Can social norms lead people to choose less money over more?

by

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Master's thesis

This thesis is a part of completing my:

Master's degree in Economics

University of Bergen, Department of Economics

June 2017

UNIVERSITETET I BERGEN

Acknowledgements

Sondre Vågenes Michelsen, Bergen 01. June 2017

Abstract

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The point of departure for this paper is a surprising finding from an economic experiment. Tjøtta (2016) designs a *more or less game*, where participants are asked to choose between receiving 450 kroner or 250 kroner, conditional on winning a lottery. There is no mention of what happens to foregone money if participants choose the alternative with less money, the choice does not affect the probability of winning the lottery, and the experiment is double blinded. Unlike the dictator game, choosing less money in the more or less game does not imply more money for someone else. It is therefore very surprising that almost one third of participants in the more or less game choose less money over more.

The paper examines if social norms can explain this surprising finding. Social norms have been shown to explain behavior in dictator games very well (Krupka and Weber 2013, Kimbrough and Vostroknutov 2016), can they also explain behavior in the more or less game?

Two main questions are asked: (1) Does social norms differ between the more or less game and the dictator game, or do people interpret them as the same situation? (2) Can social norms explain why some people choose less money over more?

To gain a better understanding of social behavior such as sharing, reciprocity, cooperation, contribution to public goods and costly punishment, it is important to understand what really motivates people to choose less money over more. Is it social norms or something else?

To examine the two main questions, two economic experiments are conducted. The first experiment replicates the more or less experiment from Tjøtta (2016), with some minor alterations. The experiment includes two treatments, (1) the more or less game and (2) the dictator game. In the replication experiment, around 20 percent of participants choose less money over more in the more or less game.

The second experiment elicits social norms from both the more or less game and the dictator game, using a clever elicitation method from Krupka and Weber (2013). The experiment reveals two important insights. First, social norms differ slightly between the two games, indicating that, in general, people perceive the games as two different situations. Second, social norms have a clear effect on behavior in the dictator game, while in the more or less game the effect is less clear.

Even though the paper does not find a general effect of social norms on behavior in the more or less game, it does find that people's perceptions of the social norm varies a lot. It could be possible that social norms affects *some* participant's behavior in the more or less game, but to answer this specific question, further research is required.

Results from both experiments are analyzed using the statistical software Stata/IC 14.1

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Chapter 1 – Introduction

1.1 The surprising experiment

The point of departure for this paper is a surprising finding from an economic experiment. Tjøtta (2016) designs a *more or less game*, where participants are asked to choose between receiving 450 kroner or 250 kroner, conditional on winning a lottery. There is no mention of what happens to foregone money if participants choose the alternative with less money, the choice does not affect the probability of winning the lottery, and the experiment is double blinded. In one treatment, participants also play a dictator game in addition to the more or less game. Surprisingly, almost one third of participants in the more or less game choose less money over more. There is also a high correlation between choosing less money in the more or less game and in the dictator game. How can this result be interpreted?

Outside of the lab, people regularly engage in activities that are costly to themselves and mainly benefit others. People volunteer, vote, return lost wallets, give blood and donate to charities. This *social behavior* is also observed in lab experiments. People share in the dictator game, punish low offers in the ultimatum game, contribute to public goods and cooperate in prisoners dilemma games. When actions affect other people, many are willing to share, trust, cooperate or punish, even if it means less money for themselves.

Observations of social behavior in both lab experiments and real world, have led to the development of social preference theories. They adapt the standard economic model by implementing preferences that go beyond people's own monetary payoff, through concerns for altruism, fairness or equality. People trade off utility derived from higher monetary payoff against utility derived from achieving altruistic, fair or equal outcomes. In the dictator game, where choosing less money for yourself means more money for someone else, social preferences theories can explain behavior fairly well (Fehr and Schmidt 1999, Bolton and Ockenfels 2000, Andreoni and Bernheim 2009).

The fact that some participants choose less money over more, even when doing so does not affect anyone else, is what makes the result from the more or less game puzzling. The result is difficult to explain with simple social preferences models assuming preferences for certain social outcomes, since the more or less game lacks these type of outcomes.

1.2 Why do some people choose less money?

Three possible explanations as to why people choose less money over more should be considered.

First, it is possible that people misinterpret or misunderstand the experiment. Participants might believe they have a higher possibility of winning the lottery if they choose less money. Or they might assume that the decision they make in the more or less game, in some way affects decisions they have to make later in the experiment.

Another possibility, is that participants see the more or less game as a variation of the dictator game. If participants perceive that the money they refrain from will be given back to the experimenter, the more or less game becomes a dictator game with the experimenter as recipient. If this is the case, participants who choose less money for themselves, might have social preferences that favor sharing with the experimenter.

Lastly, it is possible that participants care about acting appropriate and in accordance with a social norm. In economics, social norms have started to receive attention when it comes to explaining social behavior (Krupka and Weber 2013, Kimbrough and Vostroknutov 2016). A complementary approach to simple social preferences theories, is that people have preferences for acting in accordance with social norms, rather than preferences for certain altruistic, fair or equal outcomes. The social norm approach is concerned with the appropriateness of actions, rather than outcomes. If a social norm suggests that choosing more money in the more or less game is inappropriate behavior, that can potentially explain why some people choose less money over more.

1.3 Purpose

The purpose of this paper is to examine what effect social norms might have on behavior in both the more or less game and the dictator game. Two questions are examined. First, are there different social norms affecting behavior in the more or less game and dictator game, or do people interpret them as the same situation? Second, can a preference for following a social norm explain why some people choose less money over more in the more or less game?

Understanding what motivates choosing less money over more in the more or less game, can lead to a better understanding of social behavior such as sharing, reciprocity, cooperation, contribution to public goods and costly punishment. If neither simple social preference models, nor the social norms approach can account for the surprising result in the more or less game, other explanations than social preferences should be considered.

1.4 Method

To examine the two main questions of the paper, two economic experiments are conducted. The first experiment replicates the more or less game from Tjøtta (2016), to check the robustness of the findings. The experiment includes two treatments, the more or less game (1) and the dictator game (2). A between-subject design is used, where participants face either the more or less game or the dictator game.

The second experiment elicits social norms from the more or less game and the dictator game, using a clever experimental design from Krupka and Weber (2013). Participants see descriptions of different hypothetical situations[1] in which a person face a choice among several possible alternatives. For each situation, participants are asked to evaluate the social appropriateness of all available actions for the decision maker. To reveal the social norm, the experiment is designed as a coordination game, where participants are incentivized to match the responses of others. At the end of the experiment, a random action is drawn, and if a participant's response to the action is the same as the modal response, the participant receives an extra payment.

In the analysis of the results, elicited social norms from the more or less game and dictator game are compared, to examine if people interpret the two situations differently. Next, the elicited social norms are included as a component of utility in a conditional logit choice model, to predict behavior in the two games, and to examine if the model can explain why some people choose less money over more in the more or less game.

1.5 Structure

The rest of the paper is structured as follows. Chapter 2 deals with the replication of the more or less experiment. The original experiment from Tjøtta (2016) is described in more detail, before experimental design of the replication experiment is discussed. The chapter ends with a presentation of the results from the replication experiment.

Chapter 3 deals with the social norm elicitation experiment. The chapter starts with an overview of social preference theories, before a social preference theory for following a social norm is presented. Next, experimental design from the norm elicitation experiment is discussed, before results are presented and analyzed.

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[1] The two situations were: The more or less game (1) and the dictator game (2)

Chapter 4 summarizes and discusses the results. Main findings are presented and potential weaknesses of the method and analysis are highlighted. The chapter ends with a look at a different view on the effect of social norms on behavior, and with a suggestion for further research.

Chapter 2 – Replicating the more or less experiment

2.1 The more or less experiment from Tjøtta (2016) – An overview

Tjøtta (2016) conducted seven different variations of the more or less game, with more than 3500 participants in total. The first four more or less games were conducted as classroom experiments, the fifth was conducted as a lab experiment and the sixth and seventh were conducted using web-based surveys (Ivarsflaten, Andersson et al. 2015). Participants were paid real money and the experiments were double blinded. The more or less question was framed as follows:

Two persons in the auditorium will be randomly drawn to receive money. If you are one of those two persons, you can decide whether you will receive 250 kroner or 450 kroner. You can only mark one of the options. If you mark two or none, you will receive 0 kr. Mark your choice:

I will accept 450 kroner, thank you.

I will accept 250 kroner, thank you.

In the first experiment, participants faced both the more or less game and a binary dictator game[2], in randomized order. In the second experiment, participants faced *either* the more or less game or the dictator game. 31.9 percent of participants chose less money over more in the more or less experiments.

To examine if having experience from similar economic experiments makes people more likely to accept money, Tjøtta (2016) conducted two more classroom experiments with both inexperienced and experienced participants. In the two experiments, 30.4 percent of participants chose less money, and neither experience from experiments or number of semesters studied, seemed to affect the tendency to accept less money over more.

The fifth experiment examined if a stronger entitlement to the money would make people more likely to accept more money. Participants volunteered to a lab experiment and received

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[2] In the binary dictator game, dictators were asked to split 500 kroner between themselves and a recipient. The alternatives were: Even split (250,250) or uneven split (450,50).

a show-up fee of 100 kroner. They were informed that 10 participants in each session would be drawn to win 500 kroner, and the more or less question was framed as how much money do you want to *keep* for yourself. Participants could freely choose how much money to keep. The more or less question came after repeated prisoner's dilemma game lasting around 35 minutes. In this experiment, 64.5 percent of participants chose less money over more. On average, participants kept 71.3 percent of the money they were endowed.

The sixth and seventh experiments were conducted using web-based surveys (Ivarsflaten, Andersson et al. 2015). Experiment six asked participants to explain their choices. Among those who chose less money, 42.1 percent stated non-distributive norms as explanations, while 26.1 percent stated concern for distributive norms. 12.1 percent had misunderstood or misinterpreted the experiment.

Experiment seven asked participants to reflect on the decision before making it. Reflection in combination with experience surprisingly caused an increase in the tendency to accept less money.

Table 1 below, summarizes the seven different variations of the more or less game from Tjøtta (2016).

Table 1 – Summary of the more or less experiment

Experiment	N	Type	Treatments	Less money
1	91	Classroom	More/less + dictator (Within subject)	28.6%
2	151	Classroom	More/less + dictator (Between subject)	36.0%
3	78	Classroom	Experience vs inexperience	30.4%
4	104	Classroom	Experience vs inexperience	30.4%
5	200	Lab	Strengthening entitlements	64.5%
6	1019	Web-based survey	Explaining their choices	22.6%
7	1861	Web-based survey	Reflection	29.2%

Main findings

Two important findings stand out. In the more or less game, around one third of participants chose less money over more, in classroom experiments, lab experiments and in web-based surveys, even when controlling for experience, reflection and stronger entitlement to the money.

Second, there was a strong correlation between choosing less money in the dictator game and in the more or less game. Of participants that faced both the more or less game and the dictator game, 59.3 percent *gave away* the same amount in both games (Tjøtta 2016). That people choose less money over more, even when doing so does not affect anyone else, is what makes the result from the more or less game puzzling.

To check the robustness of the results from the original more or less experiment from Tjøtta (2016), a replication experiment is included in this paper. Experimental design and results from the replication experiment are presented in the next two sections.

2.2 Experimental design – Replication of the more or less experiment
The experiment include two treatments: The more or less game (1) and the dictator game (2).

The experiment deviates from the one in Tjøtta (2016) in three ways. In the original experiment, participants choose between more money (450 kroner) and less money (250 kroner), but there is no explicit alternative to choose no money[3]. To gain a better understanding of what motivates choosing less money over more, the experiment includes five alternatives in both treatments. The alternatives are: 800 kroner, 600 kroner, 400 kroner, 200 kroner or 0 kroner.

Second, the original experiment is framed as receiving money from a lottery, where participants have to choose how much money to *accept*. In order to minimize the difference between the more or less game and the dictator game, both treatments are framed as *keeping* money, conditional on winning a lottery.

Third, the original experiment uses a within-subject design when comparing behavior in the dictator game and the more or less game. In the replication experiment, a between-subject design is used, where it is not possible to examine correlation in individual behavior between the two treatments.

Lab or classroom experiment?
The experiment was conducted as a lab experiment. The University of Bergen have access to a lab facility, *The citizen lab*. The lab experiment offered more anonymity, as partition walls separate seats in the lab. It also made it easier to control the number of participants in each session, and made it possible to run experiments with a longer duration.

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[3] Even though there is no explicit alternative to keep 0 NOK, the participants in Tjøtta (2016) do have the possibility to give no answer, which leads to them not taking part in the lottery.

