NORGES HANDELSHØYSKOLE

Bergen, 20.12.12

# Blinded by the Choice

*An experimental study on luck, choice and distributive justice*

**Ingrid Hågård Bakke**

**Supervisor: Alexander Wright Cappelen**

Master thesis in Economics

NORGES HANDELSHØYSKOLE

# Abstract

This thesis aims to study moral motivation in economic decision making and to increase understanding of how we treat the element of choice when it comes to economic inequality and distribution of income. Most people agree that inequality caused by differences in choice and effort is acceptable. We also accept inequality caused by luck if we take the risk by choice. On the other hand, we feel that inequalities caused by factors beyond our control should be redistributed to a considerable extent. But what about all the grey zones in between, all the different combinations of luck and choices? The starting point for this thesis is that there exist choice situations that are mere illusions – situations involving choice where the decision maker have little or no control over the outcome despite the freedom to choose. From psychological literature we also know that people have a tendency to exaggerate the control that choices provide. Combining these features, we are interested in to what extent people assign responsibility to more or less meaningless choices.

This thesis analyses an economic experiment. In the experiment, a spectating dictator is asked to redistribute the total earnings of a two-person winner-takes-it-all lottery, where the detailed rules of the lottery vary across three different treatments. The results reveal that a choice illusion – luck that is covered up as a choice – in fact undermines the willingness to redistribute. Using a pure luck lottery as a baseline, we find that people transfer less from the lucky to the unlucky when an "empty" choice is introduced. We find that inequality is reduced substantially across all treatments, but that people redistribute less in the choice treatments.

# Preface

This paper represents my final thesis in the Master of Science in Economics and Business Administration program at the Norwegian School of Economics – Major in Economics. It presents and analyses an economic experiment designed and conducted by The Choice Lab at NHH. The mission of this research team is to "[learn] more about how people make economic and moral choices, and how governments, corporations and non-governmental institutions can use insights from this research to improve their decision making" (The Choice Lab, 2012). The experiment was carried out in October and November 2012 among students from the University of Bergen and the Norwegian School of Economics. The scholars associated with this particular experiment are Professor Alexander W. Cappelen, PhD student Sebastian Fest, Professor Erik Ø. Sørensen, and Professor Bertil Tungodden.

I would like to express my thankfulness to my supervisor Alexander W. Cappelen for his ideas, enthusiasm and helpful guidance. I would also like to thank the rest of The Choice Lab's scholars and administrative staff, especially Sebastian Fest and Ranveig Falch, for useful help and for letting me take part in your research environment. My gratitude also goes to family and friends – for general support, setting fake deadlines, being the best roommates one could ever ask for, or simply cooking me moules frites on a rainy day. Particularly I want to thank my father, Ida, Hanna, Kristina and Lise for useful feedback and proofreading.

Bergen, December 2012

Ingrid Hågård Bakke

# Contents

# Tables and figures

*Being good is easy, what is difficult is being just.*

Victor Hugo (1802-1885)

# 1. Introduction

What people consider distributive justice depends on what caused the initial inequality. Is Peter richer than Sara because he had better innate abilities, because he made a higher effort, or simply because he was lucky? Most people do in fact accept some inequality. Many agree that inequality caused by differences in choice and effort is acceptable. We also accept inequality caused by luck if we take the risk by choice. Further, we feel that inequalities caused by factors beyond our control should be redistributed to a considerable extent (Cappelen, et al., 2007; Almås, et al., 2010; Cappelen, et al., 2010; Cappelen, et al., 2011). An obvious example is income and wealth. Some struggle with low income and poverty because of genetic illnesses, poor innate abilities, or because they live in a community with few opportunities, while others have low disposable income because they are lazy, like to gamble, or choose to spend most of their time on leisure or other non-work activities. Differences in genetic health, innate abilities and the setting you are born into are difference in *ex ante opportunities*, that is, different starting points before any choices are made (Cappelen, et al., 2011). Differences in the *ex post outcome* can hence be due to different starting points, different luck, different choices made, or different effort put in. But what about all the grey zones in between, all the different combinations of luck and choices?

Psychological literature suggests that people have a tendency to exaggerate the meaning of choices. Langer (1975) sheds light on what she calls the *illusion of control*. This phenomenon is defined as "an expectancy of a personal success probability inappropriately higher than the objective probability would warrant" (Langer, 1975). Langer finds that choices, among other factors, causes people to believe that they can control or influence outcomes when they really cannot. Examples are the wish to choose one's own lottery numbers or to roll the dice personally instead of letting someone else do it. Making these choices clearly does not increase the probability of winning, but this is what the illusion of control makes us believe.

Having established that people assign choices importance concerning what is a fair distribution of resources and the acceptable level of inequality, and that we have a tendency to psychologically exaggerate the meaning of choices, this thesis aim to study whether we see people overrating the importance of choices in moral economic decision making. Should

all outcomes based on choices be one's own responsibility, or are some choices not real choices as they provide no increased control over a given situation? And do we hold each other responsible for such meaningless choices?

Cappelen, et al. (2011) have taken a closer look at these grey zones between luck and choice. In an experimental study, they looked at redistribution of income after a game where the participants could choose between a lottery and a safe option. An interesting finding from this study was the fact that the value of the safe option – representing the cost of avoiding risk – was not taken into account when people made redistributive choices between lucky and unlucky risk-takers. People were to a great extent held responsible for choosing risk, even when the alternative was a very poor safe option (like getting 25 kr with certainty instead of a lottery involving risk with an expected value of 400 kr). In this thesis, I have looked at the extreme version of this experiment. In addition to looking at redistribution in relation to the cost of avoiding a risky choice, I have looked at completely "empty" choices, so-called nominal choices where the different alternatives are essentially identical. Based on a new experiment conducted by scholars from The Choice lab at NHH, I have examined to what extent people distinguish between obvious pure luck lotteries and lotteries involving a choice, but which in reality represents luck covered up as a choice. I have looked at how spectators, who are not themselves participating in the particular lottery and whose payment is independent of their redistributive decisions, redistribute ex post between lucky and unlucky participants in groups who have been faced with different lottery situations as a payment for real work effort. Are the participants in the option groups to some extent held responsible for their choices even though they in reality have either no chance at all of affecting the outcome or only obtain control by accepting a highly unattractive alternative? The main research question of this thesis is therefore:

> *"To what extent do we hold each other responsible for outcomes in situations involving a choice where the choice can be regarded as meaningless?"*

The experiment used for this thesis reveals that a choice illusion – luck that is covered up as a choice – in fact undermines the willingness to redistribute after a winner-takes-it-all lottery. Using a pure luck lottery as a baseline, we find that people transfer less from the lucky to the unlucky when a meaningless choice is introduced. Using a simple measure of inequality that takes values between 0 and 1 where 0 is perfect equality where both players are assigned the same amount and 1 means that one player gets all the earnings, we find that

inequality is reduced substantially across all treatments, but that people redistribute less in the choice treatments. This is evidence of people acknowledging the choice egalitarian argument, but suffering from a choice illusion. The effect is mainly driven by males. The distinction in inequality between the pure luck baseline and the choice treatments proves that we are not fully able to distinguish between choices that increase one's control over a situation and choices that in reality are nothing but luck in moral economic decision making.

Studying these questions and examining how theories about fairness, choice, risk and moral motivation relate to real choices made in real economic experiments can give important insights that can be of use in a range of settings. The most obvious is income and wealth inequalities. Welfare policy and wealth distribution has been on the political agenda for centuries, both nationally and internationally. The main question is to what extent people should be held responsible for all the factors affecting their income and wealth. In our society, there seems to be a discord between the liberal egalitarian view that welcomes more freedom of choice and that keeps people responsible for these choices, and the egalitarian attitude stating that economic inequality is negative for a society. Brief examples are pension fund schemes and the freedom to choose your own physician in Norway. Does adding freedom of choice in these matters really increase people's control? For the man in the street these choices are more or less "empty"; he is in no position to make a qualified choice, often resulting in more or less random choices that he is later held responsible for.

The ambition for this thesis is to contribute to the ongoing exploration of moral motivation and psychological mechanisms in economic decision making. A deeper understanding of what people consider a fair redistribution of wealth, how we treat the element of choice, and a better understanding of attitudes towards who should bear the cost of risk, will hopefully enrich our knowledge and enable us to make better systems and policies in society. On a general and more psychological level, this study aims to reveal nuances in what motivates human behavior. This is of interest to the general public as well as economists, social scientists and policy makers.

The thesis is organized as follows: Chapter 2 gives a theoretical backdrop introducing the origin of behavioral economics, theories and empirical findings on moral motivation, concepts in moral attitudes to inequality, and the experimental approach in the field of economics. Chapter 3 presents the research design by describing the experiment and the rationale behind the features of the experiment. Chapter 4 presents the findings and analysis,

while chapter 5 concludes and briefly discusses policy implications. As the experimental analysis in chapter 4 is fairly simple and straightforward, I have chosen to put considerable weight on presenting and discussing theories and literature in chapter 2.

# 2. Theory

This literature chapter serves as a backdrop for the empirical section and a point of departure for discussion and analysis throughout the thesis. First, I will briefly present the historical background and context of the field of behavioral economics in general and moral motivation in particular. Second, some concepts moral attitudes to inequality will be presented and discussed, before returning to modeling the motivation behind moral economic decision making for this particular experimental design. Finally follows a section on the experimental approach within the field of economics, including its properties and shortcomings.

## 2.1 Historical background of behavioral economics

Traditional economic theory assumes that decision makers behave like *homo economicus* – the economic man. The term first appeared in John Stuart Mill's work on political economy dated back to 1836 (Persky, 1995), and basically means that all our economic decisions are completely rational and based exclusively on self-interest. Empirical evidence repeatedly proves that these assumptions fail. People donate to charity, share wealth with strangers, behave inconsistently over time and feel worse losing 100 kroner than they feel better winning 100 kr (Kahneman & Tversky, 1979). To understand and structure these economically irrational characteristics of decision making, we need to take human psychology and sociology into account to a greater extent than traditional economic theory. The result is what we call behavioral economics, and researchers in this field often use the experimental approach to reveal true economic behavior.

Traditional economic theory is based on some rather narrow assumptions about how humans behave when we make economic decisions. After all, it is what scientific models are all about; you make assumptions and simplify reality in order to make a model that can predict and give us information about different aspects of life. Some of these assumptions hold, some might fail entirely, while others only hold to a certain extent, but still manage to capture and explain given phenomena. Assumptions create models that are simplified versions of reality, being somewhat useful or completely meaningless. Assumptions make

models more or less stylized, depending on how many aspects of reality the model is able to take into account.

