing treatment.[15] While the male participants did not respond to the timing of the decision in a statistically significant way, the female participants did.

With the Give formulation, the female participants reduced their offers from an average of 23.2% before earning their money, to 12.2% on average

[15]The timing effect is statistically significantly stronger for the females than for the males in both the Give and the Receive treatments (t-test p-values < 0.001).

after the earning phase (Mann-Whitney p-value = 0.03). By itself, this result is consistent with loss aversion theory. However, the timing effect was in the opposite direction when the Receive formulation was used. When the female participants were asked to state how much they would like to receive of their own money, the average offer *increased* from 5.7% in the Before treatment, to 11.3% in the After treatment (Mann-Whitney p-value = 0.04).

The average offers from the male participants were 7.6% and 7.1% with the Give formulation, and 10.6% and 8.9% with the Receive formulation, before and after the earning phase, respectively. The differences are in the direction suggested by loss aversion theory, but neither of them are economically or statistically significant (Mann-Whitney p-values = 0.55 and 0.51, respectively).

As shown in table 4.4, the percentage of male participants who chose not to share was relatively stable across the treatments. The percentages ranged from 54.2% in the After-Give treatment to 69.0% in the Before-Give treatment. For the female participants, the choice of whether or not to share appears to strongly depend on the treatment. In the Before-Give treatment only 12.5% chose not to share, while in the Before-Receive treatment 77.8% chose this option.[16]

[Table 4.4 about here.]

The increase in average offers that occurred when the female participants in the Receive treatments earned their money goes against the predictions of loss aversion theory. A potential explanation for this result is that the female participants responded to experimenter demand effects before earning their money, but less so after earning it. That is, they may have interpreted the Receive (Give) formulation as an encouragement from the experimenter to give less (more) than they otherwise would prefer. This interpretation also accounts for the reduction in offers after the earning phase in the Give

[16]The low number of observations suggests that Pearson's chi-squared test may be unreliable in this case. Instead, the difference was tested with a binomial probability test of whether any of the two proportions of non-givers were equal to 0.46. Both tests were rejected with p-values <0.01.

treatments, and why the share of non-giving females varied so much between the Before treatments.

Rosnow and Rosenthal (1997) point out that experimenter demand effects tend to be stronger when the experimenter and participant have a different gender. As all assistants in the experiment were male, this may explain why there were no equivalent effects on the male subsample. The dampening of the experimenter demand effect after the earning phase may be due to more salient entitlements in these treatments.

4.5 Conclusion

The evidence reported in this paper does not support the idea that individuals are loss averse with respect to their status quo wealth level when they decide how to share their money. Loss aversion theory suggests that individuals experience it as more costly to share money when the offer is perceived as a loss, rather than a reduced gain. Assuming that the reference point is the individual's net current endowment, this paper asks whether real effort dictator game participants are more willing to share from expected income than from money they have already earned. The timing of the sharing decision, relative to earning the money, does not affect the sharing decisions made by male participants. While there is a timing effect on sharing by the female participants, this effect is not robust with respect to contextual changes.

The female participants who were asked to report the amount they wished to "give" shared more if they had not yet earned their money. In contrast, the average offers increased after the earning task from the female participants who were asked to report the amount they wished to "receive." There are no elements of loss aversion theory that explain why the timing effect depends on circumstance in the way that is observed here.

A practical implication of the results is that policies directed toward wealth redistribution do not have to be concerned with loss aversion effects. This is relevant for both taxation authorities and charity organizations who could otherwise frame contributions as coming from future income, rather

than status quo wealth, in order to lessen the perceived costs of giving. At the same time, the results also illustrate that framing impacts the willingness to share in ways that are still not satisfactorily understood.[17] Further research is required to explain why timing affected the female participants while the male participants were unaffected.

Two caveats should also be noted. First, when the data is broken down by both treatment and gender, the number of observations per cell becomes relatively small. For any treatment, fewer than 20 participants were female. While the number of observations is large enough to detect statistically significant effects, there is also a risk that the small sample is atypical for the wider population.