Within-subject or between-subject design?

A within-subject design, where each participant face both the more or less game and the dictator game, would give more observations and make it possible to compare individual behavior in the two treatments. On the other hand, a within-subject design might lead to carryover effects and experimenter demand effects. If decisions made in one treatment affect decisions in the other treatment, there is a carryover effect. If participants can identify the research objective of the experiment, they might want to help the experimenter by giving the correct response. This is known as an experimenter demand effect (Zizzo 2010). Given the similarities between the two treatments, carryover and experimenter demand effects could be present with a within-subject design. In order to avoid such effects, a between subject design was preferred.

That being said, the experiment was conducted together with a different dictator experiment. Even though participants only faced either the more or less game or the dictator game, they did also face a different variation of the dictator game. The other dictator game examined framing effects on giving in dictator games, and did not resemble the more or less game[4].

General instructions

All participants received general written instructions before the experiment. The instructions included short information on the experiment and questions about gender, studies and experience from other experiments. The experiment was conducted in Norwegian. Appendix B includes instructions in Norwegian and an English translation.

Treatment instructions

Instructions in the two treatments were designed to be as similar as possible. In both treatments, participants were informed that a person would be drawn to receive 800 kroner. In the dictator game, participants had to decide how much money to keep, and were explicitly informed that the money they did not keep for themselves would be given to another participant. In the more or less game, participants were not given any information on what would happen to foregone money. The two games were presented to participants in the following way[5]. See appendix B for instructions in Norwegian.

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[4] The other dictator game experiment was conducted by Oda Sund, and will be used in her master's thesis
[5] The experiment was conducted in Norwegian, instructions presented on the next page have been translated to English.

Treatment 1 – Dictator game

Person A is drawn to receive 800 kroner. If you are drawn to be person A you have to make a decision in advance, on how much money you want to keep. The money you do not keep for yourself will be given to a randomly drawn person, person B. You can choose between keeping 800 kroner, 600 kroner, 400 kroner, 200 kroner or 0 kroner.

I choose to keep:	Your answer
Keep 800 kr (800 kr for you, 0 kr for person B)	
Keep 600 kr (600 kr for you, 200 kr for person B)	
Keep 400 kr (400 kr for you, 400 kr for person B)	
Keep 200 kr (200 kr for you, 600 kr for person B)	
Keep 0 kr (0 kr for you, 800 kr for person B)	

Treatment 2 – More or less question

Person A is drawn to receive 800 kroner. If you are drawn to be person A you have to make a decision in advance, on how much money you want to keep. You can choose between keeping 800 kroner, 600 kroner, 400 kroner, 200 kroner or 0 kroner.

I choose to keep:	Your answer
Keep 800 kr (800 kr)	
Keep 600 kr (600 kr)	
Keep 400 kr (400 kr)	
Keep 200 kr (200 kr)	
Keep 0 kr (0 kr)	

Randomization

In order to avoid participants selecting into one of the treatments, participants were randomly assigned to either the dictator treatment or the more or less treatment. Before the experiment, a random number generator[6] was used to decide the order of the sheets handed out. Additionally, participants drew a number from a bowl when entering the lab, assigning them to a specific seat.

Payments

Participants received a show-up fee of 50 kroner. To limit costs of the experiment, a lottery decided which participants would have their decisions realized. Participants were clearly informed about this in the written instructions. The experiment consisted of four sessions, where two participants in each session were drawn as winners of the lottery.

That payments in both treatments are conditional on winning the lottery leads to weaker monetary incentives. In a meta-study on dictator games, Engel (2011) finds that uncertainty about whether the decision of the dictator becomes effective, leads to a negative effect on sharing. One way to interpret this finding, is that weaker monetary incentives make acting kind or fair relatively cheaper. If participants perceive the more or less game as a dictator game with the experimenter as recipient, the weaker monetary incentives could make giving money back to the experimenter more desirable. On the other hand, if participants perceive the more or less game simply as a choice between more or less money, weaker monetary incentives should not have an effect.

Experimental procedure

The experiment was conducted together with another dictator game experiment[7], in the Citizen Lab at the University of Bergen, on the 28.febuary 2017. The experiment consisted of four sessions, with a total of 117 participants. 58 participants faced the more or less game, while 59 participants faced the dictator game. One participant in the more or less game gave a blank answer, and one participant in the dictator game failed to give a meaningful answer.

We recruited participants using the software Hroot[8], which is a database where volunteers can sign up to receive invitations to economic experiments. The database consists mainly of

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[6] https://www.random.org
[7] The other dictator game experiment was conducted by Oda Sund, and will be used in her master's thesis
[8] https://medborgerlab.app.uib.no/

students from different faculties at the University of Bergen. Around 900 potential participants were invited through email, and could register for the experiment through a webpage. Each participant were only allowed to register for one session.

In the invitation email[9], participants were informed about time, place, financing of the experiment, that the experiment was anonymous and that it did not require any prior knowledge to participate. They were also informed that the experiment had an expected duration of 15 minutes, and that they would receive a show-up fee of 50 kroner, with the possibility to earn more based on the answers they would give in the experiment.

In the days leading up to the experiment, reminder emails were sent out to invited participants who had not yet replied. The day before the experiment, registered participants received an email with information about the experiment. We received a few questions regarding what participants were expected to do in the experiment, and a few cancelations. We also received feedback from some participants who were uncertain about when their sessions started. Because of this, an additional reminder email were sent out, clearly specifying time and place of the experiment.

On the day of the experiment, we had booked the lab, a control room and a waiting room. When participants arrived at the lab they were met by either a lab-assistant or an experimenter, who registered them and showed them to the waiting room. When all participants had arrived, they drew a letter from a bowl, which assigned them to their seat in the lab. This letter also worked as participant-id.

The experiment was conducted using pen and paper. Sheets containing instructions and the experiment were placed on each seat before the participants entered the lab.

When participants had entered the lab and found their seats, an experimenter gave instructions. The participants were informed about who conducted and financed the experiment, about the expected duration of the experiment and that it would be impossible for both the experimenters and other participants to identify answers they would give in the experiment. They were also asked not to communicate with each other during the experiment. An experimenter was available in the lab throughout the whole experiment to answer potential questions. This experimenter was located at a desk in the front corner of the lab, with no possibility to see participants, unless they raised a hand for questions.

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[9] See Appendix A for the invitation email

A lab assistant and an experimenter were located in the control room during the experiment, where they drew winners of the lottery and distributed payoffs into envelopes. After the experiment, envelopes with payoffs were given to the experimenter in the lab, who then handed them out to the participants. This secured double blindness of the experiment.

Three people were involved in conducting the experiment. Two experimenters and one lab-assistant. One experimenter was responsible for instructions in the lab, answering potential questions and handing out envelopes with payoff to the participants. The other experimenter and the lab-assistant were responsible for welcoming and registering participants, drawing winners and distributing payoffs into envelopes. These two had no contact with the participants in the lab after the experiment had started.

The four sessions had an average duration of about 12-15 minutes, with the experiment itself taking between 3-5 minutes. We had no issues while conducting the experiment.

2.3 Results – Replication of the more or less experiment

Figure 1 and Figure 2, show results from the two different treatments in the experiment, the dictator game and the more or less game.

Figure 1 – Results dictator game
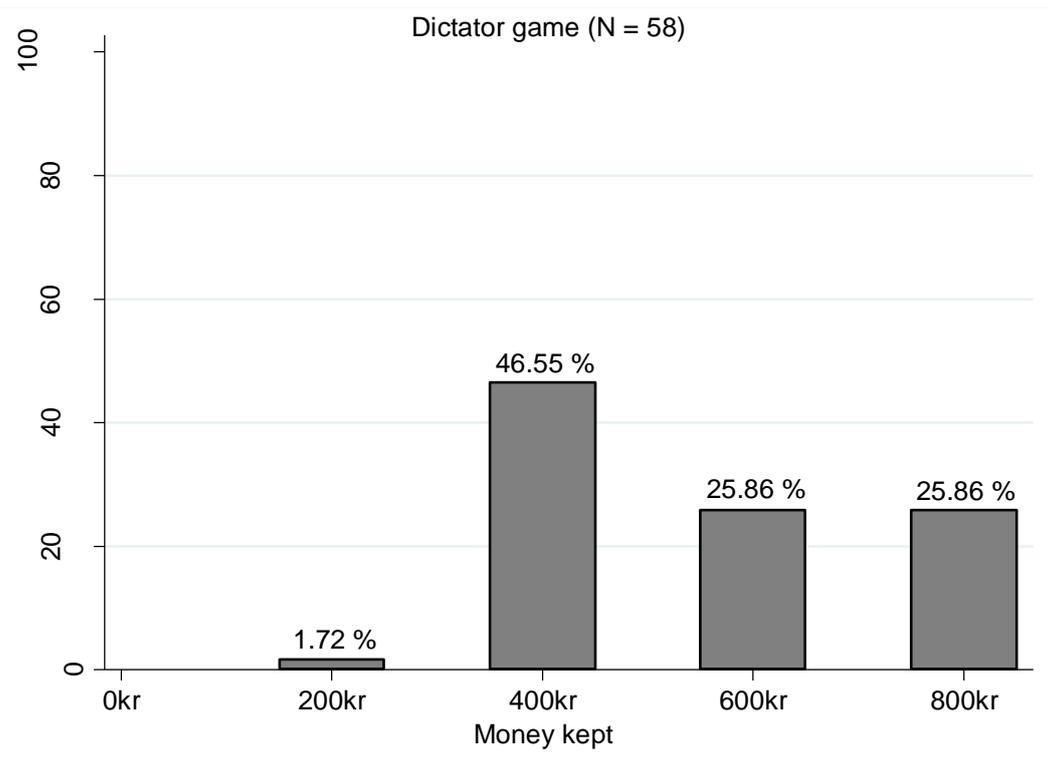
Dictator game (N = 58)

Figure 2 – Results more or less game

More or less (N = 57)
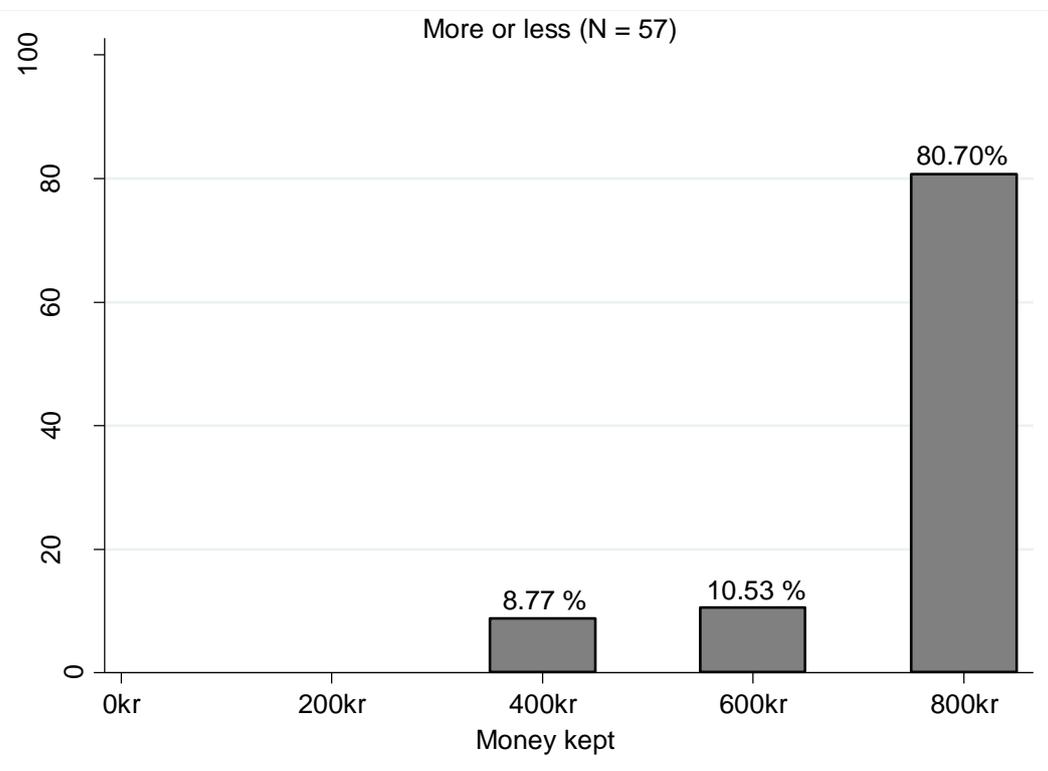
In the dictator game, the most common response was to keep half the money, and share half with the other participant. Around 25 percent of participants kept all the money for themselves, and only one participant kept less than half. This result is consistent with the experimental evidence from other dictator games (Engel 2011).