What is really referred to when discussing traditional economic theory in this thesis, is neo-classical economics. The neo-classical era of the early 20th century followed the classical economists of the 18th and 19th century, and is the basis of a substantial part of the economics that is taught around the world today (Schwartz, 2008). The classical economists actually did take some psychological considerations into account when developing their theories. In fact, in *The Theory of Moral Sentiments* (1759/1892), Adam Smith presents a number of principles of human psychology not yet developed by pure psychologists (Camerer & Loewenstein, 2003). The neo-classicists, on the other hand, ignored most other disciplines in their works (Schwartz, 2008). Psychology was just emerging as a science at that time, and economists hesitated taking it into their field fearing it was a foundation too unsteady for their analyses (Camerer & Loewenstein, 2003). They looked at economics more as a pure natural science, and established the foundation of the marketplace where agents' self-interest naturally regulates price and quality (Smith, [1776] 2009).

The term *homo economicus* first appears in, or rather in the wake of, the philosopher and political economist John Stuart Mill's *On the Definition of Political Economy; and on the Method of Investigation Proper To It* (Persky, 1995). Here, Mill describes a decision maker that is completely rational and who is exclusively motivated by self-interest and the wish to possess wealth (Mill, 1836). He always prefers more over less, and he does not care about the welfare of others beyond what benefits himself. Further, he always behaves completely rational, and thus makes all economic decisions completely without emotional intervention. We all know from our everyday lives that we do not always behave like this. In fact, we make irrational choices all the time – often claimed to be predictably irrational (Ariely, 2010) – and we do care about the welfare of others. This, however, does not mean that all economic models based on these classic assumptions are useless. To some extent we are both rational and motivated by self-interest. Thus, traditional economic theory and models can give us correct, useful and important insights, although it does not necessarily provide a *complete* picture of true economic behavior.

One could have left it at that. Obviously one did not. Feeling an urge to continue where the classical economists of the 18th and 19th centuries left off, economists in the mid-20th century wanted to take the social sciences back into economics. In order to get a more accurate

picture of reality, economists, psychologists, philosophers and other social scientists started examining how, why and to what extent psychology, sociology and other social sciences influence human decision making in the field of economics. This is what we today call behavioral economics. The field is closely related to experimental economics, whose development and theory I will return to in later chapters. Lab and field experiments have proved an appropriate approach when mapping true human behavior, and so the two fields of study have developed side by side in later decades (The Royal Swedish Academy of Sciences, 2002). Behavioral and experimental economics faced a breakthrough in 2002 when Daniel Kahneman and Vernon Smith were awarded the Nobel Prize in Economic Sciences for their contribution to research in the field (The Royal Swedish Academy of Sciences, 2002). The fact that Kahneman is a psychologist winning the Nobel Prize in Economic Sciences reflects how interdisciplinary the fields are. In the decades prior to this breakthrough, behavioral and experimental economics were recognized more as an "amusing sideline, not really as a serious contribution to the field of economics" (Sugden, 2010). Today, the fields are flourishing. As measured by publications in important journals and new doctoral dissertations, behavioral and experimental economics are among the most active fields in economics (The Royal Swedish Academy of Sciences, 2002).

## 2.2 Moral motivation

*Economists tend to focus on equity when they talk about fairness. (...) we got to get away from that. Fairness means a lot more than (...) equity. It's about the rules of the game.*

Professor Bart Wilson, Chapman University

Aside from bounded rationality, non-economic motivation is an important modification of the economic man and one of the main topics in behavioral economics. Non-economic motivation can be based on either social or moral aspects, and this thesis will concentrate on the latter. Two classical games serve as an introduction to this section on moral motivation.

### *The ultimatum game*

The ultimatum game is a stylized game situation first presented in Güth, Schmittberger and Schwarze in 1982 (Bearden, 2001). It consists of two players, let us call them A and B, and a sum of money or another good, let us say 100 kr. Player A is then to divide the sum of money between himself and player B. Player B can either accept the offer and both players keep whatever the amounts player A decided, or he can decline and none of them get anything. Traditional game theory says that player B prefers more over less and therefore that he will accept any offer greater than zero. As player A also prefers more over less, he is motivated to keep as much as possible to himself. The solution is consequently that player A will give away the smallest amount possible that is greater than zero, 1 kr, and keep 99 kr to himself. Player B will then accept as $1 > 0$.

This is not what happens in real ultimatum games. Several studies have examined real behavior in this game, and most find that the players do not act according to neo-classical game theory (Bearden, 2001). The concept of *fairness* seems to be prevalent to a considerable extent. The players share the sum of money more equally than explained by neo-classical game theory. Player B usually finds being assigned 1 kr unfair and will not accept. The result is then less money, but at least the outcome is fair as both players get 0 kr. The question is how much money player B is willing to "pay" for fairness. He faces a trade-off between receiving money, but being treated unfairly, and receiving no money, but reaching a fair outcome and at the same time punish player A for his unfair suggestion. Player A will thus be motivated by self-interest, fairness considerations and the fear of player B rejecting the offer. Thus he offers more than 1 kr. Whether the outcome is a 80/20, 60/40 or 50/50 split, the conclusion is the same: Real ultimatum games prove that humans take fairness considerations into account in economic decision making.

### *The dictator game*

A similar, but simpler game is the dictator game. Actually, it is not really a game as much as a single-person decision scenario. Two players are assigned a sum of money. Like above, let us imagine that players A and B get 100 kr. Player A is the dictator and can divide the money however he prefers. The players are anonymous, do not know each other and only play the game once. Player B can only accept, so player A's assignment is the final outcome of the game.

As in the ultimatum game, traditional game theory suggests that player A is to keep as much as possible. In the dictator game, this means keeping all the money. And, as in the ultimatum game, experiments show that we do not act that way (Engel, 2010). More than a hundred dictator game experiments have been carried out and published over the last three decades, and the results show great variation (ibid). However, most studies, including Engel's meta study (2010), easily conclude that people do in fact give money to the other player even if they do not have any economic incentives to do so. Like in the ultimatum game, fairness considerations are taken into account to a considerable extent in distribution situations.

This thesis studies a variant of the dictator game where the dictator is a third party and not one of the two players. Also, the money that is to be distributed is earnings after a real work effort task, and in addition the money is preliminary distributed by a lottery. I will return to this in later sections after presenting the concept of fairness ideals and the illusion of control.

## 2.3 Fair and unfair inequality

In order to answer the question about which inequalities should be corrected and which are acceptable morally and theoretically, we have to search in philosophical literature about fairness and distributive justice. What is fair and what is unfair inequality depends on what caused the initial inequality and what kind of fairness ideal people have (Lamont & Favor, 2008). A fairness ideal is a sort of mindset describing what a person finds fair and unfair in principle. Normally, unequal distribution is caused by differences in luck, effort, innate abilities, choices or a combination of these factors. Luck and innate abilities are often considered factors beyond individual control. Effort and choice, on the other hand, is usually determined by the individual itself. Still people differ in opinions on what factors one should be held responsible for, and what factors one should not have to bear the consequences of. Some consider all inequality unfair, while others argue that inequality due to for instance difference in effort should not be redistributed. Some find inequality caused by difference in innate talents and abilities unfair, while others oppose this view. In philosophy we find quite a few different theoretical fairness ideals, presented in the following brief review.

The *strict egalitarian* fairness ideal refers to the belief that everybody should have the same wealth regardless of all factors (Lamont & Favor, 2008). People should not be held

responsible for neither talent nor effort. That means that inequalities in ex post outcomes should be evened out no matter what the origin of the inequality is. We find this view in political ideologies such as communism and Marxism (Arneson, 2009). A different view is the *libertarian* view. Libertarians claim that distributive justice is that each person is entitled to whatever wealth he or she earns or produces. This view states that individuals are responsible for both talent and effort, and also that people are entitled to enjoy the wealth obtained through luck. A libertarian will give the individual the benefits of traits such as innate abilities. If a person is born smart and talented and experience success because of this, he should be the one who reaps the fruits. In between these opposing views we find *liberal egalitarianism* (Cappelen, et al., 2007). The followers of this view believe that a person is responsible for the effort put in to obtain wealth, but not for the talent. Ergo, inequality in wealth due to differences in effort is acceptable, but inequality caused by different initial abilities and talents should be evened out because it is beyond the individual's control. Fourth, *meritocrats* hold people responsible for all factors related to personal traits, regardless of whether it is talent or effort. Educational reward systems such as common grading systems are based on this view. An examiner does not care whether your performance is caused by hard work or initial abilities; the only thing that matters is the results.

A fifth fairness ideal is *choice egalitarianism*. This holds people responsible for their choices, but not for their luck (Cappelen, et al., 2011). This means that choice egalitarianism and liberal egalitarianism might overlap in some situations, if talent is characterized as luck and effort is determined by choice. The motivation behind a choice egalitarian view might be that in a group wherein wealth is redistributed, like a welfare society or an organization, people should not have to give up some of their obtained wealth because another person made a bad choice. Also, the person making the choice could be tempted to not make a thoughtful decision, because he knows that if he makes a bad choice, he will be insured by others who made better choices. If this was the case, no one would have the incentive to make good choices. One area of study where this ideal is put into use is in contract theory with principal-agent problems. Here, it is claimed that whoever is in a better position to influence risk, should bear the risk. Contract designers take microeconomic theory and knowledge about incentives into account when making efficient contracts. Contracts should be designed such that the one who determines the effort is the *residual claimant* (Mathiesen, 2010). The wedding planner, not the wedding couple, should bear the cost of exceeding the

wedding budget as it is the wedding planner, and not the wedding couple, who is in a better position to manage the wedding costs. Otherwise, the wedding planner would not have incentives to act according to the budget, and the wedding couple could end up with costs far bigger than expected without being able to control it.