Second, it may be the case that most people are loss averse, but that the reference point formation takes a different form than is assumed here. Köszegi and Rabin (2007); Gill and Prowse (2012) argue that expected outcomes are important reference points for individuals. If the expected outcome is the only reference point, this would mean that when the production task and payment mechanism were explained in the beginning of the experiment, the reference point would be set to 100 NOK.[18] Any participant who ended up as a high earner (earning 175 NOK) would therefore have a gain of 75 NOK to give from before incurring losses. This situation would be the same in all the treatments.

Reference-dependent preference theories generally suffer from ambiguity concerning the definition of the reference point. This leaves the theories incomplete and hinders their applicability. Previous research has studied the behavioral effects of fixing the participants' endowments while manipulating their expectations (Arkes, Joyner, Pezzo, Nash, Siegel-Jacobs, and Stone, 1994). The current paper shows how to take the opposite approach by fixing the expectations while manipulating the endowments. This procedure adds a new tool to the toolbox for those interested in identifying the nature of

[17]The is nothing new about the fact that a small change in the way a sharing option is presented may have a large impact on the level of sharing. See Engel (2011) for numerous other examples.

[18]The expected outcome for any participant in the experiment is: $0.5 \cdot 175NOK + 0.5 \cdot 25NOK = 100NOK$.

reference points.

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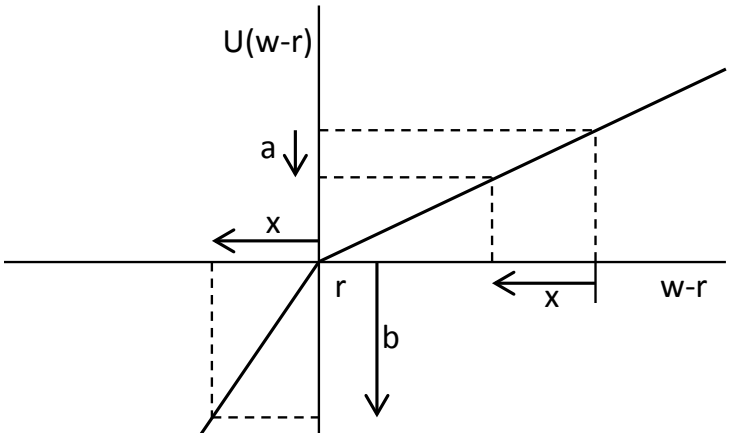
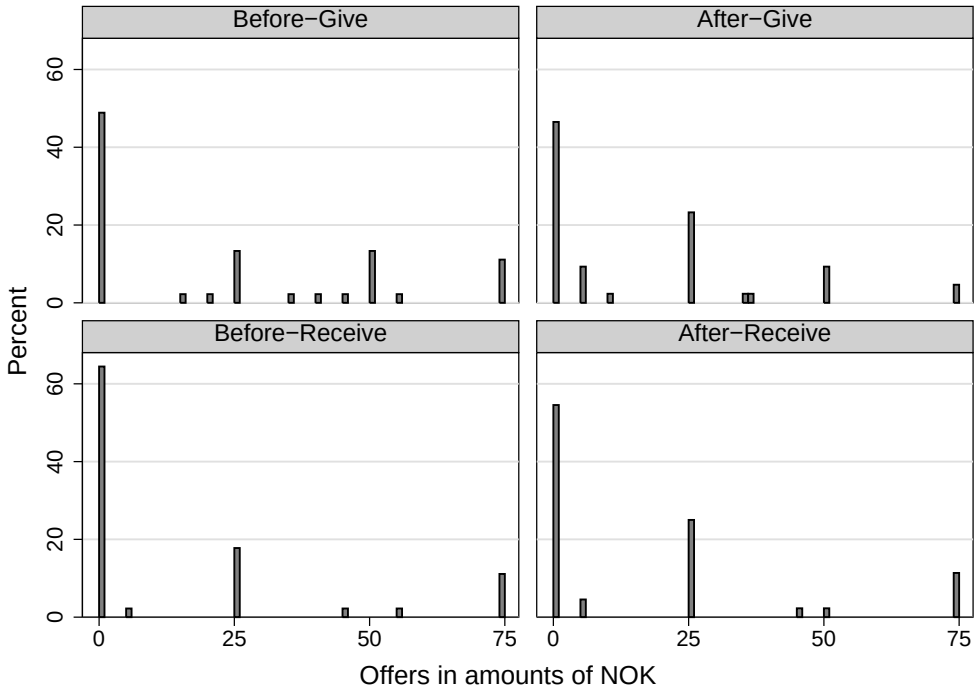
Figure 4.1: Loss aversion may affect sharing decisions