In the more or less game, the most common response was to keep all the money. Around 19 percent of participants kept less, either by choosing 600 kroner or 400 kroner, and no participants kept less than half. The results are similar to the ones reported in Tjøtta (2016). The surprising finding that some people choose less money in the more or less game is still present, but to a smaller degree.

The smaller share of participants choosing less money, could potentially be explained by an entitlement effect from framing the more or less game as *keeping* money. If participants perceive the money as their own, it might be more acceptable to keep it. In dictator games where dictators have had to earn the money they are to distribute, dictators keep significantly more for themselves (Cherry, Frykblom et al. 2002). In his meta study, Engel (2011) finds that framing the dictator game so that the dictator feels entitled to the money, leads to a small and weakly significant effect on keeping money.

The main difference between the two treatments is that participants keep significantly more money in the more or less treatment than in the dictator treatment. Without an explicit recipient of the forgone money, people keep more.

Chapter 3 – Social norms in the more or less game and dictator game

3.1 Social preference theories and social norms

A common assumption in standard economic theory has been that people are narrowly self-interested. When faced with a decision-making problem, people will maximize their own monetary payoff without concern for other people's payoff or for social goals.

In the 1980s, observations from the ultimatum game (Guth, Schmittberger et al. 1982) questioned the self-interest assumption. The ultimatum game is a two-stage economic decision making game that investigate ultimatum bargaining situations. Players are assigned in random pairs where one player is given the role as *proposer*, the other as *responder*. In the first stage, the proposer receives an endowment and makes a proposal on how to spilt the endowment between himself and the responder. In the second stage, the responder either accepts or rejects the proposal. If accepted, the endowment is split according to the proposal. If rejected, both players get nothing.

According to game theory, the proposer should maximize his earnings by proposing a split where the responder receives an amount that is marginally larger than zero. The responder should accept any proposal larger than zero.

The typical finding from the ultimatum game, deviates from the predicted behavior of standard economic theory. Proposers usually offer to share between 25-50 percent of the endowment with the responder, and offers below 5 percent are rare. Responders frequently reject offers below 20 percent (Roth 1995).

To further explore the findings from the ultimatum game, a modified version of the game was designed, the dictator game (Kahneman, Knetsch et al. 1986, Forsythe, Horowitz et al. 1994). In the dictator game, the responder's ability to reject the proposal is removed. Players are assigned into random pairs, where one player is given the role as *dictator*, the other as *recipient.* The dictator receives an endowment, and decides how to spilt the endowment between himself and the recipient. The recipient has no choice but to accept the proposed split, so that the dictator has no strategic concerns when making his decision.

Removing strategic concerns from the ultimatum game, reduces the amount shared with the recipient, but not completely. On average, dictators share around 28 percent of their

endowment, and only about 36 percent of dictators take everything for themselves (Engel 2011).

To explain why some people share with the recipient, even though it means less money for themselves, social preference theories were developed. They argue that people have preferences that go beyond maximizing their own payoff, through concerns for altruism, fairness, reciprocity or equality (Levine 1998, Fehr and Schmidt 1999, Bolton and Ockenfels 2000, Charness and Rabin 2002).

Social preference theories assume that people's utility depends both on their own monetary payoff, but also on the monetary payoff of a reference group of others. People have certain, exogenously given, preferences for altruistic, fair or equal outcomes, and could be willing to sacrifice monetary payoff to achieve these outcomes.

Simple social preferences models can successfully explain behavior in many variations of the ultimatum game and the dictator game, and are currently the leading theory when it comes to explaining *social behavior* in economics.

Despite the success of the social preferences models, there are still some observations from lab experiments that are difficult to explain using the simple models. Small changes to choice context and framing of an experiment can cause significant changes to outcome. Dictator games where participants *take* from, instead of *give* to an anonymous recipient, results in people leaving more money for the recipient (List 2007, Bardsley 2008). If people have a preference for a certain social outcome, it should not matter whether this outcome is achieved by taking money or giving money.

Other examples include dictator games where the degree of anonymity and sense of entitlement to the money affect dictator giving (Hoffman, Mccabe et al. 1994) (Cherry, Frykblom et al. 2002), and prisoner's dilemma games where the name of the game leads to different levels of cooperation[10] (Liberman, Samuels et al. 2004).

The more or less game from Tjøtta (2016) is also difficult to explain using simple social preferences models. When there are no outcomes that can be considered altruistic, fair or equal, why do some people choose less money over more?

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[10] When the game is called "Community game", levels of cooperation are significantly higher than when the game is called "Wall Street game".

A social preference theory for following social norms

To explain both the existence and the dynamics of social behavior, a complementary approach to the simple social preference models has been suggested. The approach argue that people care about acting appropriate and in accordance with social norms. Social behavior is not driven directly by preferences for altruistic, fair or equal payoff distributions, but indirectly by preferences for following social norms, see for example Krupka and Weber (2013) and Kimbrough and Vostroknutov (2016). Heterogeneity in observed social behavior across different variations of experiments, can then be explained by the fact that social norms vary with context. To give money in a dictator game will probably be considered appropriate behavior in accordance with the social norm, while taking money might be considered inappropriate. Can this approach explain behavior in the more or less game?

3.2 Definition of a social norm

When examining the effect of a social norm on behavior, it is necessary to define what a social norm is. Several definitions exist in the literature, but two distinct features are usually present. First, social norms normally apply to actions or behavior rather than outcomes. Elster (1989) distinguishes between *rational action* which is outcome oriented, and *social norms* which are not. Rational action says that if you want to achieve outcome Y, do action X. Social norms on the other hand, say that you *should do* action X, or you *should not do* action Z.

When it comes to social norms, the appropriateness of two different actions producing the same outcome might be considered very differently. Taking money from someone to achieve equality might be considered inappropriate, while giving money to achieve the same equal outcome might be considered appropriate. When it comes to rational action, outcome is the variable of interest. If an equal outcome is preferred, it does not matter if achieving the equal outcome is done by taking or by giving.

Second, for a norm to be social, it must be jointly recognized in a population or group. According to Ostrom (2000), social norms are shared understandings about actions that are obligatory, permitted, or forbidden.

Additionally, it is common to distinguish between injunctive social norms and descriptive social norms. Injunctive norms describe what people *ought to do*. Descriptive norms describe actions that people regularly take, and is closely related to customs or conventions. Both injunctive and descriptive social norms might affect behavior, but the focus in this paper is on injunctive social norms.

Finally, it is important to note that if an action is considered the most appropriate action in a given situation, it does not necessarily make all other actions inappropriate. If the social norm is tipping 20 percent after having dinner at a restaurant, tipping 10 percent or 30 percent does not automatically become inappropriate. Other actions can still be considered appropriate, just less appropriate than the norm.

When do people conform to social norms?

Bicchieri (2006) argues that people conform to a social norm when they believe that both most others conform to the norm, and most others *expect* them to conform to the norm. In this view, if a social norm is to affect behavior, people should share a belief that others are conforming to the norm, together with a belief that they are themselves *expected* to follow the norm.

The definition of a social norm used in this paper can be summarized as:

A shared understanding in a group or population, of what constitutes appropriate behavior, or appropriate action, in a given situation.

3.3 Eliciting social norms through an economic experiment

To elicit social norms that might affect behavior in the more or less game and dictator game, a clever elicitation method developed by Krupka and Weber (2013) can be used. Participants are presented with descriptions of different hypothetical situations in which a person face a choice among several possible alternatives. For each situation, participants are asked to evaluate the social appropriateness of all available actions for the decision maker. The evaluation is done on the following scale[11]:

Very socially inappropriate (-1) – Somewhat socially inappropriate (-1/3) – Somewhat socially appropriate (1/3) - Very socially appropriate (1)

To reveal the social norm, the experiment is designed as a coordination game, where participants are incentivized to match the response of others, instead of revealing their own personal preferences. The incentive is created by drawing a random action at the end of the experiment, and if a participant's response to the action is the same as the modal response, the participant receives an extra payment. Participants are thus incentivized to reveal how they believe most others would evaluate the appropriateness of different actions.

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[11] The different levels of appropriateness are given values from -1 to +1.

For example, in a dictator game, if the randomly drawn action is *"Give everything to the recipient"*, and the most frequently given response to this action is *"Very socially appropriate",* all participants who have given this response will receive an extra payment. Participants who have given other responses will not receive the extra payment.

From the coordination game, it is possible to elicit a *norm profile* that shows the *mean appropriateness ratings* of all available actions in a situation. The norm profile can be used to say whether or not there is a clear and well defined social norm in the situation, and what behavior would be considered in accordance with such a norm. To examine if social norms differ between the situations, elicited norm profiles can be compared.

Furthermore, it is also possible to include the elicited norm profile as a component of utility in a conditional logit choice model. The model can be used to predict behavior in situations where social norms might affect behavior.

3.4 Including a preference for following social norms in a simple utility framework

A social preference model that includes a preference for following social norms can be modeled as follows. The model is from Krupka and Weber (2013).

If $A = (a_1, a_2 \ldots \ldots a_k)$ represents a set of k available actions in a situation, it is possible to define a social norm in the situation as: $N(a_k) \in [-1, 1]$. The social norm is a shared understanding of the degree of appropriateness for each available action in the situation. The elicited norm profile from the coordination game described above, which consists of mean appropriateness ratings for all available actions, can be used as an estimate for $N(a_k)$.

If an action k is considered appropriate then: $N(a_k) > 0$. If an action k is considered inappropriate then: $N(a_k) < 0$. This definition of a social norm also allows for two appropriate (or inappropriate) actions to differ. Consider two actions l and m. Both actions are considered appropriate so that: $N(a_l) > 0$ and $N(a_m) > 0$. If action l is considered more appropriate than action m, then: $N(a_l) > N(a_m) > 0$.

Assume that people have preferences both for the monetary payoff produced by an action and whether the action is considered socially appropriate and in accordance with the social norm. A utility function that defines the utility derived from an action is:

$$u_i(a_k) = V\big(\pi_i(a_k)\big) + \gamma N(a_k)$$

$u_i(a_k)$ = Utility from action k

V = Weight put on monetary payoff

$\pi(a_k)$ = Monetary payoff from action k

γ = Weight put on acting in accordance with the social norm

$N(a_k)$ = The appropriateness of action k (The social norm)

In this simple framework, people will choose the utility maximizing action a_k^*, out of A possible actions. Different actions produce different utility, depending on the monetary payoff they produce, $\pi(a_k)$, whether the action is appropriate, $N(a_k)$ and the weights put on monetary payoff (V) and acting in accordance with the norm (γ).

If someone does not care about adhering to social norms, then $\gamma = 0$ and they will choose the action that maximize monetary payoff.

In a situation with no well-defined social norm affecting behavior, values for $N(a_k)$ will be similar for all actions. For example, if all available actions in a situation are considered *"Very socially appropriate"*, then $N(a_k) = 1$ for all k actions. When $N(a_k)$ take on the same value for all actions, utility will be maximized by choosing the action that produce the highest monetary payoff[12].

In situations where actions differ in social appropriateness, it is not given that people will choose the action that produces the highest monetary payoff. Instead, they will trade off utility derived from monetary payoff and utility derived from adhering to the social norm.

The value of γ can differ from person to person, and explains heterogeneity in behavior within situations where there is a well-defined social norm. The value of V allow individuals to put a greater weight on monetary payoff when stakes are high. It seems reasonable to assume that the higher the stakes, the higher the weight on monetary payoff.

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[12] When all actions are equally appropriate, the utility gain from acting appropriate is the same for all actions.

The next section describes the experimental design in the norm elicitation experiment, which was used to obtain estimates for the social norms, $N(a_k)$, in the more or less game and dictator game.

3.5 Experimental design – Norm elicitation experiment

The objective of the norm elicitation experiment was to identify social norms related to the more or less game and the dictator game. Participants were presented with two hypothetical situations, one describing the more or less game, the other describing the dictator game.

Within subject or between subject design?

The experiment was conducted twice, once as a lab experiment and once as a classroom experiment. The lab experiment used a within-subject design where each participant evaluated both the more or less game and the dictator game. The design gives more observations per participant and reduces error variance associated with individual differences. On the other hand, the design might lead to carryover effects and experimenter demand effects.

In order to control the results from the lab experiment for carryover and experimenter demand effects, the classroom experiment used a between-subject design, where participants only evaluated *one* situation. In the results section of this chapter, results from both the lab experiment and the classroom experiment are presented, together with a short discussion on differences between the results.

General instructions

All participants received general written instructions. They received short information on the experiment and were asked about gender, studies and experience from other experiments. Participants in both lab and classroom experiments received the same instructions. The experiments were conducted in Norwegian. Appendix B includes instructions in Norwegian and an English translation.