The main interesting question is what real world factors that people believe that individuals should be held responsible for. Any outcome is determined by a set of factors. One example is individual pre-tax income, which is determined by factors such as age, gender, family background, number of hours worked, years of education, discipline of education, whether the person works in the private or public sector and country of residence (Almås, et al., 2011). Which of these factors should be in the *responsibility set?* That is, where to draw the *responsibility cut*? A prominent view in our society is that of choice egalitarians and liberal egalitarians, stating that one should be held responsible for factors under one's control, but not for factors beyond one's control (Cohen, 1989). That leads us to the next question of what is under one's control or not. This thesis is interested in studying the nuances of the notion of responsibility, keeping in mind the illusion of control. The illusion of control is a theory from psychology by Langer (1975) claiming that people have a tendency to exaggerate the meaning of choices, defined as "an expectancy of a personal success probability inappropriately higher than the objective probability would warrant" (Langer, 1975). Langer finds that choices, among other factors, causes people to believe that they can control or influence outcomes when they really cannot. An example is a result from one of Langer's experiments saying that we value a lottery ticket with our own chosen numbers higher than a ticket with randomly chosen numbers.

Cappelen, Sørensen & Tungodden (2010) tried to map what people actually hold each other responsible for among the factors price, working time and productivity in an experiment with a distribution phase following a production phase. They found that people, at large, do not hold each other responsible for the randomly assigned price which was obviously beyond individual control. They did, however, hold each other responsible for working time and productivity. Whether the participants chose to work 10 minutes or 30 minutes was determined at the individual level, and holding people responsible for this is hence in accordance with the liberal egalitarian view or the choice egalitarian view. When it comes to productivity, measured by how many words the participants were able to type correctly during the working time, a factor considered beyond individual control by the scholars, they found that people in fact do hold each other responsible for this. This is interesting. Both

price and productivity is considered beyond individual control, still most people hold each other responsible for productivity, but not price. The scholars conclude in the following way:

> Our preferred interpretation of this finding is that for many of our participants, the core distinction when drawing the responsibility cut was not between choices and circumstances, but between impersonal and personal factors. (Cappelen, Sørensen & Tungodden, 2010, p. 440)

Another interesting study revealing how people treat the notion of choice is that of Savani & Rattan (2012). Through six experiments, they find that priming (American) people on the concept of choice increases the acceptance and maintenance of wealth inequality. Their hypothesis was that being reminded of the concept of choice activates the belief that outcomes in life are a determined by personal agency and not from outside, uncontrollable factors. This leads to justification of economic inequality. They primed their treatment group by asking them to list four *choices* they made yesterday prior to questions about inequality, in contrast to the control group which was asked to list four *things* they did yesterday prior to the same questions on inequality. Their hypothesis proved correct and Savani & Rattan conclude as follows:

> (…)when choice is highlighted, people are less disturbed by facts about the existing wealth inequality in the U.S., more likely to underestimate the role of societal factors in individuals' successes, less likely to support the redistribution of educational resources, and less likely to tax the rich even to resolve a government budget deficit crisis. (Savani & Rattan, 2012, p. 2)

This study was carried out in America where the notion of choice is important and highly valued (Savani & Rattan, 2012), and one can discuss to what extent we would come to the same conclusions outside the U.S. Nonetheless, the study reveals an interesting mechanism in the attitudes towards distributive justice and the role of choice.

Yet another tendency in distributive justice is uncovered by Barr, et al. (2012). They conclude that relatively well-off people take differences in effort and productivity into account when redistributing to a greater extent than relatively poor people do. By running a four-person dictator game with two treatments – one where the initial allocation was random and one where the initial allocation reflected relative performance in a production phase – they found that well-off people redistribute differently according to whether the initial

allocation was random or a result of performance, while poor people did not. To increase generalizability, the researchers carried out the experiment both in Oxford, UK and Cape Town, South Africa. The same conclusion was drawn for both locations. This study suggests that there are socio-economic differences in acknowledgement of effort and productivity. It remains for further research to establish whether the same differences apply to acknowledgement of choices.

## 2.4 The motivation function

We have concluded that both self-interest and fairness considerations affect humans in economic decision making. Depending on the *fairness ideal* a person prefers, he will consciously or unconsciously maximize his utility. The concept of utility functions is assumed known in this thesis. His utility is still increasing in income, but it is at the same time decreasing in deviation from his fairness ideal. The optimal allocation thus depends on the weight a person gives to income and fairness considerations and the fairness ideal (Cappelen, et al., 2007). The more he cares about his own income, the more he will allocate to himself. The more he cares about fairness, the closer to the perceived fair allocation he will distribute the money. In a simple dictator game, where the sum of money that is to be distributed is simply given to the players rather than them working to earn it, the utility function – or motivation function – will look something like the following (Cappelen, et al., 2007; Bolton & Ockenfels, 2000):

$$V_i(y_i, X) = a_i y_i - \frac{\beta_i}{2}(y_i - m^{k(i)}(X))^2$$

where $X$ is the sum of money that is to be divided and $y_i$ is person $i$'s payment. $a_i$ is the weight $i$ puts on his own income and $\beta_i$ is the weight he puts on fairness considerations. $m^{k(i)}$ represents $i$'s fairness ideal, hence $m^{k(i)}(X)$ is what person $i$ in principle thinks is his fair payment. Given an interior solution, the optimal allocation is

$$y^* = m^{k(i)}(X) + \frac{\alpha_i}{\beta_i}$$

The optimal solution depends on person $i$'s fairness ideal and the weight he puts on income and fairness considerations. In a simple dictator game where none of the players have worked to earn the money, most will find an equal distribution the most fair, $m^{k(i)}(X) = 0{,}5$ (Bolton & Ockenfels, 2000). Thus, this game does not reveal much about fairness ideals, nor does it reflect most real life distributive situations. In society, the goods that are to be distributed are usually a result of production, not "manna from heaven" (Cappelen et al., 2007). To better study what fairness ideals people support, some experiments include a production phase prior to the distribution phase (ibid). In the production phase the participants are asked to work on a certain task for a given or optional period of time. By working on a task, the participants feel that they are entitled to some form of compensation, as opposed to "free money" that can be considered a bonus rather than something they have a right to claim. By introducing a production phase, experimenters can provoke, identify and analyze the dictators' motivation. Manipulating the production phase in different ways allows for uncovering different mechanisms in the distribution phase. Examples of manipulations are optional working time, randomized differences in wages, and paying according to productivity. Optional working time opens up for differences in choice and effort. Randomized differences in wages introduce an element of impersonal luck, while paying according to productivity reveals the element of talent or innate abilities. All these factors affect what we consider a fair distribution of income.

A version of this distributive situation is one where the person who is given the task of redistribution is not himself one of the players. The experiment in this thesis is based on this version. Consider an experiment where two players, A and B, have been working on a task, and then a third party spectator, player C, is to distribute the earnings between A and B. C's own payment will not depend on the redistributive choice he makes for A and B, and thus his own payment and the weight he puts on it is left out of the equation. Still an anonymous experiment, the factor left to explain C's redistribution decision is his fairness ideal, given that he knows how the initial allocation of earnings came to be:

$$D_C = m^{k(C)}[X(e, c, l, t)]$$

The above equation shows what factors affect C's redistributive decision. We assume that all factors that affect an outcome can be categorized as effort, choice, luck or talent. $X$ is the total earnings that are to be distributed, and $X$ depends on player A and B's effort ($e$), choices ($c$), luck ($l$) and talent ($t$) where $X = x_A + x_B$ and $x_i(e_i, c_i, l_i, t_i)$. However, in this

experiment, all participants worked for 30 minutes, so the effort is the same for everyone. Also, a participant's number of correct sentences completed is unknown to everyone. Productivity, reflecting talent, is thereby unidentifiable. Eliminating these factors and translating the described fairness ideals strict egalitarianism (SE), libertarianism (L), liberal egalitarianism (LE) and choice egalitarianism (CE) into formal equations, we get the following (developed from Cappelen, et al., 2007 and Cappelen, et al., 2011)

$$m^{SE}[X(c,l)] = \frac{X(c,l)}{2}$$

$$m^{L}[X(c,l)] = x_i(c,l)$$

$$m^{LE}[X(c,l)] = \frac{X(c,l)}{2}$$

$$m^{CE}[X(c,l)] = \begin{cases} \frac{X(c,l)}{2} \; if \; c_A = c_B \\ x_i(c,l) \; if \; c_A \neq c_B \end{cases}$$

For the SE ideal, the total earnings are divided equally among the two players regardless all factors. For the L ideal, there is no redistribution and player $i$ keeps whatever he earned regardless how he earned it. For LE, a player is entitled to a share of the total earnings that equals his share of the total effort as liberal egalitarians believe that people should be held responsible for effort, but not talent or luck. If effort is the same for both players, as in the experiment used in this thesis, the fair distribution is an equal split. Concerning the choice egalitarian (CE) ideal, player A and B are entitled to an equal share of the total earnings if they have made all the same choices. If they differ in choice, they are held responsible for that, and are entitled to whatever they have managed to earn individually.

## 2.5 Experimental economics

### 2.5.1 The experimental approach

Half a century ago, the experiment as a scientific method was predominantly reserved for medicine, the natural sciences and to a certain extent psychology (Cappelen & Tungodden, 2012). Consensus among economists was that the experimental approach could not be applied in the field of economics. Scholars like John Stuart Mill, Lionel Robbins and Milton Friedman all opposed the use of laboratory experiments in economics, followed by Richard Lipsey concluding that "it is rarely, if ever, possible to conduct controlled experiments with the economy" (Guala, 2005). The opponents' arguments were that one could not test economic hypotheses in laboratory experiments because labs could never control for all factors influencing decisions and thus not mimic real life situations. Today, experimental economics is one of the most flourishing fields in economics. By now, the experiment has indeed proved to be a useful tool in testing economic theories and hypotheses. An example is the previously mentioned dictator game where traditional game theory claims that the dictator will keep all the money, whereas numerous experiments show the opposite (Engel, 2010).

The use of experiments has been crucial for the development of behavioral economics (Cappelen & Tungodden, 2012). Experiments, carried out either in the field or in the lab, allow scholars to question economic models by showing what people actually do in contrast to what theory predicts they ought to do. Experimental findings either extend normative theories with descriptive empirics or refute the theory altogether. Where theoretical models fail to capture all mechanisms active in a scenario, real world data contains too much noise to say anything about causal effects, and surveys only give normative information on attitudes or behavior, the controlled laboratory experiment allows us to study true economic behavior and to establish causal relationships. True economic behavior is induced by monetary incentives. Most economic experiments use real money rewards in order to mimic real life situations and in that way uncover true behavior, and the participants usually know how much money is at stake (Cappelen & Tungodden, 2012). The laboratory experiment has two features that are particularly advantageous for establishing causal relationships: The ability to create a controlled environment where nothing but the variable of interest varies (Falk & Heckman, 2009), and randomization.