Note: Loss averse individuals derive utility from the difference between their wealth (w) and their reference point (r). In the figure, the reference point is located at the origin. The difference between wealth and the reference point is measured along the abscissa. The utility function is steeper in the loss domain ($w - r < 0$) than in the gain domain ($w - r > 0$). Assuming that the reference point is the individual's status quo wealth level, and that it does not include expected income, parting with an amount (x) will impact utility less if it is deducted from expected income (a) than if it is coming from the status quo wealth level (b).

Figure 4.2: Histograms of offers in each treatment



Note: Dictator offers in NOK. 89.3% of offers are a multiple of 25 NOK .

Table 4.1: Experimental phases

Treatments	Before	After
Phases	Allocation decision	Earning task
	Earning task	Allocation decision
	Questionnaire	Questionnaire
	Payment	Payment

Note: All four treatments consist of the same four phases. The only difference in ordering is whether the allocation phase occurs *before* or *after* the earning task.

Table 4.2: Participant descriptive statistics by treatment

Treatment	Female	Age	Year at NHH	N
Before-Give	36%	23.1	2.8	45
After-Give	44%	23.0	2.7	43
Before-Receive	40%	22.6	3.1	45
After-Receive	39%	22.8	3.1	44
Total	40%	22.9	3.0	177

Note: Averages of the participants' gender, age, and current year of study at NHH, as reported in the post-experiment questionnaire. Two participants chose not to report their year at NHH.

Table 4.3: Aggregate results (%)

Treatment	**Mean offer**	**Standard error**	**Share not offering**	**N**
Before	10.89	1.58	56.67	90
After	9.56	1.41	50.57	87
Before-Give	13.14	2.28	48.89	45
After-Give	9.31	1.84	46.51	43
Before-Receive	8.63	2.15	64.44	45
After-Receive	9.81	2.14	54.55	44

Note: Mean offers and standard errors reported as percentage of the dictator's endowment (175 NOK). Share not offering refers to the share of participants who chose not to offer anything. The first two lines report the pooled results of the respective sub-treatments. (The total number of observations is 177.)

Table 4.4: Results by gender and treatment (%)

Gender	**Statistic**	**Before-Give**	**After-Give**	**Before-Receive**	**After-Receive**
Male	Mean offer	7.59	7.05	10.58	8.89
		(2.37)	(1.95)	(2.98)	(2.84)
	Not offering	69.0	54.2	55.6	66.7
	N	29	24	27	27
Female	Mean offer	23.21	12.18	5.71	11.26
		(3.66)	(3.31)	(2.94)	(3.30)
	Not offering	12.5	36.8	77.8	35.3
	N	16	19	18	17