Treatment instructions

The experiment included two treatments. Evaluation of the more or less game (1) and evaluation of the dictator game (2). As in the replication of the more or less experiment, instructions in the two treatments were designed to be as similar as possible, with the exception of mentioning what happens to foregone money in the more or less game.

Situations were presented in the same way in both lab and classroom experiments. In the lab experiment participants evaluated a total of five different hypothetical situations, including both the dictator game and the more or less game. In the classroom experiment, participants only evaluated *one* situation, either the dictator game or the more or less game. The hypothetical situations for eliciting social norms in the two treatments were presented to participants as follows[13]:

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[13] The experiment was conducted in Norwegian, instructions presented on the next page have been translated to English.

Treatment 1 – Eliciting norms dictator game

Assume that Person A takes part in a lottery to win 800 kr. In advance, Person A will have to make a decision on how much money to keep. The money that is not kept, will be given to a randomly drawn person, Person B. Person A can choose to keep 800 kroner, 600 kroner, 400 kroner, 200 kroner or 0 kroner.

The table below shows all available actions for Person A. Please indicate how socially appropriate each of the five actions are. Remember that if your evaluation of a randomly drawn action matches the most frequently given response, you have a chance to win 500 kroner. Please mark your answers.

Person A's alternatives	Very socially inappropriate	Somewhat socially inappropriate	Somewhat socially appropriate	Very socially appropriate
Keep 800 (800 kr for A, 0 kr for B)				
Keep 600 (600 kr for A, 200 kr for B)				
Keep 400 (400 kr for A, 400 kr for B)				
Keep 200 (200 kr for A, 600 kr for B)				
Keep 0 (0 kr for A, 800 kr for B)				

Treatment 2 – Eliciting norms in the more or less game

Assume that Person A takes part in a lottery to win 800 kr. In advance, Person A will have to make a decision on how much money to keep. Person A can choose to keep 800 kroner, 600 kroner, 400 kroner, 200 kroner or 0 kroner.

The table below shows all available actions for Person A. Please indicate how socially appropriate each of the five actions are. Remember that if your evaluation of a randomly drawn action matches the most frequently given response, you have a chance to win 500 kroner. Please mark your answers.

Person A's alternatives	Very socially inappropriate	Somewhat socially inappropriate	Somewhat socially appropriate	Very socially appropriate
Keep 800 (800 kr)				
Keep 600 (600 kr)				
Keep 400 (400 kr)				
Keep 200 (200 kr)				
Keep 0 (0 kr)				

Randomization

In the lab experiment, all participants received a sheet with five hypothetical situations. For practical reasons the order of the situations was fixed, not randomized[14]. If there are carryover effects from evaluating one situation to another, the results might be skewed. In their norm elicitation experiment, Krupka and Weber (2013) present participants with several hypothetical situations in a fixed order, but not including more than one treatment from each game.

In the classroom experiment, sheets were handed out in randomized order. Each sheet contained only *one* hypothetical situation.

Payments

In the lab experiment, participants received a show-up fee of 50 kroner. As noted in the instructions, they also had a possibility to win 500 kroner based on the evaluation they gave in the experiment. In the four sessions of the lab experiment, 12 participants that had matched the most frequently given response for a randomly drawn action, won 500 kroner.

In the classroom experiment, participants did not receive a show-up fee. 10 participants that had matched the most frequently given response for a randomly drawn action, won 500 kroner.

Experimental procedure – Lab experiment (Within-subject)

The experiment was conducted in the Citizen Lab at the University of Bergen, on the 28.febuary 2017. The experiment was conducted together with another norm elicitation experiment[15], and had a total of 120 participants. Participants evaluated both the more or less game and the dictator game.

Recruitment to the norm elicitation lab experiment was done together with recruitment to the replication of the more or less experiment. Participants received the exact same invitations. See section on experimental procedure for the replication of the more or less experiment for details.

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[14] To completely randomize the order of the 5 situations, we would have needed 120 different variations of the experiment sheets.

[15] The other norm elicitation experiment was conducted by Oda Sund, and will be used in her master's thesis

The experiment was conducted using pen and paper. When participants arrived at the lab they were met by either a lab-assistant or an experimenter, who registered them and showed them to the waiting room. When all participants had arrived, they drew a letter from a bowl, which assigned them to their seat in the lab. This letter also worked as participant-id.

When participants had found their seats, an experimenter gave instructions. The participants were informed about who conducted and financed the experiment, about the expected duration of the experiment and that it would be impossible for both the experimenters and other participants to identify answers they would give in the experiment. They were also asked not to communicate with each other during the experiment.

Similar to the replication of the more or less experiment, three people were involved in conducting the experiment. Two experimenters and one lab-assistant. One experimenter was responsible for instructions in the lab, answering potential questions and handing out envelopes with payoff to the participants. The other experimenter and the lab-assistant were responsible for welcoming and registering participants, drawing winners and distributing payoffs into envelopes. These two had no contact with the participants in the lab after the experiment had started.

The four sessions of the norm elicitation experiment had an average total duration of 22-25 minutes, where the experiment took about 9-10 minutes. We had no issues while conducting the experiment.

Experimental procedure – Classroom experiment (Between-subject)

The classroom experiment was conducted on the 30.march 2017, in a *Statistics for marketing-students* lecture at BI Bergen. The experiment was conducted together with another norm elicitation experiment[16], and had a total of 157 participants. 40 participants evaluated the more or less game, 39 participants evaluated the dictator game.

Participants in the classroom experiment were not recruited beforehand. Students present at the lecture were offered a chance to participate in the experiment during the break between the first and second part of the lecture. Around 90 % of the students present at the lecture chose to participate.

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[16] The other norm elicitation experiment was conducted by Oda Sund, and will be used in her master's thesis

The experiment was conducted using pen and paper. Sheets containing instructions and the experiment were handed out to participants at the start of the experiment. Before handing out instructions, participants were informed about who conducted and financed the experiment, the expected duration, anonymity and that they could earn real money depending on their answers. Participants were also asked not to communicate with each other during the experiment.

We had 45 sheets with each treatment[17], and both experimenters and the lecturer helped hand out the sheets. Participants then had 4 minutes to read instructions and finish the experiment. When finished, participants were asked to fold their sheets and hand them in. In total, the experiment lasted around 7 minutes. We had no issues while conducting the experiment.

3.6 Results – Norm elicitation experiments

Converting responses into numerical scores makes is possible to calculate the mean appropriateness rating for each available action in both the more or less game and the dictator game. A rating of "*Very socially inappropriate*" received a score of -1, *"Somewhat socially inappropriate"* a score of -1/3, *"Somewhat socially appropriate"* a score of 1/3 and *"Very socially appropriate"* a score of 1. Table 2 and Table 3 list mean appropriateness ratings from lab and classroom experiments. Tables also show the full distribution of responses, with the most frequently given responses marked in grey. To test if population means in the two treatments differ, Wilcoxan signed rank tests are reported for the lab experiment and Wilcoxan rank sum tests are reported for the classroom experiment.

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[17] There was a total of 4 treatments, 2 from my experiment and 2 from the other experiment.

Table 2 - Elicited appropriateness ratings, lab experiment

Lab experiment – Within-subject design

Money kept	Dictator game (N=120)					More or less game (N=120)					Signrank test (z)
	Mean	--	-	+	++	Mean	--	-	+	++	
0kr	**0.32**	13%	18%	25%	43%	**0.13**	28%	16%	14%	41%	3.508***
200kr	**0.57**	2%	12%	35%	51%	**0.43**	7%	22%	21%	50%	1.753*
400kr	**0.93**	0%	0%	11%	89%	**0.66**	5%	8%	19%	67%	4.860***
600kr	**0.27**	3%	27%	47%	23%	**0.57**	8%	11%	20%	61%	−4.590***
800kr	**-0.25**	36%	32%	17%	16%	**0.59**	14%	5%	8%	72%	−8.050***

*** = p<0.01, ** = p<0.05, * = p<0.10. Signrank reports z-values and significance.
Responses are: Very socially inappropriate (--), Socially inappropriate (-), Socially appropriate (+),Very socially appropriate (++).

Table 3 - Elicited appropriateness ratings, classroom experiment

Classroom experiment – Between subject design

Money kept	Dictator game (N = 39)					More or less game (N=40)					Ranksum test (z)
	Mean	--	-	+	++	Mean	--	-	+	++	
0kr	**0.20**	18%	23%	21%	38%	**0.28**	23%	15%	10%	53%	−0.646
200kr	**0.50**	3%	13%	41%	44%	**0.58**	3%	18%	20%	60%	−0.959
400kr	**0.79**	5%	0%	16%	79%	**0.65**	5%	3%	33%	60%	1.719*
600kr	**0.23**	3%	26%	56%	15%	**0.55**	5%	10%	33%	53%	−3.021***
800kr	**-0.30**	28%	49%	13%	10%	**0.3**	13%	25%	18%	45%	−3.482***

*** = p<0.01, ** = p<0.05, * = p<0.10. Ranksum reports z-values and significance.
Responses are: Very socially inappropriate (--), Socially inappropriate (-), Socially appropriate (+),Very socially appropriate (++)

Plotting mean appropriateness ratings in a figure, illustrates the elicited norm profile. Figure 3 and Figure 4 compare norm profiles between the dictator game and the more or less game, based on ratings from the lab and classroom experiment. Standard errors and confidence intervals are reported in Appendix D.
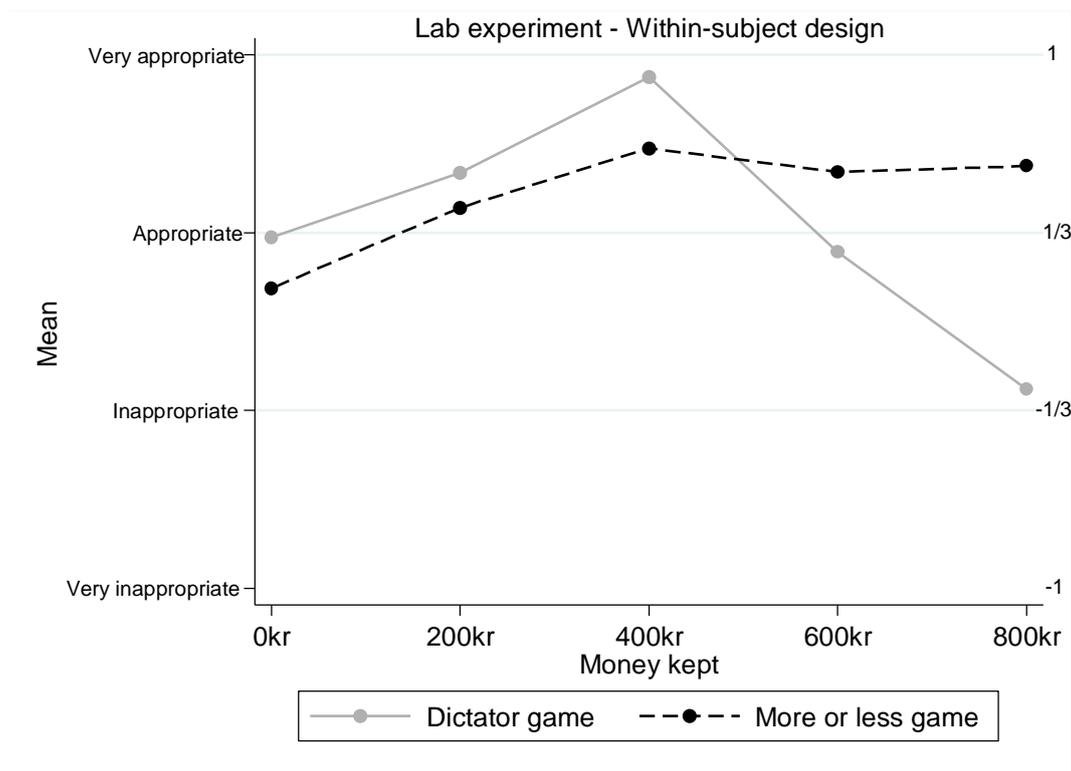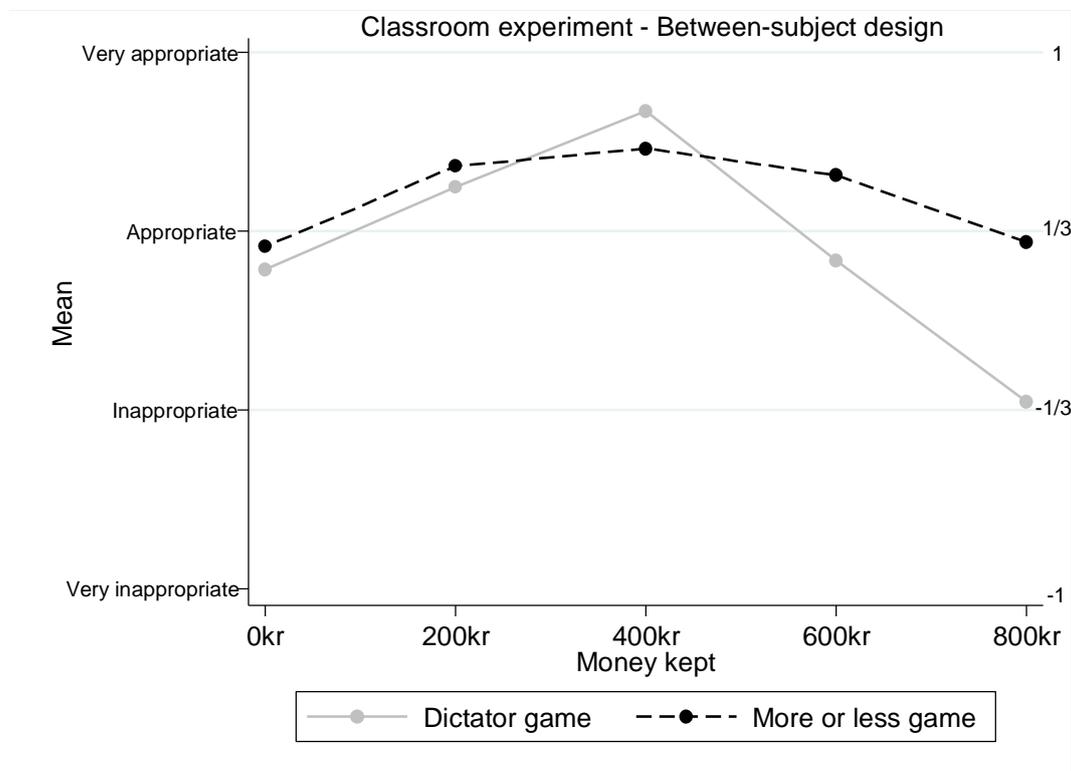
Figure 3 - Norm profile, lab experiment