An outcome, decision, or a way of behaving can be caused by a range of factors. Studying real events or behavior, identifying what factors actually caused the outcome can be challenging and lead to speculative or spurious conclusions. The real world often has too much "noise" to study pure, causal effects. In a controlled lab experiment, however, all these other factors can be controlled for. If we believe that self-interest affects a person's decisions and we originally want to study the prevalence of moral motivation, we can manipulate the experiment by letting the distributor's own payment be independent of his decision. If we believe that social status or image affects a person's decisions and we originally want to study the prevalence of self-interest, we can manipulate the experiment by letting all decisions be anonymous. The manipulative control a lab setting facilitates, allows us to operate in a less "noisy" research environment.

A second favorable feature of the economic experiment is the fact that it allows randomization which again lets us establish causal relationships, and not just correlation (Cappelen & Tungodden, 2012). Identifying correlating variables is fairly straightforward for any kind of data, but it is often hard to tell which is the cause and which is the effect. Identifying causality is for obvious reasons preferable when trying to understand mechanisms in the economy and in the world at large. Imagine we have real world data showing a positive correlation between health and income; the higher the income, the better the health condition. Does this mean that high income causes good health, that good health leads to higher income, or is there a third factor affecting both income and health, like general abilities and sense? In controlled experiments, it is possible to ensure that all other possible factors that could influence the dependent variable, except the variable of interest, are equal among two groups (ibid). By letting the two groups be equal regarding observable characteristics, one can easier identify how the variable of interest affects the dependent variable. If we for instance suspect that age affects health and/or income, we can look at two groups within the same age interval to rule out the age effect. Furthermore, it is also possible to design an experiment such that we can assume randomization on non-observable factors as well. Imagine a group of people who are randomly drawn from a sample and given a treatment while the rest of the sample is not. The group given the treatment is called the treatment group, while the rest serves as the control group. Since the treatment is the only factor that separates the two groups, one can establish that any differences between the two groups are caused by the treatment.

To illustrate this logic formally, I use the framework of Deaton (2010, pp. 437-439). Here, $T$ represents treatment. $T_i$ is hence 1 if individual $i$ is in the treatment group and 0 if he is in the control group. $Y_i$ denotes the outcome for individual $i$, and is divided into $Y_{i1}$ if $i$ is in the treatment group and $Y_{i0}$if $i$ is in the control group. What we are interested in is the difference in outcome caused by the treatment, $\bar{Y}_{i1} - \bar{Y}_{i0}$. From the experimental data we observe the average outcome in the treatment group and the control group, $E(Y_i \,|T_i = 1)$ and $E(Y_i \,|T_i = 0)$. By manipulating the difference $E(Y_i \,|T_i = 1) - E(Y_i \,|T_i = 0)$ like below, we are able to reach the desired causal effect:

$$E(Y_{i1} \mid T_i = 1) - E(Y_{i0} \mid T_i = 0)$$

$$= [E(Y_{i1} \mid T_i = 1) - E(Y_{i0} \mid T_i = 1)]$$

$$+ [E(Y_{i0} \mid T_i = 1) - E(Y_{i0} \mid T_i = 0)].$$

So far, we have simply added and subtracted the same term, $E(Y_{i0} \mid T_i = 1)$. As we see, the second bracket term now cancels out as the expected outcome for the control group is the same whether treatment is given to the treatment group or not. Thus, we are left with

$$E(Y_{i1} \mid T_i = 1) - E(Y_{i0} \mid T_i = 0)$$

$$= [E(Y_{i1} \mid T_i = 1) - E(Y_{i0} \mid T_i = 1)]$$

which can be abbreviated to

$$E(Y_{i1} \mid T_i = 1) - E(Y_{i0} \mid T_i = 0)$$

$$= E(Y_{i1} - Y_{i0} \mid T_i = 1)$$

This is an estimated treatment effect among the treated, but because treatment is the only thing that separates the treatment and control groups, it is also an estimated treatment effect for all. These simple, but convenient properties of the economic experiment makes it a powerful tool for estimating causal relationships.

### 2.5.2 Shortcomings and critics of the experimental approach

Despite the obvious benefits of the economic experiment, there are still reasons to hesitate relying solely on its conclusions.

The main concern regarding the economic experiment is its external validity and generalizability. This means to what extent the conclusions from an experimental study apply to the world outside the lab, to other settings or populations (Campbell & Stanley, 1963). Several properties of the economic experiment contribute to undermining the extent to which the results can be generalized:

**The Hawthorne effect**

The Hawthorne effect refers to the idea that the participant's awareness of being a part of an experiment affects his behavior in the experiment (Jones, 1992). This means that had he acted in the real world or not known he was a part of an experiment, he might have behaved differently, and the experimental results do not necessarily reveal genuine economic behavior.

**Lack of representativeness**

If the sample in an experiment has different characteristics than a greater population, the sample is not representative for that population. Thus, the conclusions drawn from the experiment cannot necessarily be directly transferred to the other population. One example is student samples. So far, many economic experiments have typically been conducted on undergraduate business students as this group is usually the most convenient group to reach for scholars (Cappelen & Tungodden, 2012). As students for many reasons have different characteristics than, say, the population of Norway as a whole, knowledge obtained through such experiments do not necessarily apply to the general public. Another example is representativeness across national borders or across socio-economic groups. Results from an experiment conducted in the United States will not necessarily comply with results from the exact same experiment carried out in Russia. Similarly, experiments carried out in urban areas might not show the same results as if the experiment was carried out in a rural district.

**Excluding influential emotions**

Milton Friedman claimed that "we can seldom test particular predictions in the social sciences by experiments designed explicitly to eliminate what are judged to be the most important disturbing influences" (Guala, 2005, p. 2). Above it was claimed that the opportunity to eliminate certain factors was an advantage. What causal relationships are concerned, this is true, but the flipside is that we are excluding factors that do in fact influence us in the real world (Schwartz, 2008). This obviously weakens the external validity

of an experiment. With respect to this, an experiment is just like any other scientific model; in its stylized form it is unable to catch the complexity of the real world.

**Improper monetary incentives**

As previously mentioned, most economic experiments involve real money in order to recreate the economic incentives prevalent in the real world. Obviously, the amounts at stake in experiments are not as large as in real life. In an experiment studying attitudes toward risk, for instance, most participants can afford losing everything. The same would not be true for risky situations in real life. Hence, we can suspect that we observe less risk averse behavior or more risk seeking behavior in experiments than in real life.

Another shortcoming of the experiment as a way of understanding what motivates behavior, is the fact that experimental studies usually only look at the choices people make, and not the reasoning behind the choices. We only observe the actual behavior, while all the processes that lead to the behavior remain unknown to the researchers. One way of supplementing experiments with regard to this, is to use interview-based studies to gain even more insight. A different area of study also aspiring to look beyond the actual behavior or decision making of experimental subjects, is neuroeconomics. Neuroeconomics is yet another interdisciplinary field of study linking traditional economics and behavioral economics to neuroscience (Schiller, 2011). By connecting the experimental subject to an MRI scanner and studying these MRI pictures while the subject makes economic choices, one can see what parts of the brain are activated during a certain task or decision making process in the experiment (Lem, 2012). Still at an early stage, neuroeconomics allows us to use knowledge about the brain and cognitive processes in order to take insight about economic decision making to a new level.

# 3. Research design

The empirical section of this thesis is built around an economic experiment. This chapter will present the experiment's context, design and execution.

## 3.1 Context

### 3.1.1 The Choice Lab

The experiment that provides the data for this thesis was designed and carried out by scholars from The Choice Lab at the Norwegian School of Economics (NHH). The Choice Lab is a team of researchers, mainly from the Department of Economics at NHH. The mission of the research group is to "[learn] more about how people make economic and moral choices, and how governments, corporations and non-governmental institutions can use insights from this research to improve their decision making" (The Choice Lab, 2012). The activities of The Choice Lab are mainly funded by the Research Council of Norway, and research output has been published in top academic journals like *Science*, *Journal of Political Economy* and *American Economic Review* (ibid). The researchers associated with this particular experiment are Professor Alexander W. Cappelen, PhD student Sebastian Fest, Professor Erik Ø. Sørensen, and Professor Bertil Tungodden. The role of the undersigned in the experiment process was to take part in planning the experiment, help recruiting participants, and assist in carrying out the experiment.

### 3.1.2 The vignettes

Prior to the lab experiment, two vignette studies were conducted among students at NHH. The purpose of the vignettes was to test the planned experimental design in order to discover any deficiencies of the question formulations and explanations. To discover possible sources of misunderstandings or misinterpretations as easily as possible, the vignettes included a comments box where the participants could freely write down any comments on the task they had just completed. The comments, along with analyses of the answers given, provided a basis for the evaluation of the original design and for further editing of the design. Such quality control increases the reliability and internal validity of an experiment.

### 3.1.3 Recruitment

To increase the external validity by not only experimenting on business students and to increase the sample size, students from the University of Bergen (UiB) were invited to participate in addition to NHH students. The University of Bergen is a medium-sized university with approximately 14 000 students offering study programs within most fields of study (UiB, 2012). The main campus is located near the city center of Bergen. Recruitment was done by physical recruitment stands at the different faculties a few days prior to the experiment. Stands were present at the Faculty of Humanities, the Faculty of Law, the faculty of Social Sciences, the Faculty of Psychology and the Faculty of Mathematics and Natural Sciences. The reason for this broad approach in the recruitment process was to recruit a sample that was as representative for the UiB student population as possible. Stands were located in typical mingling areas during lunch hours to reach out to as many students as possible. They were briefly informed about the experiment and the fact that they would earn a minimum of 100 kr. Stands were manned by research assistants from The Choice Lab. Students who wanted to participate signed up to the session that suited them the best either at the stand or online. As the experiment was carried out in a building located conveniently on campus close to several faculties, the location should not cause a severe selection effect in that some students chose to participate or not participate because of the location of the experiment.

A second round of the experiment was carried out at NHH one week after the UiB experiment. NHH is a scientific university college offering study programs within economics and business administration. NHH is located in one of Bergen's suburbs and educates approximately 3000 students. Students were invited via e-mail and they signed up online to the session that suited them the best. Only second year students and master students were invited to this experiment because vignettes had been run on first and third year students, and including these could bias the results. The experiment took place on the NHH campus, so I assume no selection effect from the choice of location.