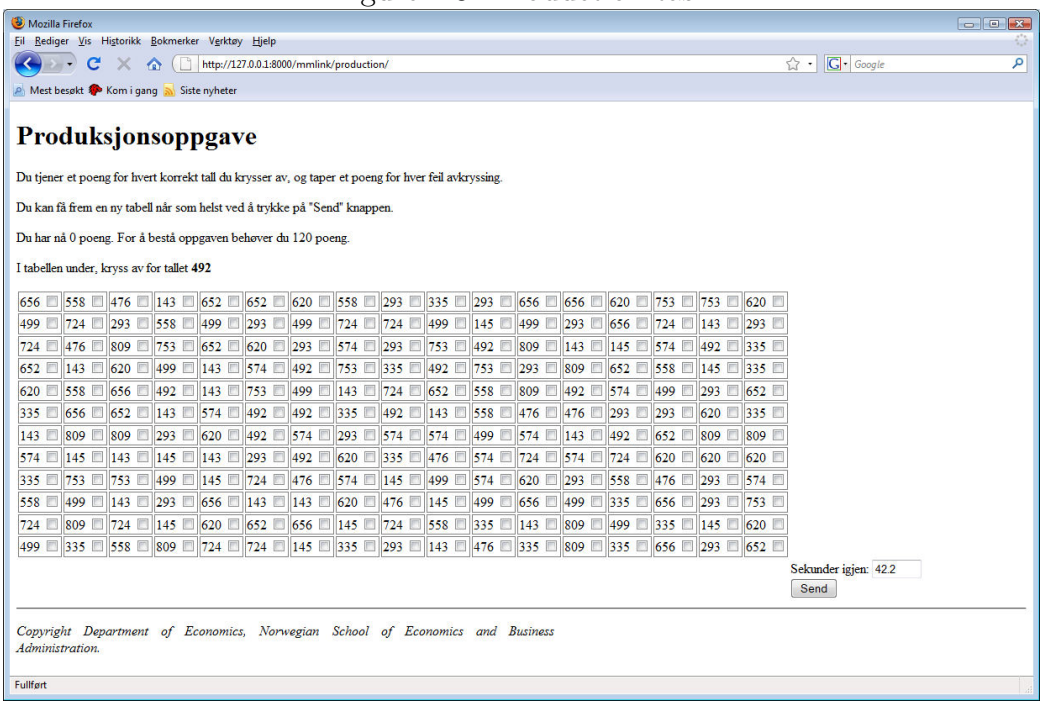
Note: Mean offers are reported as shares of the dictators' endowment (175 NOK). Standard errors in parentheses. Not offering refers to the share of participants who chose not to offer anything.

4.6 Appendix

4.6.1 Selected illustrations

Figure 4.3 shows a screenshot of the task that the participants faced in the production phase.

Figure 4.3: Production task



Translation:
Production task
You earn one point for each correct mark, and lose one point for each incorrect mark.
You may produce a new table at any time by pressing the “Submit” button.
You currently have 0 points. To pass the task you need 120 points.
In the table below, mark the number **492**

Seconds remaining:
[Submit]