Lab experiment - Within-subject design

Figure 4 - Norm profile, classroom experiment

Classroom experiment - Between-subject design

Discussion: Within- or between-subject design?

In general, elicited norm profiles from lab and classroom experiments are similar. As can be seen from Table 2 and Table 3, the most frequently given response is the same for 9 out of 10 actions, and the mean appropriateness rating for most actions are similar. Looking at the graphical representation of the elicited norm profiles in Figure 3 and Figure 4, the general trends are very similar, but there is a small difference in the norm profile for the more or less game.

In the lab experiment, keeping more money generally leads to an increase in appropriateness rating, while in the classroom experiment the trend is flatter. In the classroom experiment, keeping all the money and keeping no money is actually considered equally appropriate.

Using Wilcoxan rank sum tests to compare results from the experiments reveal more differences.

Table 4 - Comparing lab and classroom results – More or less game

Money kept	Mean appropriateness Lab	Mean appropriateness Classroom	Ranksum (z)	Significantly different
0kr	0.13	0.28	1,152	No
200kr	0.43	0.58	1,167	No
400kr	0.66	0.65	$-1,191$	No
600kr	0.57	0.55	$-1,182$	No
800kr	0.59	0.3	$-2,712^{***}$	Yes

*** = p<0.01, ** = p<0.05, * = p<0.10. Ranksum reports z-value and significance

Table 5 - Comparing lab and classroom results – Dictator game

Money kept	Mean appropriateness Lab	Mean appropriateness Classroom	Ranksum (z)	Significantly different
0kr	0.32	0.20	-0.955	No
200kr	0.57	0.50	-1.986^{***}	Yes
400kr	0.93	0.79	-1.948^{**}	Yes
600kr	0.27	0.23	-2.276^{***}	Yes
800kr	-0.25	-0.30	1.166	No

*** = p<0.01, ** = p<0.05, * = p<0.10. Ranksum reports z-value and significance

In the more or less game, there is a significant difference in the evaluation of the alternative "*keep 800.*" In the dictator game, there are significant differences in evaluation of the alternatives *"keep 200" "keep 400"* and *"keep 600."*

The differences could be coincidental, or due to the fact that the classroom experiment only has around 40 observations per action, while the lab experiment has 120 observations per action. Another possibility, is that results from the lab experiment are affected by carryover effects or experimenter demand effects.

To avoid potential problems due to carryover and experimenter demand effects, data from the classroom experiment will be used in the analysis that follows. Robustness checks on data from the lab experiment are included in Appendix E.

3.7 Analysis – Social norms in the more or less game and dictator game

Do different social norms apply to the more or less game and the dictator game?

Based on data reported in Table 3 and Figure 4, some general conclusions can be made. In the dictator game, a clear social norm defines keeping 400 kroner as the most appropriate action. The action has a mean appropriateness rating of 0,79 and 79 percent of participants evaluated the action as "*Very socially appropriate.*" Other actions are also considered appropriate, with the exception of keeping 800 kroner, which is considered somewhat inappropriate. Elicited appropriateness ratings fit well with experimental evidence from dictator games, where sharing half of the money with the recipient is a common response (Engel 2011).

In the more or less game, the social norm is less clear. All actions are considered appropriate, with a mean appropriateness rating between 0,28 and 0,65. The most frequently given response is "*Very socially appropriate*" for all actions.

Comparing the mean appropriateness ratings in the more or less game and the dictator game, show statistically significant differences in appropriateness ratings for actions *keep 400, keep 600* and *keep 800*[18]. In the more or less game, keeping 600 or 800 kroner are both considered more appropriate than in the dictator game, while keeping 400 is considered less appropriate. This fits well with actual behavior in the two games, where keeping 600 or 800 kroner is more common in the more or less game. Based on the elicited mean appropriateness ratings, social

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[18] See Wilcoxon rank sum tests reported in Table 3

norms in the two situations seems to be somewhat different. On the other hand, the results do not exclude the possibility that *some* participants perceive the two situations as the same.

Predicting behavior using the simple utility framework

To investigate how well the elicited social norms can predict behavior in the actual more or less game and dictator game, it is possible to use the simple utility framework presented earlier.

$$u_i(a_k) = V\big(\pi_i(a_k)\big) + \gamma N(a_k)$$

Estimating the equation can be done by using mean appropriateness ratings from the norm elicitation experiment, together with behavioral data from the replication of the more or less experiment. Following Krupka and Weber (2013), a conditional (fixed effect) logistic regression[19] is used, where the binary dependent variable is whether an action was selected. The explanatory variables are characteristics of each action, in this case the monetary payoff an action produces (π) and the mean appropriateness of the action ($N(a_k)$). By assuming that $V(\pi) = \beta\pi$ for any final payoff for the decision maker, the conditional (fixed effects) logistic regression provides estimates for weights put on monetary payoff (β) and adherence to social norms (γ). This leads to the following utility function:

$$u_i(a_k) = \beta\pi_i(a_k) + \gamma N(a_k)$$

Standard errors are bootstrapped (1000 reps), to account for noisy estimates of $N(a_k)$. Table 6 reports the estimation results of two conditional (fixed effects) logistic regressions. In Model 1, explanatory variables are monetary payoff produced by an action, and the actions mean appropriateness rating. In Model 2, an interaction term between mean appropriateness rating and a variable that indicates whether the participant faced the more or less game or the dictator game, is included in the model.

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[19] See McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. <u>Frontiers in Econometrics</u>. P. Zarembka, Academic.

Table 6 - Conditional (fixed effect) logistic regression

Conditional (fixed-effect) logistic regression with behavioral data and elicited appropriateness ratings (from the classroom experiment)

Behavioral data	Model (1)	Model (2)
Payoff (β)	0.012***	0.009***
	(0.002)	(0.003)
Appropriateness rating (γ)	4.776***	3.781***
	(0.980)	(0.983)
Appropriateness rating X Treatment		-2.817*
		(1.709)
Log-likelihood	-105.621	-104.319
Observations	575	575
Subjects	115	115

$*p < 0.1; **p < 0.05; ***p < 0.01$; all two-tailed. Bootstrapped standard errors (1000 reps) are in parentheses. Treatment = 1 if More or less, 0 if Dictator game

Coefficients from the conditional logit estimation cannot be interpreted in the same way as coefficients from an OLS regression, but the sign and significance of each coefficient can give some insight. The coefficient for β is positive and statistically significant in both models, indicating that people care about their own monetary payoff and that in general, more money is better than less. The coefficient for γ is also positive and statistically significant in both models, indicating that people care about the appropriateness of their behavior.

It is also worth noting that the coefficient for appropriateness rating is large relative to the coefficient for monetary payoff. This could be explained by the fact that participants in the more or less experiment (behavioral data) choose between expected payoffs, not certain outcomes[20]. In a situation where there is uncertainty about the monetary payoff that an action produces, but not about the appropriateness of the action, adhering to the social norm becomes relatively cheaper.

Krupka and Weber (2013) use the ratio $\frac{2\gamma}{\beta}$ to identify how much money an individual is willing to sacrifice to take an action that is considered very socially appropriate (+1), rather than very socially inappropriate (-1). Based on the coefficients from Model 2, the ratio is 840. The probability that a participant in the more or less experiment would win the lottery was on

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[20] A lottery decides which participants will have their decisions realized. See section: *Experimental design – Replication of the more or less experiment*, for details.

average 7 percent. An individual would thus be willing to sacrifice 59 kroner[21] of certain monetary payoff to take an action that is considered very socially appropriate (+1), rather than very socially inappropriate (-1). In Krupka and Weber (2013), this ratio is 5,66 USD, which is approximately 50 kroner[22]

In Model 2, the coefficient for the interaction term is negative and statistically significant at the 10 percent level. Including the interaction term also changes the other coefficients. This suggests that on average, people care differently about adhering to social norms in the two situations.

Predictions

By using coefficients from Model 2, it is possible to calculate predicted frequencies of choices in the two treatments, based on the probability that an individual would choose an action. Figure 5 and Figure 6 compares predicted frequencies to actual behavior in the more or less experiment.
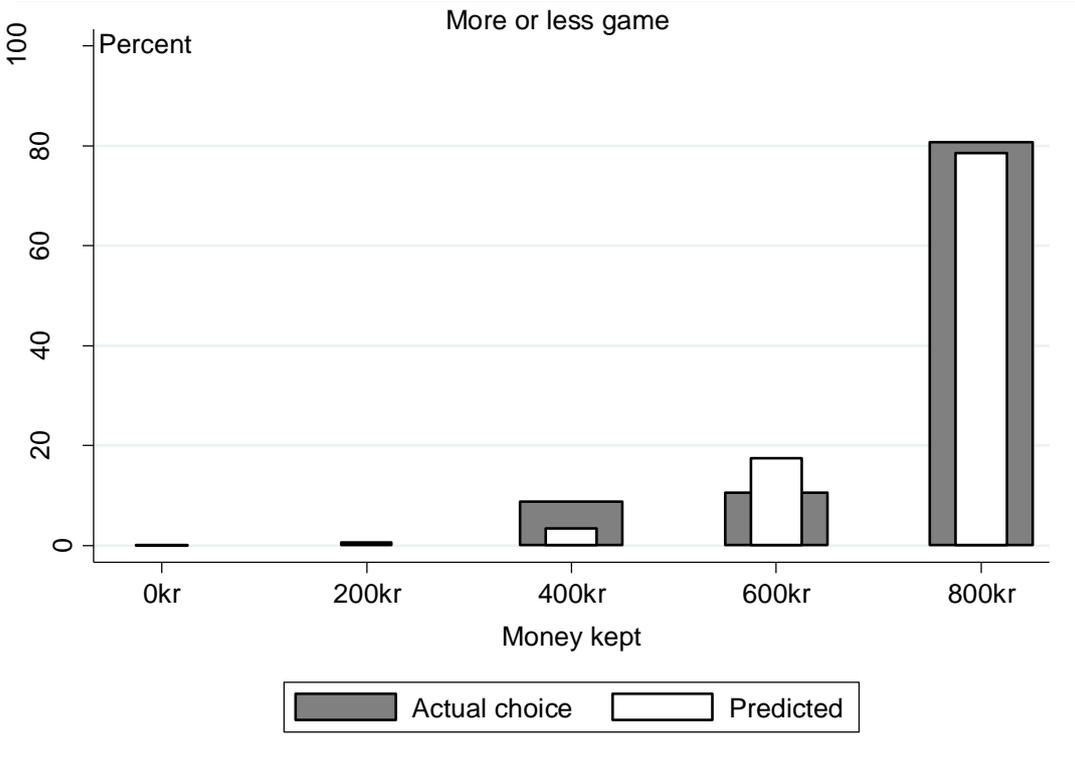
Figure 5 - Predicted frequencies, Dictator game