### 3.1.4 The sample

***Table 3.1 – Summary of sample***

| Treatment | % female Mean (se) | Age Mean (se) | CR score Mean (se) | N |
|---|---|---|---|---|
| **1:No choice** | .44 (.04) | 22.83 (.27) | 1.58 (.09) | 145 |
| **2:Nominal choice** | .47 (.04) | 22.71 (.26) | 1.55 (.10) | 140 |
| **3:Forced choice** | .47 (.04) | 22.49 (.25) | 1.84 (.09) | 137 |
| **Total** | .46 (.02) | 22.68 (.15) | 1.65 (.05) | 422 |

The total sample consists of 422 participants, whereof 187 are UiB students and 235 are NHH students. It was not asked which faculty the UiB students belonged to. The gender distribution is 195 women and 227 men. The average age is 22.7 years, and more than 80 per cent is between 20 and 25 years old. The true age distribution at NHH and UiB is similar, with most students being between 21 and 25 years old (Database for statistikk om høgre utdanning, 2012). In terms of age, the sample is thus representative for a student population. The average score on the cognitive reflection (CR) test is 1.65 points out of a maximum score of 3 points. The distribution among the three treatments no choice (NO), nominal choice (NF) and forced choice (FC) is 145, 140 and 137 objects, respectively. 59 per cent of the sample are bachelor students, 31 per cent are master students, leaving 10 per cent to other study programs, i.e. year programs or PhD programs. In our sample, approximately 70 per cent vote for Arbeiderpartiet (the labor party) or Høyre (the conservative party). The political opinion of the sample does not seem to differ too much from the general political opinion in Norway.

### 3.1.5 Setting

The experiment was carried out at two different locations and dates: October 25$^{th}$ 2012 at UiB and November 1$^{st}$ 2012 at NHH. Both experiments were carried out in computer labs on campus and included multiple sessions during the day. Six sessions were carried out at UiB, the first one starting 8.15 AM and the last one starting 6.15 PM. Four sessions were carried

out at NHH, the first one starting 10.15 AM and the last one starting at 4.15 PM. A PhD student and a research coordinator from The Choice Lab led the experiment, helped out by research assistants. The participants were asked not to communicate with each other during the experiment, and they were prevented from looking at each other's screens by partitions. A session lasted for approximately 1.5 hours, depending on how quick the participants answered the questions. The participants were not allowed to leave their seats during a session. The experiment was conducted in Norwegian.

### 3.1.6 Within-session randomization

The participants were randomly assigned to a specific seat in a specific room by picking a numbered ball from a basket. Their seats determined what treatment they were given. All treatments were given in each session. This within-session randomization increases the validity of the experiment compared to experiments where each session is given only one treatment. This because one can assume that sessions are not perfectly randomized as their participants may differ in circadian rhythms and other factors affecting their choice of session. For example it might be the case that participants signing up for the 8.15 AM session are different on observables and non-observables than the rest of the sample as they might be more disciplined and hard working.

## 3.2 Design

The participants were given instructions and general information about the experiment from moderators who were physically present in the labs. The full instructions and questions are reproduced and translated in their entirety in appendix A1. The experiment consisted of four segments: First there was a production phase, followed by the lottery and the preliminary payment. Then the redistribution phase was carried out, and the experiment concluded with a questionnaire. In the following, I will first present the baseline treatment and the rationale behind its design. Then I will present the choice treatments, explain the differences between these and the baseline, and explain the motivation behind their design.

**The production phase**

As mentioned in chapter 2, this experiment included a production phase where the participants were asked to work on a task for 30 minutes. The reason for this is to better

mimic real life situations. In society, the goods that are to be distributed are usually a result of production, and by working on a task the participants feel that they are entitled to some form of compensation for their effort. This opposed to receiving "free" money than can be considered a bonus rather than something they feel a right to claim. The task was to build four-word sentences from five given words. For example the five words SKY OLD IS BLUE THE could form the sentence THE SKY IS BLUE. When a sentence was completed, five new words appeared. The participants were asked to work on this task for the full 30 minutes. They were instructed that they should work on the sentences carefully rather than try to finish as many as possible. Further, they were not informed whether or how they would be compensated for this effort before they started working, apart from initially being informed about the show-up fee of 100 kr and the possibility to earn more.

**The lottery – preliminary payment determination**

When the 30 minutes had passed, the participants were informed about how their payment would be decided. This is the phase where different treatments were introduced. The sample was randomly divided into three, decided by their seat numbers. The baseline group was given the following instructions about how their payment would be decided:

> *How much money you make will be determined by a lottery where you with equal probability will make 800 kr or 0 kr. In the lottery, a ball will be randomly drawn from a ballot with an equal amount of yellow and green balls. If a yellow ball is drawn you will make 800 kr, if a green ball is drawn you will make 0 kr.*

**The redistribution phase**

Next, the participants were told that they were to redistribute the total amount earned between two other participants in the experiment, A and B, whose payments had been determined in the same way as for themselves. By now, the participants did not know the outcome of their own payment lottery, because this information could bias the redistributive decision at hand. The lottery of the other two players had resulted in player A making 800 kr and player B making 0 kr. They were informed that how they allocated the money would not affect their own payment, but that their decision could possibly determine the payments of the two other participants. Since all participants were to redistribute between two other participants, only some of the decisions could be implemented. The role of this third party spectator is thus that he was indeed a participant in the experiment, but not in this particular redistribution situation where he was a dictator. Had he been one of the players, self-interest

would probably color his decision to a considerable extent. Another option would have been to let the spectators be pure spectators, and not themselves work and participate in the lotteries. The reason why the spectators are players in other games is to increase observations by letting each participant have two roles in the experiment. Whether we would have seen different results if the spectators were pure spectators, remain speculations in this thesis. On one hand, a pure spectator is more neutral and unbiased. On the other hand, a participating spectator will most likely more easily identify with the situation and recognize the details in the game.

After the participants had decided how much they wanted to transfer from the player with 800 kr to the player with 0 kr, they were asked to write down their motivation behind their redistribution decision. This was done to gain a deeper understanding of what motivated the decisions.

**The Questionnaire**

Finally, the participants answered questions on age, gender, political views and whether they were bachelor students, master students or other. They also answered questions about to what degree they perceived that luck, hard work and talent determine personal income, and also to what degree they thought it is *fair* that luck, hard work and talent determine personal income. They also reported to what extent they thought we should do more or less to even out income differences in Norway. Finally, they answered three assignments in the form of numerical "brain teasers" in order to identify the respondents' cognitive reflection. This was included to analyze whether there is a relationship between redistributive decisions and cognitive reflection. This is discussed further in chapter 4.

At the end of the experiment, the participants got to know their final payments and got the money in cash in sealed envelopes with payment codes on. The research assistants who put the money in the envelopes were not the same ones who handed them out. This to maintain anonymity in that no one besides the participant himself could know the size of a participant's payment.

This baseline treatment was designed for the purpose of provoking the wish for an even distribution. The notion of real work effort that was the same for all participants and the lottery being presented as a payment for this effort was supposed to trigger a substantial transfer from the lucky winner to the unlucky loser. The reason for preferring a fairly even

distribution in the baseline is that it serves an appropriate comparative basis for the other treatments where the hypothesis was a less even distribution. The only part of the experiment where the design differed from the baseline was the lottery phase. The first choice treatment was one where we changed the lottery by introducing a completely meaningless choice. Although determining the outcome, the two alternatives were identical to the players for all control purposes. Our hypothesis was that the element of choice would trigger the illusion of control and combined with a choice egalitarian fairness view result in smaller transfers from the lucky winner to the unlucky loser.

> ***[Nominal Choice (NC)]***
> *We first ask you to make a choice between two colors, yellow and green. Your choice will determine the outcome of a lottery that decides how much money you will make, where you with equal probability can make 800 kr or 0 kr. In the lottery, a ball will be randomly drawn from a ballot with an equal amount of yellow and green balls. If you have chosen the same color as the ball that is drawn you will make 800 kr, if you have chosen the color of the ball that is not drawn you will make 0 kr.*
>
> *We now ask you to make a choice by clicking on one of the two pictures below.*
>
> *If you have chosen the same color as the ball that is drawn you will make 800 kr, if you have chosen the color of the ball that is not drawn you will make 0 kr.*
>
> *Remember that the ballot contains an equal amount of yellow and green balls.*

Concerning the second choice treatment rendered below, the players were theoretically able to control the outcome. However, the alternative to the risky option was highly unattractive, and for all purposes "forcing" the players to expose themselves to risk. Similar to the nominal choice treatment, the hypothesis for this treatment was that the element of choice would result in smaller transfers from the lucky winner to the unlucky loser than in the baseline.

> ***[Forced Choice (FC)]***
> *You can choose between two different payments. You can either choose to make 25 kr or you can let the payment be decided by a lottery where you with equal probability can make 800 kr or 0 kr. In the lottery, a ball will be randomly drawn from a ballot*

*with an equal amount of yellow and green balls. If a yellow ball is drawn you will make 800 kr, if a green ball is drawn you will make 0 kr.*

*We now ask you to make a choice by clicking on one of the two pictures below.*

*If you choose the picture of the coins, you will make 25 kr, if you choose the picture of the lottery your payment will be decided by a lottery where you with equal probabilities can make 800 kr or 0 kr.*

As we see from the design of the three different treatments, the No Choice (NO) outcome is based on pure luck. The players have no opportunity to avoid the risk the lottery imposes, neither do they have any opportunity to control the outcome of the lottery. In the Nominal Choice (NC) option, the outcome depends on the choice made by the participant. However, this is a meaningless or "empty" choice – a choice illusion. The chance of winning is still 50 per cent, and no information, skills or action can improve the participants' position. In the Forced Choice (FC) option, the participant actually has the opportunity to avoid risk, but at a very high cost. In order to eliminate risk, the participant has to give up 375 kr of the expected value of the lottery of 400 kr (800*0.5 + 0*0.5 = 400) by settling for a safe payment of 25 kr. According to expected utility theory and risk theory, assumed known in this thesis, one has to be very risk averse to pay a risk premium of 375 kr to avoid risk in a game where the expected value is 400 kr. As the safe option decreases in value from the expected value, the safe alternative's attractiveness decreases. As 25 kr is considered a small amount of money for any student in Norway in 2012, at least compared to the potential gain of 800 kr, this option is for most people very unattractive. The FC treatment is thus partly a choice illusion in the way that the unattractive alternative somewhat "forces" the participant to choose the risk of the pure luck lottery, although not as extreme as the NC treatment.