Figure 4.4: Allocation choice in the After-Give treatment

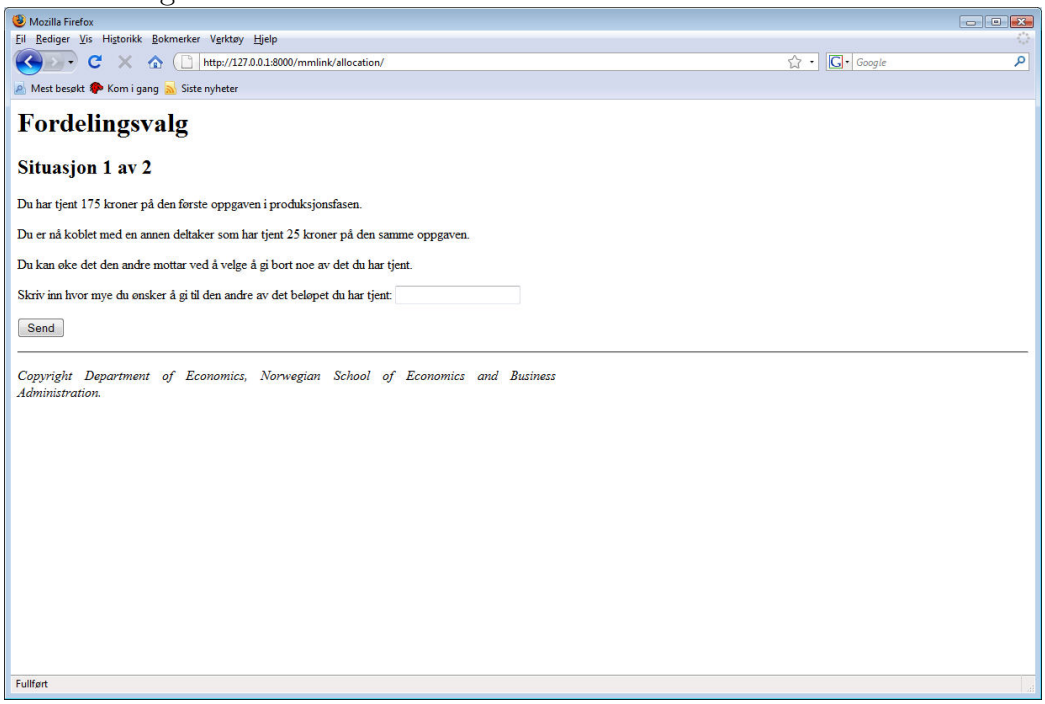
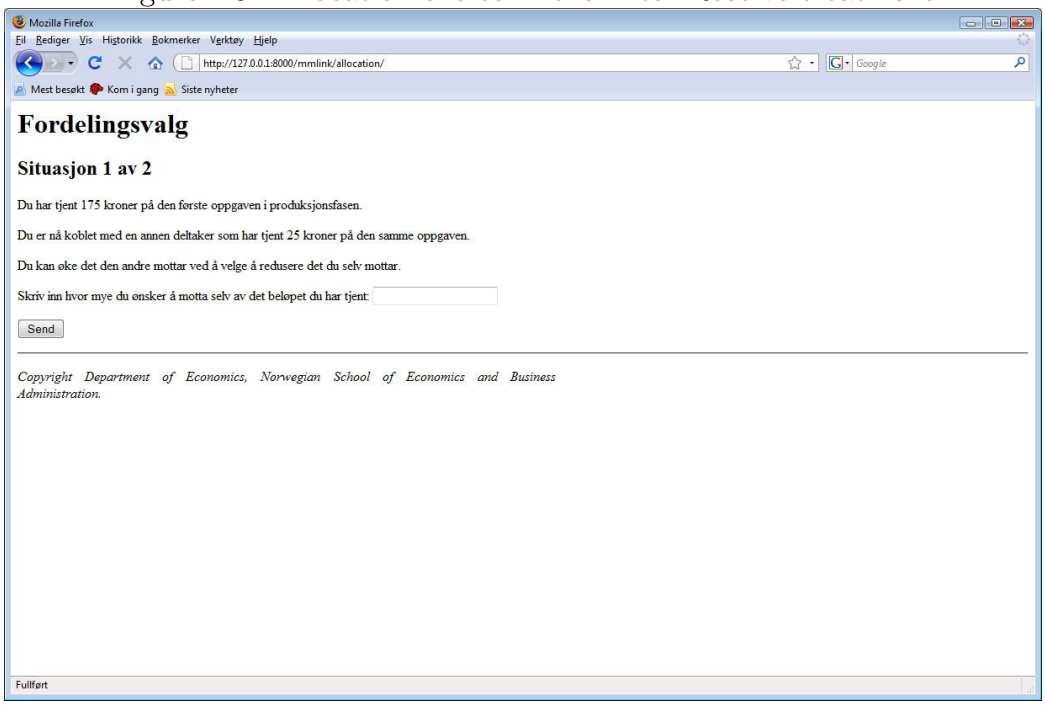


Figure 4.5: Allocation choice in the After-Receive treatment



Translation (After-Give):

Allocation choice
Situation 1 of 2
You have earned 175 NOK from the first task in the production phase.
You are now matched with another participant who has earned 25 NOK from the same task.
You can increase what the other receives by choosing to give away some of what you have earned.
Write down how much you wish to give to the other from the amount you have earned:
[Submit]

Translation (After-Receive):

Allocation choice
Situation 1 of 2
You have earned 175 NOK from the first task in the production phase.
You are now matched with another participant who has earned 25 NOK from the same task.
You can increase what the other receives by choosing to reduce what you receive yourself.
Write down how much you wish to receive yourself from the amount you have earned:
[Submit]