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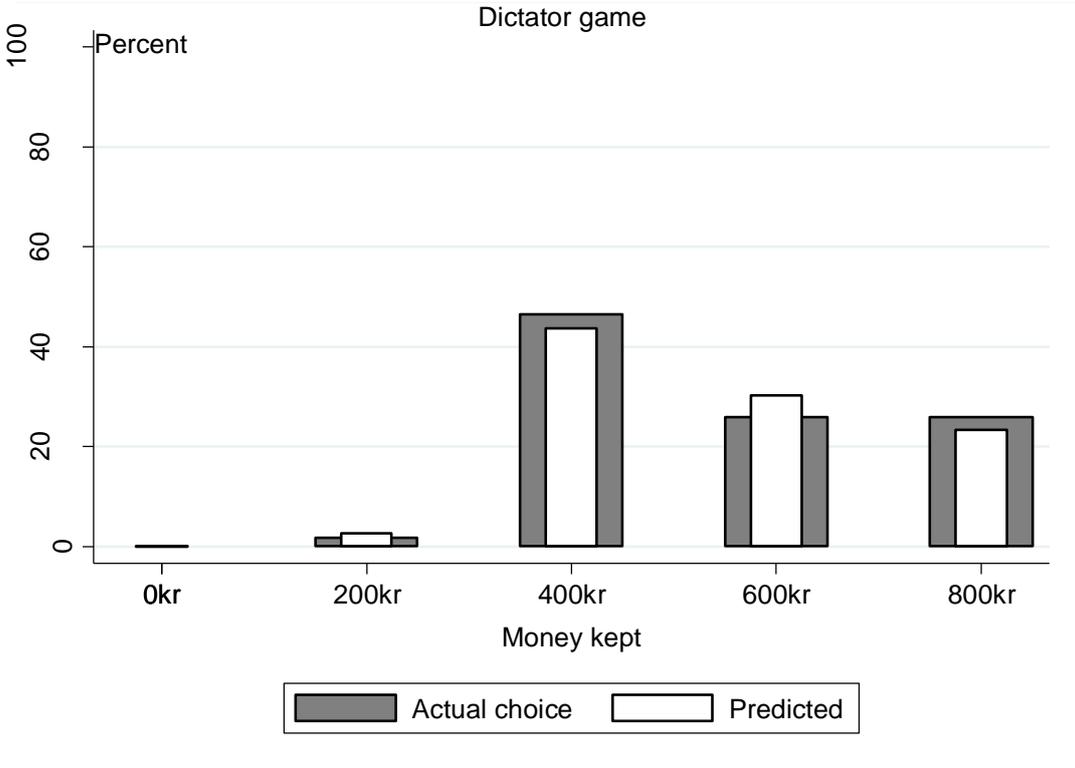
[21] 840kr x 0.07 = 59 kr
[22] Based on exchange rates from 09.05.17

Figure 6 - Predicted frequencies, More or less game

The model predicts behavior very well. In the dictator game, the most frequent outcome is to keep half the money, while in the more or less question the most frequent outcome is to keep all the money. The model also predicts that some people would choose less money in the more or less question.

Considering that the model uses behavioral data from the experiments it is supposed to predict, the success of the model is perhaps not surprising. Appendix F includes predictions based on Model 1 in Table 6, and Model 1 and 2 in Table 6 using elicited norms from the lab experiment. All models predict behavior very well, which might indicate that the success of the model, at least partially, comes from using behavioral data from the experiment it is supposed to predict.

Using only behavioral data from *either* the more or less game or the dictator game

The interaction term in model (2) suggests that people care differently about social norms in the more or less game and dictator game. It can therefore be interesting to run the conditional (fixed effect) logistic regression (Model 1) with only behavioral data from *either* the more or less game or the dictator game. This can reveal more potential differences in the effect of social norms on behavior in the two situations. Table 7 reports estimates. In Model (3),

behavioral data from only the more or less game was used. In Model (4), behavioral data from only the dictator game was used.

Table 7 - Conditional (fixed effect) logistic regression, behavioral data from *either* dictator game or more or less question

Conditional (fixed-effect) logistic regression with behavioral data and elicited appropriateness ratings (from the classroom experiment)

Behavioral data	More or less game	Dictator game
	Model (3)	Model (4)
Payoff (β)	0.007***	0.010
	(0.001)	(0.041)
Appropriateness rating (γ)	-0.646	4.431
	(1.571)	(14.873)
Log-likelihood	-38.327	-65.606
Observations	285	290
Subjects	57	58

$*p < 0.1$; $**p < 0.05$; $***p < 0.01$; all two-tailed. Bootstrapped standard errors (1000 reps) are in parentheses, In model (3), only 995 replications were completed.

Using only behavioral data from the dictator game reveals coefficients that are very similar to the ones reported in model (1), but both coefficients are now insignificant. The insignificance could potentially be explained by the fact that the model now only uses observations from 58 subjects instead of 115 subjects.

When using only behavioral data from the more or less game, the coefficient for payoff is still positive and significant, while the coefficient for appropriateness rating becomes negative and insignificant. The result suggests that in the more or less game, participants mainly care about payoff maximization.

Recall from the simple utility framework, that if the appropriateness $N(a_k)$ of all actions in a situation are similar, people will choose alternatives that maximize payoff. The elicited norm profile for the more or less game in Figure 4 is relatively flat, with only small differences in mean appropriateness rating between alternatives. This could explain why behavior in the more or less game seems to be less affected by social norms that behavior in the dictator game.

Robustness – Using elicited norms form the lab experiment

To check the robustness of the results in Table 7, Appendix E includes results from regressions of Model (3) and Model (4) using the elicited norms from the lab experiment, instead of the classroom experiment. Surprisingly, this leads to a large change in the coefficient for appropriateness rating in Model (3). Using elicited norms from the lab experiment yields a coefficient that is positive and significant at the 10 percent level, indicating that people in fact care about the appropriateness of their actions in the more or less game.

Comparing the norm profile for the more or less game in Figure 3 (lab) to the one in Figure 4 (classroom), can offer an explanation to the change in coefficients in Model (3) when social norms from the lab experiment is used. The norm profile from the lab experiment have an increasing trend, where mean appropriateness ratings generally increase with keeping more money. The trend in the norm profile from the classroom experiment is flatter. If there is a high correlation between payoff and appropriates rating, so that choosing more money gives both more payoff and a higher appropriateness rating, the model might not be able to separate the two effects. This seems to be the case when using the elicited norms from the lab experiment.

Chapter 4 – Summary and discussion

4.1 Main findings

The more or less experiment from Tjøtta (2016) was successfully replicated, and the surprising finding that some people choose less money over more, even when doing so does not affect anyone else, was present in the replication experiment. This provides a robustness check of the surprising experiment, and finds that the result is robust to adding more alternatives to the choice set.

At the start of the paper, two main questions were asked.

First, do social norms in the more or less game and dictator game differ, or are they interpreted as the same? The elicited norm profiles from the more or less game and dictator game show slightly different social norms in the two situations. The main difference is that keeping most of the money is considered more appropriate in the more or less game than in the dictator game. For actions *keep 800*, *keep 600 and keep 400*, there are statistically significant differences between the two situations. The finding is strengthened by the results from the conditional logit regression, where including the interaction term between appropriateness ratings and treatment, yields a significant coefficient. The finding suggests that, in general, people see the two games as two different situations, but it does not exclude the possibility that *some* participants might consider them the same.

Second, can social norms explain why some people choose less money in the more or less game? In general, the conditional logit choice model predicts behavior well in both the more or less game and the dictator game, but the result might be affected by using behavioral data from the experiment the model is supposed to predict.

Estimated coefficients from the conditional logit regressions, suggests that people care about both monetary payoff and acting appropriate, but differently in the dictator game and more or less game. In the dictator game, the coefficient for appropriateness rating is generally positive. This is consistent with Krupka and Weber (2013), who also finds a positive effect of appropriateness ratings on behavior in dictator games.

In the more or less game, the coefficient for appropriateness rating becomes negative and insignificant when using only behavioral data from the more or less game, suggesting that acting appropriate might not be the main concern of participants. The fact that all actions in the more or less game have similar mean appropriateness ratings, and that the most frequently

given response to all actions was "*Very socially appropriate,*" makes the general effect of social norms on behavior in the more or less game small.

On the other hand, the simple model does not necessarily account for people having different perceptions of what the social norm is. In the model, elicited mean appropriateness ratings $N(a_k)$ are used as an estimate for the social norm. The mean appropriateness rating describes the average appropriateness of each action, but does not say anything about how perceptions of the norm vary around the average.

Table 3, that show the full distribution of responses given in the norm elicitation experiment, reveal that there is a significant amount of heterogeneity in people's perception of the social norm, both in the dictator game and the more or less game. Knowing that the more or less game have little resemblance with situations faced in everyday life, it is not surprising that people have different perceptions of what would be considered appropriate behavior. Even though coefficients from the conditional logit regression does not show a general effect of social norms on behavior in the more or less game, they do not exclude the possibility that social norms might have an effect for *some* participants. To answer this specific question, further research is required.

4.2 Weaknesses with experimental design

It has been pointed out, see for example Levitt and List (2007), Smith (2010), that even in controlled lab experiments, it will never be possible to control everything. One important factor that can be difficult to control, is experiences and beliefs brought into the lab by participants. Some people might have participated in dictator experiments or other similar experiments before, and thereby bring with them certain beliefs and expectations on how to behave or how to interpret the questions they are asked.

The more or less game, which is an unfamiliar situation for most people, could be especially vulnerable to different interpretations from participants. The fact that there is no mention of what happens to foregone money in the experiment, does not mean that participants will not make assumptions of what happens to the money. Some might perceive the game as a dictator game, while others might perceive it as a choice between more or less money. This can make an impact on both the actual more or less game, and the norm elicitation experiment.

Participants could also assume that the decision they make in the more or less game will have an impact on the probability of winning the lottery or on other decisions they have to make in

the experiment. When analyzing data from the experiments, one should be aware of these potential effects.

Additionally, as pointed out earlier, carryover effects and experimenter demand effects might affect results in experiments using a within-subject design. In the replication experiment, as well as in the norm elicitation experiment, participants faced either the dictator game or the more or less game, but they also faced another version of the dictator game from the other experiment. There is a possibility that this could have led to a carryover effect, which should also be considered when analyzing the data.

4.3 Weaknesses with the conditional logit choice model

Some potential problems with the conditional logit choice model could also be pointed out. First, if for all alternatives, choosing more money would equal both more payoff and more appropriateness, the model might fail to separate the effects of payoff and appropriateness.

Second, participants in the experiments might be concerned with more than the payoff and appropriateness of an action. The size of the stakes, the degree of scrutiny from others, and private moral considerations (Levitt and List 2007) might also have an effect on behavior, which the model does not account for.

Third, the model use elicited mean appropriates ratings, $N(a_k)$, as an estimate for the social norm. As pointed out earlier, mean appropriateness ratings might be an inaccurate estimate, and does not necessarily account for heterogeneity in perceptions of the social norm. Coefficients from the model only show the effect of the average social norm on behavior, but could miss out on effects from different individual perceptions of the norm.

4.4 Suggestion for further research – A different view on social norms

The model used in this paper, assume that people derive utility from acting appropriate and following social norms, and disutility from breaking social norms. A different interpretation, inspired by Adam Smith and his Theory of Moral Sentiments (Smith 1759), suggest that the decision to act in accordance with a social norm, does not come directly from a utility calculation, but rather from intuition, and a desire to follow internalized social rules. If people perceive that an action is inappropriate and not in line with the rule or with the social norm, people will not take that action.

From this point of view, it would be interesting examine the correlation between a person's actions in the more or less game, and their perception of what the social norm is. If the people that consider keeping all the money inappropriate, are also the same people that choose to

keep less money in the more or less game, that could indicate that social norms indeed have an effect on behavior in the more or less game.

An experiment using a within-subject design, where participants both make actual decision in the more or less game, and evaluate the appropriateness of all actions in the game, could be used to examine this question. With both behavioral data and norm data from each individual, it will be possible to use a slightly altered version of the model presented in this paper, which allows the perception of the social norm to vary with each individual:

$$u_i(a_k) = V\big(\pi_i(a_k)\big) + \gamma N_i(a_k)$$

When conducting such an experiment, carryover effects and experimenter demand effects could potentially affect the results, so careful design of the experiment would be required. D'Adda, Drouvelis et al. (2016) test for order-effects when eliciting social norms with a within-subject design and the method from Krupka and Weber (2013). They find that in general, order-effects in norm-elicitation experiments are small and statistically indistinguishable from zero.