# 4. Findings and analysis

This chapter will present the main findings and analysis of the experiment. I will discuss the results in the light of theory presented in chapter 2, and topics for further research will be proposed.

## 4.1 Distribution of transfers

***Figure 4.1 – Redistributive transfers by treatment***

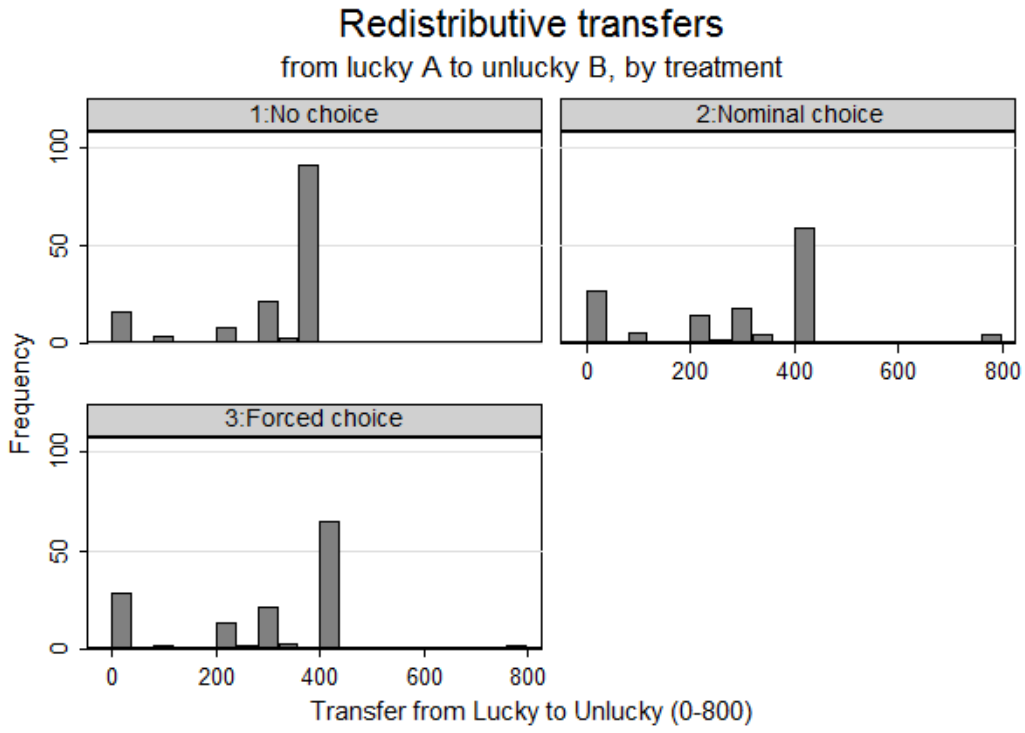


***Table 4.1 – Distribution of transfers by treatment, fractions***

| Transfer in kr | NO | NC | FC | Total |
|---|---|---|---|---|
| **0** | 10.34 | 19.29 | 18.25 | 15.88 |
| **10-350** | 26.9 | 33.58 | 32.12 | 30.80 |
| **400** | 62.76 | 42.14 | 47.45 | 50.95 |
| **500-800** | 0.00 | 4.99 | 2.18 | 2.37 |
| **Total** | 100.00 | 100.00 | 100.00 | 100.00 |

Figure 4.1 and table 4.1 show the distribution of the transfers the spectators made, measured in kr, for the different treatments. We see that most people, 51 per cent, prefer an equal distribution where both player A and player B receive 400 kr, but that this fraction is lower for the NC and FC treatments compared to the baseline. About 16 per cent think that the outcome of the lottery should be the final distribution and do not transfer anything at all to player B. In between, we see some who let player A enjoy being lucky to a certain extent, but still gives a share to player B. Also, we see a few outliers who for some reason transferred more than 400 kr to the unlucky loser B. These five participants only represent about 1 per cent of the total sample, and I consider them exceptions that confirm the concept of forced choice rather than an interesting phenomenon. As there seems to be no obvious patterns concerning observable characteristics for these five participants, I choose not to pursue this further.

## 4.2 The choice illusion

So how is the *ex post* inequality different among the pure luck baseline treatment, and the NC and FC treatments? A simple measure of inequality appropriate for this experiment and this thesis is the following:

$$Inequality = \frac{|Payment\ person\ A - Payment\ person\ B|}{Total\ payment} \in [0,1]$$

This definition says that inequality equals 1 if any of the two persons in a pair of two earns all the money and the other earns nothing. Measuring the absolute values allows for the person earning most of the money being either person A or person B. If person A and person B earn the same, inequality equals 0. Below you see a figure showing the inequality after the spectator has redistributed the total earnings. Keep in mind that the *a priori* inequality is 1 for all treatments as one player won all the money in the lotteries.

***Figure 4.2 – Average inequality***

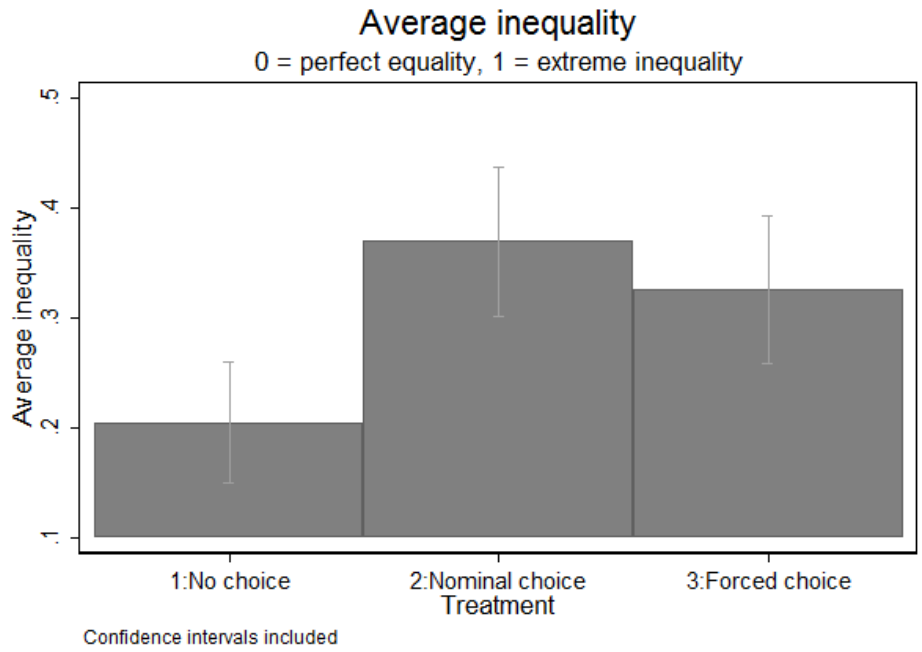


***Table 4.2 – Average inequality***

| Treatment | A→B<br>Mean (se) | Inequality<br>Mean (se) | P-value, Wilcoxon rank sum test<br>$H_0$: Inequality(NO) = Inequality(treatment) |
|---|---|---|---|
| **1:No choice** | 318.2<br>(11.16) | .2044<br>(.03) | |
| **2:Nominal choice** | 287.5<br>(15.90) | .3688<br>(.03) | 0.0001 |
| **3:Forced choice** | 283.3<br>(14.39) | .3246<br>(.03) | 0.0045 |
| **Total** | 296.7<br>(8.04) | .2980<br>(.02) | |

Figure 4.2 and table 4.2 present the main findings of this thesis. The figure shows the average inequality after redistribution for each treatment. The table shows this numerically, with both the inequality measures and the average transfer in kr from the lucky winner A to the unlucky loser B. For inference, I have used the non-parametric Wilcoxon rank-sum test (Mann-Whitney test), see appendix A2. The null hypothesis is that the inequality is the same for the baseline and the given treatment. This table reports the p-values of the test. As we

see, $H_0$ is rejected at the 1 % level for both treatments as the p-values are < 0.01. Thus we conclude that the inequality is significantly larger after redistribution for NC and FC compared to the baseline. This result suggests that the participants suffer from a *choice illusion* – they do in fact prefer a less equal distribution when a choice is introduced, even if this choice is completely or almost completely meaningless. Accepting more inequality when outcomes depend on individual choices is in accordance with the liberal egalitarian and choice egalitarian fairness ideal. Here we see that the NC and FC treatments are to a significant extent considered scenarios involving choice and people are being held responsible for these choices. In the NC case, the participants in this experiment hold each other responsible for choices even though the choice does not give the participants any more control over the situation and the outcome than the baseline. Hence, it seems like they do not to recognize how "empty" this choice is. This is in accordance with the concept of illusion of control. Similarly, they also hold each other responsible for agreeing to expose themselves to risk in the FC case to a significant extent, regardless of the obvious unattractiveness of the safe alternative. This is in accordance with the findings from Cappelen, et al. (2011) where the willingness to redistribute did not depend on the value of the safe option.

Taken into account that the initial inequality was 1 for all treatments, we also see a considerable reduction in inequality across all treatments. This is evidence of somewhat egalitarian preferences; less inequality is preferred over more inequality regardless the rules of the game. For the NO baseline treatment, inequality is reduces by approximately 80 per cent, from 1 to 0.2. For the NC treatment, this reduction is 63 per cent, and the FC inequality is reduced by 68 per cent. This means that the inequality is 85 per cent larger in NC than in NO, and 60 per cent larger in FC than in NO.

In the pure luck case (NO), where the choice component is absent, we see that on average 318.2 kr are transferred from the lucky player A to the unlucky player B. A transfer of 400 kr would prove a strict egalitarian fairness ideal, while a transfer of 0 kr illustrates a libertarian view. For the NC and FC treatments, the element of choice is present and makes a significant difference according to the conclusion above. On average, participants in the NC group transfer 287.5 kr and participants in the FC group transfer 283.3 kr. Assuming an illusion of control in that the participants do in fact look at the choices in FC and NC as real choices, a lower average transfer to the loser and higher inequality is evidence of choice egalitarianism. It could also have been a result of an increased fraction of libertarians, but as we assume randomization we know that the only factor that can explain the differences between NO and

NC/FC is the element of choice. According to the properties of the experiment which allow us to establish causal relationships, we can conclude that the larger inequalities in NC and FC are due to the introduction of a choice.

From section 2.4 we know that the choice egalitarian's decision depend on whether the two players A and B made the same choice or not. In FC, the spectator was informed that both A and B had chosen the lottery, and so one would expect a fairly equal distribution for this treatment. This is not what we observe. In this scenario, the distributer considers two aspects of the lottery. On one hand, the players have made the same choices, and deserve equal payment according to the choice egalitarian view. On the other hand, both players have chosen the exposure to risk, and most prefer holding others responsible for this voluntary risk exposure, resulting in less redistribution. Some decision makers may have perceived this scenario as a dilemma. The fact that the safe alternative is highly unattractive is discussed above.

In the nominal choice situation, the distributing spectator is informed that the two players made *different* choices resulting in A winning and B losing. According to choice egalitarianism, the spectator should then redistribute less than in the baseline. This is in fact the case in this experiment, and this mechanism might also explain why the inequality is slightly larger for NC than FC, although not significantly. Initially, we would perhaps assume less inequality in NC than in FC as the choice in NC adds no control whatsoever while the choice in FC theoretically gives the player some control over the situation. Observing marginally greater inequality for NC than FC (0.36 vs. 0.32, not significant) can thus be explained by the fact that the players did not make the same choice in NC and hence that the spectators believe that inequality due to *different* choices is more acceptable than inequality due to the *same* choices.

## 4.3 Motivation behind transfer decisions

After the transfer decision, the participants were asked to write down what motivated their decision. This was done to gain better insight in people's attitudes and a deeper understanding of what determines what we consider fair and how we treat the notion of choice. There are a few recurring explanations. The table below gives an overview of the most common explanations of transfer decisions. The comments are freely translated.

***Table 4.3 – Motivation behind transfer decisions***

| Transfer | Treatment | Comment |
|---|---|---|
| **0 kr** | **All** | *"Redistribution is changing the rules of the game after the game has been played."* |
| | | *"The winner wins and the loser loses. That is what a lottery is all about. Life is unfair"* |
| | | *"I would have distributed differently if the amounts were larger."* |
| | **NO** | *"One is allowed to be lucky."* |
| | **NC** | *"Player A chose the right color and should be rewarded for that."* |
| | **FC** | *"Both chose to enter the lottery and were aware of the possible outcomes and then they have to deal with ending up with 0 kr."* |
| **0 kr <, < 400 kr** | **All** | *"Player A should enjoy being lucky to some extent, but I do not think it is fair that player B goes home empty-handed."* |
| | **NO** | *"Player A should enjoy being lucky to some extent, but I do not think it is fair that player B goes home empty-handed."* |
| | **NC** | *"Do not want to split 50/50 because A should be allowed to enjoy choosing the right color."* |
| | | *"The lottery is pure luck, and you have not deserved the money just because you chose the right ball. Thus, one person should not get all the money. But despite the luck, you should get a small reward for choosing the right color, as both players had the same starting point before the choice."* |
| | **FC** | *"Choosing the lottery, they agree to gamble their earnings. Still it is unfair that B does not get anything, because both have made the same effort. The winner should have more money, but the loser should also get something."* |
| **400 kr** | **All** | *"Equal pay for equal work"* |
| | | *"This is what I would have wanted others to do for me if I were the loser."* |
| | | *"Both will be quite happy instead of one being very happy and one being unhappy."* |
| | **NO** | *"As the effort is equal for the two, it is not fair that payment is determined by lottery."* |

| | |
|---|---|
| **NC** | *"The color of the drawn ball was completely random and so an equal split is fair."* |
| **FC** | *"The players made the same choices and no differences between the persons are presented. Therefore they should get the same payment."* |

Although the numbers prove the presence of a choice illusion, many treat the NC lottery as a pure luck lottery and use the same arguments as the ones receiving the NO treatment. Also, some explicitly recognize the meaninglessness of the choice, like the second last comment in table 4.3. This reasoning results in the massive reduction in inequality across all treatments. The opposite also occurs, illustrated by comments saying that player A should keep all the money as he chose the right color. Reasoning like this is what causes the choice illusion effect. Consciously or unconsciously, this has affected the spectators and resulted in significantly higher inequality for the NC group. Note also that some express that they would have behaved differently if the amounts were larger. This weakens the generalizability of the experiment as real world income distribution scenarios usually involve amounts that are substantially larger than 800 kr.

Perhaps interestingly, none of the participants *explicitly* recognize the unattractiveness of the safe option in FC. Overall, the objects in this treatment either argue that the players have to take the consequences of exposing themselves to risk, or they seem to ignore the safe option altogether and argue as if lottery were the only option. No one explicitly mentions the fact that the low value of the safe option affects the decision of choosing the lottery. This corresponds to the findings of Cappelen, et al. (2011) where the distributers do not distinguish between different values of the safe option when redistributing gains between lucky and unlucky risk-takers. A common statement from participants choosing to let player A keep all the money is that the choice of risk exposure is one's own full responsibility, without commenting on the value of the safe option relative to the expected value of the lottery. This finding can serve as an argument when suggesting that we ascribe choices too much responsibility as we do not fully recognize the details and nuances in scenarios involving elements of risk, choice and luck.

## 4.4 What affects inequality acceptance?

***Table 4.4 – Regression: What affects inequality?***

| | (1) Ineq | (2) Ineq | (3) Ineq | (4) Ineq | (5) Ineq |
|---|---|---|---|---|---|
| **Choice** | 0.142*** | 0.102** | 0.195*** | 0.213*** | 0.215*** |
| | (0.039) | (0.046) | (0.063) | (0.080) | (0.080) |
| **High CR** | | -0.099 | -0.109 | -0.109 | -0.107 |
| | | (0.072) | (0.076) | (0.076) | (0.076) |
| **High CR*Choice** | | 0.143* | 0.114 | 0.116 | 0.114 |
| | | (0.087) | (0.090) | (0.090) | (0.090) |
| **Female** | | | -0.024 | -0.021 | -0.017 |
| | | | (0.067) | (0.068) | (0.069) |
| **Female*Choice** | | | -0.174** | -0.180** | -0.182** |
| | | | (0.081) | (0.083) | (0.083) |
| **NHH** | | | | 0.016 | 0.014 |
| | | | | (0.064) | (0.064) |
| **NHH*Choice** | | | | -0.029 | -0.026 |
| | | | | (0.079) | (0.079) |
| **Age** | | | | | 0.005 |
| | | | | | (0.006) |
| **Constant** | 0.204*** | 0.230*** | 0.244*** | 0.234*** | 0.123 |
| | (0.032) | (0.037) | (0.052) | (0.065) | (0.151) |
| ***N*** | 422 | 422 | 422 | 422 | 422 |

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Note: Choice is a dummy variable taking the value 1 if the participant is in the NC or FC group. High CR is a dummy variable taking the value 1 of the respondent answered all the cognitive reflection questions correctly. Female and NHH are dummies for being female or attending NHH, respectively. Column (1) reports the effect of a choice treatment on inequality. (2) includes the treatment effect of a high CR score, (3) adds the gender treatment effect, and (4) further check for different treatment effects on NHH and UiB students. Column (5) controls for age. We see a clear gender treatment effect. The initial overall treatment effect is 21.5 percentage points higher inequality.

Table 4.4 allows for a closer look at the results. It reports how CR score, gender, school and age affect the inequality and whether possible effects are treatment effects or general differences. First of all, it is clear that the effect of introducing a choice is driven by the male part of the sample. There is in fact no significant treatment effect among females, only among men. While the overall initial treatment effect of having faced the choice lotteries of NC or FC is a 21.5 percentage point increase in inequality, this increase is 18.2 + 1.7 = 19.9 percentage points lower, and insignificant, if you are female. This is an interesting and

perhaps somewhat surprising finding. Explanations are at this point only speculative. As there is no difference in inequality in the baseline group, it cannot be explained by an overall more egalitarian fairness ideal among women. The results show that men hold others responsible for the choices made in NC and FC to a greater extent than women do. This indicates that women are more sensitive to the nuances in the scenarios and recognize the meaninglessness of the choice in NC and the unattractiveness of the safe option in FC more than men. What could be done in new studies to gain more understanding of these gender differences is discussed in the section on ideas for further research in the latter part of this chapter.

Further, there are no differences across age, school (NHH or UiB), or cognitive reflection test scores. The absence of an age effect is not surprising considering the fairly narrow age span resulting from this being a student sample. One could suspect a difference between business students at NHH and university students at UiB, but we see no such school effect. This concurrence across student groups strengthens the validity. The idea of including the cognitive reflection test comes from Frederick (2005) who examines how ability or intelligence, measured by various cognitive ability tests like the one included in this study, relate to decision making. People with high cognitive abilities differ from people with lower cognitive abilities in various ways (Frederick, 2005), but the question in mind for this experiment was whether we would see any differences in transfers; whether "smart" people redistribute differently than "stupid" people. First off all, we see no such intelligence effect. Second, one can question whether this simple, three-question test is able to reflect the overall cognitive ability of a person. Considering the scope of this thesis and absence of a significant effect, the topic will not be pursued further.

## 4.5 Beliefs about income determination

The questionnaire part of the experiment included questions about to what extent the participants perceived that luck, hard work and talent play an important role in determining personal income, to what extent the participants thought it was *fair* that luck, hard work and talent play an important role in determining personal income, and whether the participants thought we should do more or less to even out income differences in Norway (see appendix A1). As these questions were asked after the lottery and redistribution phase of the

experiment, the answers might be biased as a result of the preceding experience. Consequently, I will not put too much weight on how these beliefs relate to transfers and inequality, but a brief presentation is still appropriate.

***Table 4.5 – Beliefs about income determination***

| Variable | Mean | Standard error |
|---|---|---|
| **Luck** | 6.03 | .12 |
| **Effort** | 2.73 | .10 |
| **Talent** | 3.33 | .09 |
| **Luck_fair** | 7.83 | .11 |
| **Effort_fair** | 1.64 | .07 |
| **Talent_fair** | 3.34 | .11 |
| **Do_more** | 4.85 | .11 |

Table 4.5 reports the mean beliefs about income determination across all treatments. Each answer is given as a number on a scale from 1 to 10, see appendix A1. The variable Luck takes values between 1 and 10 where 1 is that the respondent believes that luck plays an important role in determining personal income, while 10 is that luck does not play an important role. The same logic applies to the variables Effort and Talent. The variable Luck_fair takes values between 1 and 10 where 1 is that the respondent believes that it is fair that luck plays an important role in determining personal income, while 10 is that it is not fair that luck plays an important role. The same logic applies to the variables Effort_fair and Talent_fair. The variable Do_more takes values between 1 and 10 where 1 is that we should do more to even out income differences in Norway and 10 is that we should do less. Expectedly, on average people think that hard work and talent play a more important part in determining personal income than luck do, and they also believe that it is more fair that hard work and effort affect income.