On the other hand, some evidence suggests that eliciting social norms before making actual choices, could lead to a focusing effect of norms on behavior, where behavior that is considered appropriate becomes more common and behavior that is considered inappropriate less common. To avoid this potential effect, D'Adda, Drouvelis et al. (2016) suggest eliciting social norms after participants have made a choice in the decision situation.

Considering that this paper does not find a general effect of a well-defined and agreed-upon social norm on behavior in the more or less game, but does find evidence of large heterogeneity in people's perception of the social norm, further research with a model that takes into account individual perceptions of the social norms would be highly interesting.

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Appendix A –Invitation mail
Invitation email - Norwegian

Hei

Du er invitert til å delta i et eksperiment tirsdag 28.02.17. Du vil motta 50 kroner for oppmøte, og eksperimentet er finansiert av Universitetet i Bergen.

I tillegg til dette kan du tjene ytterligere penger. Disse pengene utbetales til deg når eksperimentet er over. Eksperimentet utføres anonymt, og det er frivillig å delta. Det kreves ingen forkunnskaper.

Eksperimentet varer omtrent 15 minutter, og vil holdes på Medborgerlaben i Sofie Lindstrøms hus (Rosenbergsgaten 35) i andre etasje.

Du kan melde deg på ved å logge på din profil her: https://medborgerlab.app.uib.no/

Invitation email – English translation

Hi

You are invited to participate in an experiment on Tuesday 28.02.17. You will receive a show-up fee of 50 kroner, and the experiment is financed by The University of Bergen.

Additionally, you can earn more money. This money will be paid to you when the experiment is over. The experiment is anonymous, and participation is voluntary. No prerequisites are needed.

The experiment will take around 15 minutes, and will be held at *The Citizen Lab* in Sofie Lindstrøms hus (Rosenbergsgaten 35).

You can sign up by logging in to your profile here: https://medborgerlab.app.uib.no/

Appendix B –Written instructions for the more or less experiment
Norwegian:

Deltaker _____
Vennligst fyll ut:

Kjønn:
Kvinne _____   Mann _____

Hvor mange semestre har du studert på høgskole eller universitet?
Første semester _____   Andre semester _____
Tredje semester _____   Flere enn tre semester _____

Har du deltatt i lignende eksperiment før?
Nei _____   Ja, 1 gang _____   Ja, 2 ganger _____   Ja, 3 eller flere _____

På neste side vil dere bli presentert for to spørsmål hvor dere i begge blir bedt om å ta en avgjørelse. Vennligst svar på begge spørsmålene. Når eksperimentet er over, vil 2 personer i rommet trekkes ut til å få realisert sitt valg enten i spørsmål 1 eller spørsmål 2. Valget du tar er helt anonymt, og vil ikke ha innvirkning på sannsynligheten for å bli trukket ut til å motta penger.

English translation:

Participant _____

Please answer the following questions:

Gender:
Female _____   Male _____

How many semesters have you completed at University or University College?
One semester _____   Two semesters _____
Three semesters _____   More than three semesters _____

Have you participated in similar experiments before?
No _____   Yes, 1 time _____   Yes, 2 times _____   Yes, 3 or more times _____

On the next page you will be presented with two questions, where you will have to make a decision. Please answer both questions. When the experiment is over, 2 persons in the room will be drawn to have their decisions realized, in either question 1 or question 2. The decision you make is anonymous, and does not affect the probability of being drawn to receive money.

Treatment instructions (Norwegian)

Dictator game:

Spørsmål
Person A trekkes ut til å motta 800 kroner. Dersom du trekkes ut til å være person A, må du
på forhånd velge hvor mye av pengene du ønsker å beholde. Pengene du ikke beholder selv,
vil bli gitt til en annen tilfeldig trukket person, person B. Du kan velge mellom å beholde 800
kroner, 600 kroner, 400 kroner, 200 kroner eller 0 kroner.

Jeg velger å beholde:	Ditt svar
Behold 800 kr (800 kr til deg, 0 kr til person B)	
Behold 600 kr (600 kr til deg, 200 kr til person B)	
Behold 400 kr (400 kr til deg, 400 kr til person B)	
Behold 200 kr (200 kr til deg, 600 kr til person B)	
Behold 0 kr (0 kr til deg, 800 kr til person B)	

More or less game:

Spørsmål
En person trekkes ut til å motta 800 kroner. Dersom du trekkes ut, må du på forhånd velge
hvor mye av pengene du ønsker å beholde. Du kan velge mellom å beholde 800 kroner, 600
kroner, 400 kroner, 200 kroner eller 0 kroner.

Jeg velger å beholde:	Ditt svar
Behold 800 (800 kr)	
Behold 600 (600 kr)	
Behold 400 (400 kr)	
Behold 200 (200 kr)	
Behold 0 (0 kr)	

Appendix C –Written instructions for the norm elicitation experiment (2 pages)
Norwegian:

Deltaker ____

Kjønn:
Kvinne ____   Mann ____

Hvor mange semestre har du studert på høgskole eller universitet?
Første semester ____   Andre semester ____
Tredje semester ____   Flere enn tre semester ____

Har du deltatt i lignende eksperiment før?
Nei ____   Ja, 1 gang ____   Ja, 2 ganger ____   Ja, 3 eller flere ____

Instruksjon

I dette eksperimentet vil du bli presentert for ulike hypotetiske situasjoner der «Person A» står overfor et valg. Situasjonen vil bli presentert med en beskrivelse av valget personen står overfor, samt mulige handlinger.

Etter at du har lest beskrivelsen av situasjonen, vil du bli bedt om å evaluere hvor sosialt akseptabel og i samsvar med god moral og passende oppførsel, hver av de ulike handlingene er. Handlingene skal evalueres på en skala fra «Veldig sosialt uakseptabelt» til «Veldig sosialt akseptabelt.» Med sosialt akseptabelt mener vi oppførsel som folk flest vil være enig om at er «rett» eller «etisk». En annen måte å forstå det på, er at dersom en person velger en sosialt uakseptabel handling, vil andre kunne bli opprørt over personens oppførsel. For å gi en idé om hva du skal gjøre, følger det under et eksempel.

Eksempel

Person A er på en kafé nær universitetet. Her oppdager Person A at noen har glemt lommeboken sin på et av bordene. Person A må bestemme seg for hva som skal gjøres med lommeboken. Det er fire mulige handlinger: Ta lommeboken, spørre andre i nærheten om de eier lommeboken, la lommeboken ligge der den er eller gi lommeboken til personalet. Vennligst evaluer hver av de ulike handlingene, marker dine svar med et kryss. Eksempel:

Handlinger	Veldig sosialt uakseptabelt	Noe sosialt uakseptabelt	Noe sosialt akseptabelt	Veldig sosialt akseptabelt
Ta lommeboken	X			
Spørre andre i nærheten				X
La lommeboken ligge		X		
Gi lommeboken til personalet				X

Etter eksperimentet vil det trekkes ut en tilfeldig handling. Av de deltakerne som har evaluert denne handlingen likt som flesteparten av de andre deltakerne, trekkes 3 deltakere ut og får utbetalt 500 kr. Dersom du har evaluert handlingen ulikt flesteparten av de andre deltakerne, er du ikke med i trekningen om 500 kr.

English translation:

Participant ____

Gender:
Female ____   Male ____

How many semesters have you completed at University or University College?
One semester ____   Two semesters ____
Three semesters ____   More than three semesters ____

Have you participated in similar experiments before?
Yes ____   Yes, 1 time ____   Yes, 2 times ____   Yes, 3 or more times ____

Instruction
In this experiment, you will be presented with different hypothetical situations where "Person A" have to make a decision. The situations will be presented with a description of the decision making problem and possible actions Person A can take.

After having read the description of the situation, you will be asked to evaluate how socially appropriate and consistent with moral or proper social behavior, each action Person A can take, is. The actions are evaluated on a scale from "Very socially inappropriate" to "Very socially appropriate." With socially appropriate we mean behavior that most people would agree is correct or ethical. Another way to understand it, is that if a person were to choose a socially inappropriate action, others might be angry or upset about the persons behavior. To give you an idea of how the experiment works, an example follows below.

Example
Person A is at a coffee shop near the university. Here, Person A discover that someone has left their wallet on one of the tables. Person A have to make a decision on what to do with the wallet. There are four possible actions: Take the wallet, ask others nearby if they own the wallet, leave the wallet where it is or give the wallet to the personnel at the coffee shop. Please evaluate each of the possible actions, mark your answers with a cross. Example:

Actions	Very socially inappropriate	Somewhat socially inappropriate	Somewhat socially appropriate	Very socially appropriate
Take the wallet	X			
Ask others nearby				X
Leave the wallet where it is		X		
Give the wallet to the personnel				X

After the experiment, a random action will be drawn. From the participants who have evaluated this action in the same way as most others have, 3 participants will be drawn and to receive a payment of 500 kr. If you have evaluated the action differently than most others, you will not be a part in the draw to receive 500 kr.

Treatment instructions (Norwegian)

Dictator game:

Anta at Person A er med i en trekning om å motta 800 kr. Person A må velge hvor mye av pengene som beholdes. Det som ikke beholdes, blir gitt til en tilfeldig trukket person, person B. Person A kan velge mellom å beholde 800 kroner, 600 kroner, 400 kr, 200 kroner eller 0 kroner.

Tabellen under viser de ulike valgene person A kan foreta seg. Vennligst indiker hvor sosialt akseptabelt hver av de fem handlingene er. Husk at du er med i trekningen om 500kr dersom din evaluering av en tilfeldig trukket handling, er lik evalueringen til flertallet av de andre deltakerne. Marker dine svar med kryss.

Person A sitt valg	Veldig sosialt uakseptabelt	Noe sosialt uakseptabelt	Noe sosialt akseptabelt	Veldig sosialt akseptabelt
Behold 800 (800 kr til A, 0 kr til B)				
Behold 600 (600 kr til A, 200 kr til B)				
Behold 400 (400 kr til A, 400 kr til B)				
Behold 200 (200 kr til A, 600 kr til B)				
Behold 0 (0 kr til A, 800 kr til B)				

More or less game:

Anta at Person A er med i en trekning om å motta 800 kr. Før trekningen finner sted, må person A velge hvor mye av en eventuell gevinst som skal beholdes. Person A kan velge mellom å beholde 800 kroner, beholde 600 kroner, beholde 400 kr, beholde 200 kr eller beholde 0 kr.

Tabellen under viser de ulike valgene person A kan foreta seg. Vennligst indiker hvor sosialt akseptabelt hver av de tre handlingene er. Husk at du er med i trekningen om 500kr dersom din evaluering av en tilfeldig trukket handling, er lik evalueringen til flertallet av de andre deltakerne. Marker dine svar med kryss.

Person A sitt valg	Veldig sosialt uakseptabelt	Noe sosialt uakseptabelt	Noe sosialt akseptabelt	Veldig sosialt akseptabelt
Behold 800 (800 kr)				
Behold 600 (600 kr)				
Behold 400 (400 kr)				
Behold 200 (200 kr)				
Behold 0 (0 kr)				

Appendix D – Figure 3 and Figure 4 - Standard errors and 95% confidence intervals (mean appropriateness ratings)
Figure 3

Norm profile - Dictator game

Money kept	Mean	SE	95% Conf. interval
0kr	0.32	0.07	[0.20 0.45]
200kr	0.57	0.05	[0.47 0.66]
400kr	0.93	0.02	[0.89 0.97]
600kr	0.27	0.05	[0.17 0.36]
800kr	-0.25	0.07	[-0.38 -0.12]

Norm profile - More or less game

Money kept	Mean	SE	95% Conf. interval
0kr	0.13	0.08	[-0.02 0.28]
200kr	0.43	0.06	[0.31 0.55]
400kr	0.66	0.05	[0.56 0.76]
600kr	0.57	0.06	[0.45 0.68]
800kr	0.59	0.07	[0.46 0.72]

Figure 4

Norm profile - Dictator game

Money kept	Mean	SE	95% Conf. interval
0kr	0.20	0.12	[-0.05 0.45]
200kr	0.50	0.08	[0.33 0.67]
400kr	0.79	0.08	[0.63 0.95]
600kr	0.23	0.08	[0.08 0.38]
800kr	-0.30	0.10	[-0.50 -0.10]

Norm profile - More or less game

Money kept	Mean	SE	95% Conf. interval
0kr	0.28	0.13	[0.01 0.55]
200kr	0.58	0.09	[0.40 0.77]
400kr	0.65	0.08	[0.48 0.82]
600kr	0.55	0.09	[0.37 0.73]
800kr	0.3	0.12	[0.06 0.54]

Appendix E –Robustness of the conditional logit model

Conditional logit with appropriateness ratings from <u>lab experiment</u>:

Regressions in Table 8 use the same specifications as the regressions reported in Table 6.

Table 8 – Conditional (fixed-effect) logistic regression with behavioral data from both ex.
Elicited appropriateness ratings from the lab experiment

Behavioral data	Model (1)	Model (2)
Payoff (β)	0.008***	0.009***
	(0.001)	(0.001)
Appropriateness rating (γ)	3.250***	3.474***
	(0.471)	(0.536)
Appropriateness rating X Treatment		14.757***
		(8.640)
Log-likelihood	-102.990	-101.023
Observations	575	575
Subjects	115	115

*p < 0.1; **p < 0.05; ***p < 0. 01; all two-tailed. Bootstrapped standard errors (1000 reps) are in parentheses. Treatment = 1 if More or less, 0 if Dictator games

Regressions in Table 9 use the same specifications as the regressions reported in Table 7.

Table 9 – Conditional (fixed-effect) logistic regression with behavioral data from *either* the dictator game or the more or less game. Elicited appropriateness ratings from the lab experiment

Behavioral data	More or less game	Dictator game
	Model (3)	Model
Payoff (β)	0.008***	0.010*
	(0.002)	(0.006)
Appropriateness rating (γ)	16.889*	3.896
	(9.058)	(2.005)
Log-likelihood	-35.561	-65.330
Observations	285	290
Subjects	57	58

*p < 0.1; **p < 0.05; ***p < 0. 01; all two-tailed. Bootstrapped standard errors (1000 reps) are in parentheses, In model (3), only 997 replications were completed.
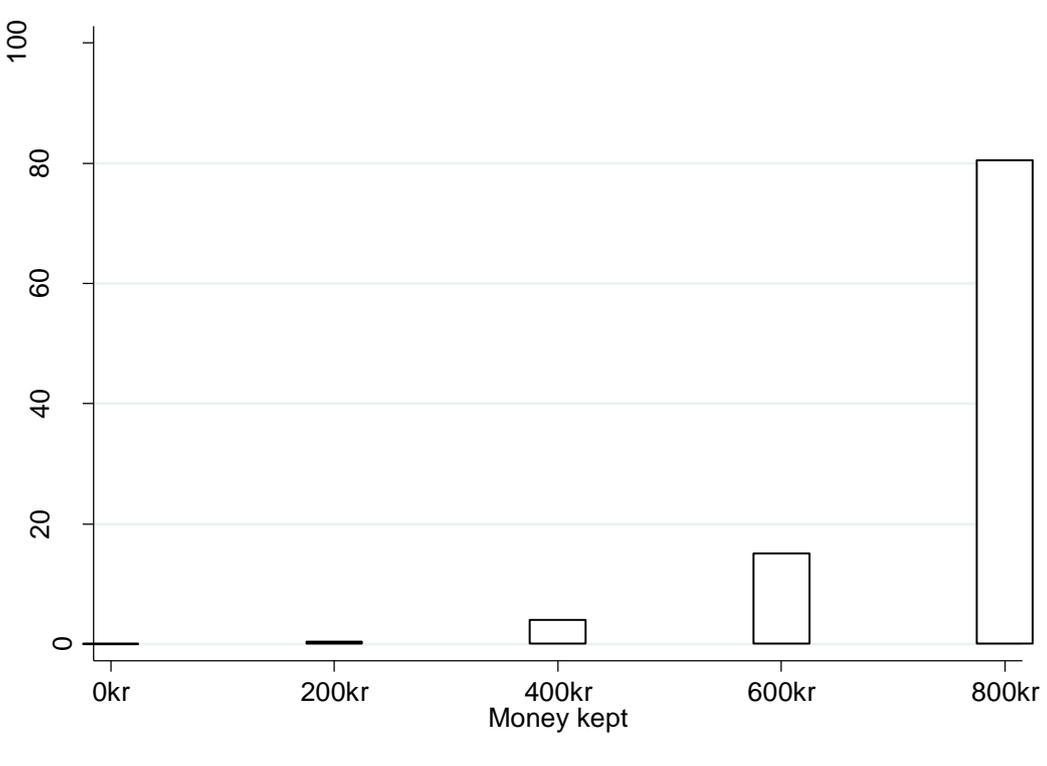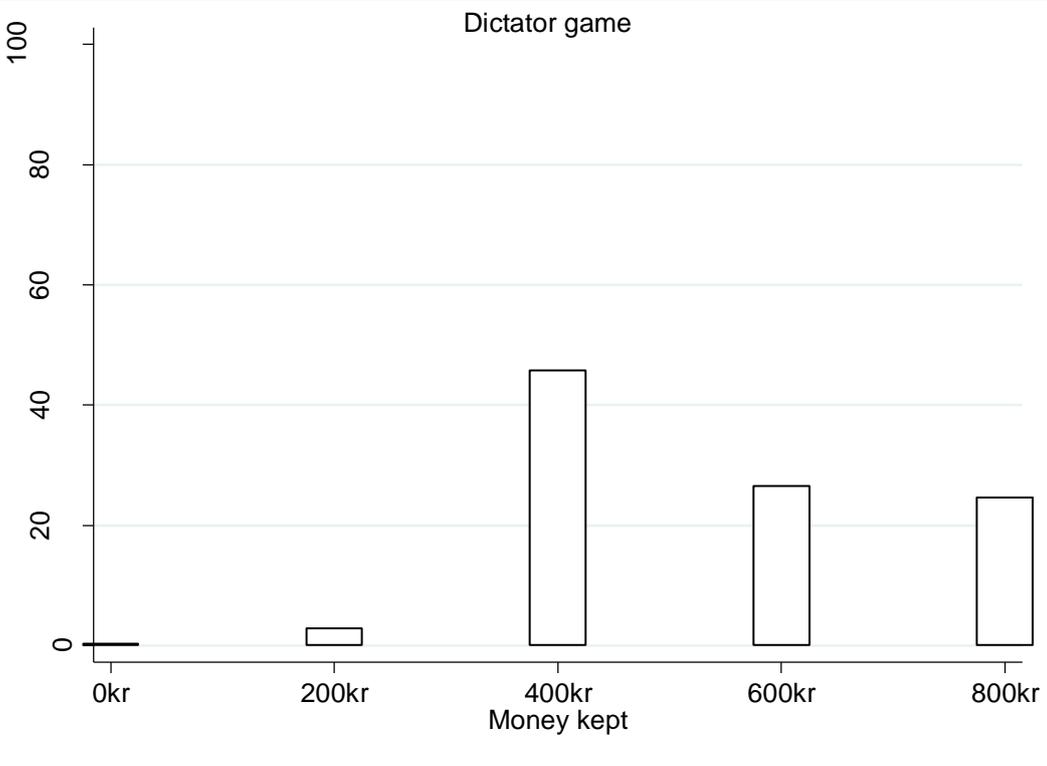
Model (3) use behavioral data only from more or less game, Model (4) use behavioral data only from dictator game

Appendix F –Predictions

Predictions based on model 1 in Table 6, using appropriateness ratings from the classroom experiment
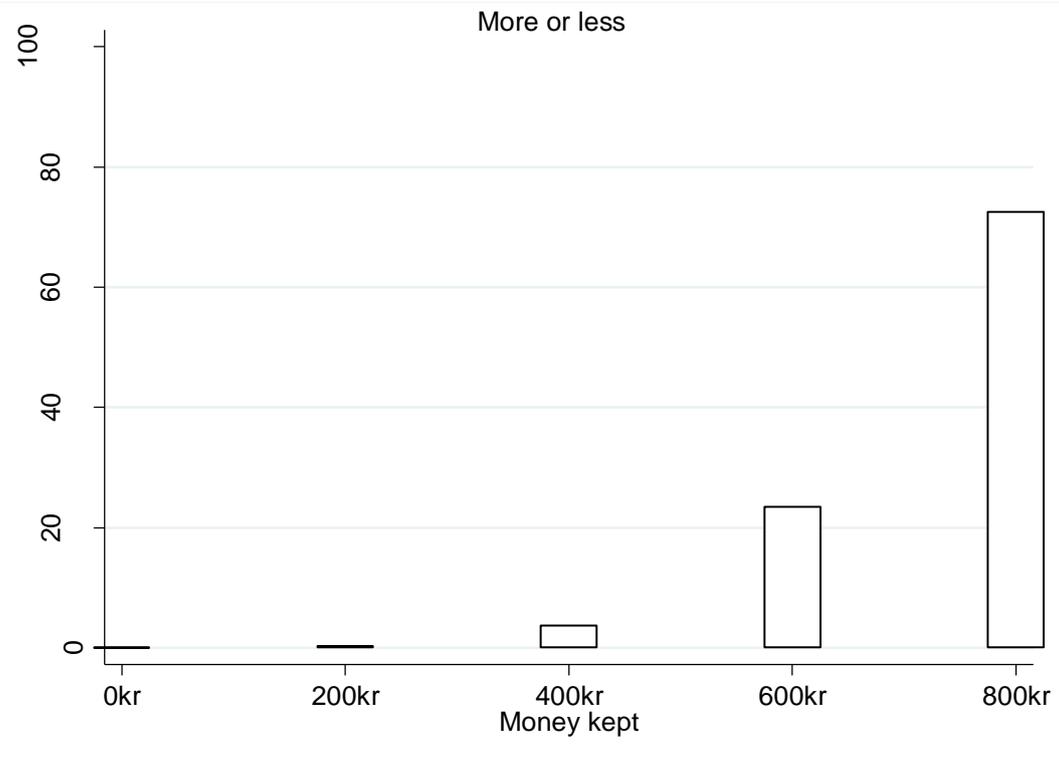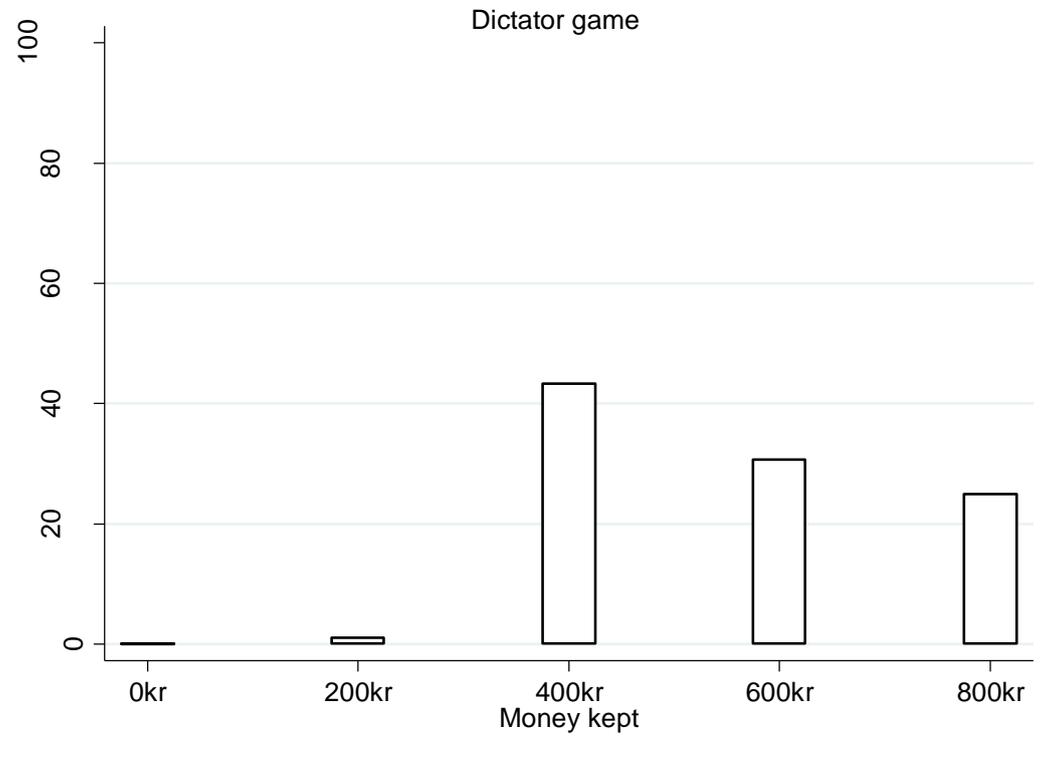
Predictions based on model 1 in Table 7, using appropriateness ratings from the lab experiment

Predictions based on model 2 in Table 7, using appropriateness ratings from the lab experiment