***Table 4.6 – Regression: Beliefs about income determination***

| | **(1) Inequality** |
|---|---|
| **Luck** | -0.002 |
| | (0.008) |
| **Effort** | 0.009 |
| | (0.012) |
| **Talent** | -0.011 |
| | (0.012) |
| **Luck_fair** | -0.029*** |
| | (0.009) |
| **Effort_fair** | -0.026* |
| | (0.015) |
| **Talent_fair** | -0.017* |
| | (0.009) |
| **Do_more** | 0.034*** |
| | (0.008) |
| **Constant** | 0.361** |
| | (0.164) |
| ***N*** | 422 |

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Note: Column (1) reports the effect of the different variable on the ex post inequality. Additional controls that are left out of the table are treatment, age, gender and CR score. The variable Luck takes values between 1 and 10 where 1 is that the respondent believes that luck plays an important role in determining personal income, while 10 is that luck does not play an important role. The same logic applies to the variables Effort and Talent. The variable Luck_fair takes values between 1 and 10 where 1 is that the respondent believes that it is fair that luck plays an important role in determining personal income, while 10 is that it is not fair that luck plays an important role. The same logic applies to the variables Effort_fair and Talent_fair. Consequently, a negative coefficient means that the more a respondent think it is *unfair* that luck determines income, the less inequality his redistributive decision results in. The variable Do_more takes values between 1 and 10 where 1 is that we should do more to even out income differences in Norway and 10 is that we should do less. This model says that the less you think it is unfair that luck determines income and the less you think we should do to even out income differences, the higher inequality you accept in the redistribution phase.

Table 4.6 reveals some expected findings. Controlling for treatment, age, gender and CR score, we see that the more you find it unfair that luck determines income, the more equally you distribute the 800 kr in the distribution phase. Also, the more you think we should do to even out income differences in Norway, the more equally you distribute the money at hand. The rest of the belief variables have very small effects and are insignificant at a 5 per cent level. Keep in mind that these findings might suffer from a bias. Still, the significant correlations represent an intuitive relationship between attitude and behavior, and one can

suggest that this is a likely true relationship.

## 4.6 Shortcomings

As mentioned in section 2.5.2, the economic experiment has its shortcoming and limitations. As a precautionary note to those wishing to study the findings further, a short evaluation of this experiment is appropriate.

First, whether there is a Hawthorne effect present in this study is hard to detect. By letting the participants know that they are a part of an experiment, one always risks getting a Hawthorne effect weakening the validity of the results. As this experiment involves real money, one can argue that real incentives provokes genuine behavior, but as the amounts at stake are relatively small, one cannot reject the claim that results might be biased by the Hawthorne effect to a certain extent. Second, the sample is certainly not representative for a greater population. According to section 3.1.4, there is reason to assume that it is fairly representative for a Norwegian student population, but students differ from the general public in various ways. Ergo, the results cannot necessarily be applied to other populations. Third, this experiment is like any other experiment in that it does not mimic a real world situation and its complexity. This experiment is stylized and only able to look at isolated effects. Fourth, the amounts at stake are perhaps too small to trigger real world economic behavior. Some even mention in the comments that they would have acted differently if the amounts were bigger. Even though the amounts involved obviously are smaller than many real world economic scenarios, 400 kr or 800 kr is not without value for a Norwegian student in 2012, and so the money does indeed serve as true incentives, although somewhat weak.

## 4.7 Ideas for further research

The experiment used in this thesis has limited generalizability because of the sample characteristics and sample size. To increase the external validity of this experiment, bigger and more representative samples are desirable. If the results coincide across different samples, the external validity is increased. If not, it could be interesting to study why some groups suffer from the choice illusion while others do not. Comparing results across socio-

economic groups and across national borders are two examples. For example, an interesting study would be one where the experiment is carried out in different individualistic Western societies like Western Europe and the United States and then compare the results to those of typical East Asian societies that are in general more collectivistic. Hofstede (1980) identifies international cultural differences in a work-related environment, and find that Western societies like the American, German, French and British are in general more individualistic than traditional, collectivistic East Asian societies like the South-Korean, Japanese and Chinese. With this as a backdrop, it could be interesting to see whether these cultural differences affect how much responsibility one ascribes to individual choices and how much one is willing to redistribute.

By expanding the sample one might also find effects of age. In particular, it could be interesting to study how children would redistribute compared to young adults, older adults and elders. Almås, et al. (2010) study how fairness considerations change with age in a variant of a dictator game where self-interest influences the decision. The paper also mentions other literature stating that children move away from a strict egalitarian fairness view towards more recognition of individual contributions and other circumstances as they grow older (Almås, et al., 2010). Applying a pure moral motivation experiment like the one used for this thesis to a sample of children would contribute to the literature on how fairness considerations change through life, and whether the illusion of control also applies to children.

Revealing a clear gender effect, it is desirable to look deeper into why the choice illusion is primarily a male effect. New experimental designs could include other choice situations where the choices are more or less real and see how the gender differences evolve according to how controllable the choice scenarios are for the players. This could reveal whether females in general assign less responsibility to choice, or whether they are just better at discovering meaningless choices.

Finally, as mentioned earlier, the role of the spectator can be examined more thoroughly. By letting some spectators be pure spectators who do not participate in the working task or in the lottery, while others are participating spectators like in this experiment, one can study how the spectator’s position affects his decisions.

# 5. Conclusion

Many assume that increased freedom of choice means better options and increased satisfaction and happiness. On the other hand, more choices mean more responsibility for outcomes in life. This responsibility seems fairly reasonable if the choice scenarios in life have real options and more than one sound alternative, and the ability to choose increases our control over the situation and its outcome. The starting point for this thesis was the statement that there exists a range of choice situations in life that are mere illusions – situations involving choice where the decision maker have little or no control over the outcome despite the freedom to choose. Further, we know that people have a psychological tendency to exaggerate the meaning of choices by believing that the choices gives us more control than they really do. The main question of this thesis was to what extent people suffer from a choice illusion in moral economic decision making by holding others responsible for such meaningless choices.

The experiment analyzed has aspired to reveal how third party dictators change their redistribution between lucky and unlucky risk-takers when an element of choice is introduced in a lottery. These choices were complete or almost complete illusions – it was either very costly to avoid the risk of a pure luck lottery, or it was impossible to control the outcome despite the freedom of choice. Using a pure luck lottery as a baseline, we find that people transfer less from the lucky to the unlucky when such an "empty" choice is introduced. Using a simple measure of inequality that takes values between 0 and 1 where 0 is perfect equality and 1 means that one player gets all the earnings, we find that inequality is reduced substantially across all treatments, but that people redistribute less in the choice treatments. Findings from this experiment suggest that we might put too much weight on choices and thus hold each other responsible for choices to a too large extent. With increased freedom of choice in economic matters, this causes increased economic inequality relative to pooled risk systems. Hence, there seems to be a discord between the liberal egalitarian attitude welcoming increased freedom of choice and individual responsibility for these choices, and the egalitarian opinion that inequality is a negative trait of a society.

Insight obtained through this study about moral motivation in distribution issues and how we interpret the role of choices can be applied to many aspects of society. Whether governments should make centralized choices on behalf of their citizens or let the citizens have substantial

freedom of choice including the responsibility for these choices is a recurring topic on the political agenda in Norway as well as in other countries. Many agree that too much inequality is undesirable, but still we do not accept to suffer from other people's poor judgment and choices.

As mentioned initially, the freedom to choose your own pension fund scheme in Norway or the freedom to choose your own physician serve as examples of such choice scenarios that for many are practically shots in the dark. Of course, some will be able to make qualified choices, but to the man in street many of the alternatives in such choices emerge as almost identical, resulting in more or less random decisions that he is later often held responsible for. An argument in favor of holding people responsible for such decisions is that any person can sit down and familiarize themselves with the different pension fund schemes or different physicians and in that way be able to make a qualified decision. This is of course a theoretical option, but for many the cost of doing this job is very high. This applies to many real life situations involving choices; the objective possibility to control an outcome is there, but the realistic possibility to actually use this to our advantage is small, if not practically absent. A debate that can arise from this is whether we want a society with substantial freedom of choice, but risking more inequality, or whether we are willing to sacrifice some freedom of choice for the benefit of less economic inequality.

This thesis has presented an analyzed an interesting trait in moral economic decision making and how we interpret the element of choice. Despite imperfect external validity, it reveals some tendencies that can be studied further in order to establish stronger evidence of this choice illusion in distributive justice. According to experimental economist Bart Wilson, fairness is not so much about equity as about the rules of the game (Wilson, 2010). The illusion of control combined with a choice egalitarian fairness ideal seems to result in people being "blinded by the choice". Acknowledging the general illusion of control and the choice illusion in moral economic decision making allows for a more deliberate starting point when discussing what should be the rules of the various "games" in society.

# References

Almås, I., Cappelen, A. W., Lind, J. T., Sørensen, E. Ø. & Tungodden, B. (2011) Measuring unfair (in)equality. *Journal of Public Economics,* 95: pp. 488-499.

Almås, I., Cappelen, A. W., Sørensen, E. Ø. & Tungodden, B. (2010) Fairness and the development of inequality acceptance. *Science,* 328(5982): pp. 176-1178.

Ariely, D. (2010) *Predictably Irrational: The Hidden Forces That Shape Our Decisions*. 1st revised edition. New York, New York: Harper Perennial.

Arneson, R. (2009) Egalitarianism. *The Stanford Encyclopedia of Philosophy* (Spring 2009 Edition), Edward N. Zalta (ed.), [Internet] Available at: <http://plato.stanford.edu/archives/spr2009/entries/egalitarianism/> [Accessed October 10th 2012].

Barr, A., Burns, J., Miller, L. & Shaw, I. (2012) Economic status and acknowledgement of earned entitlement. *SALDRU Working Papers* 66, Southern Africa Labour and Development Research Unit, University of Cape Town.

Bearden, J. N. (2001) *Ultimatum Bargaining Experiments: The State of the Art.* [Internet] Available at: <http://ssrn.com/abstract=626183> [Accessed October 31st 2012].

Bolton, G. E. & Ockenfels, A. (2000) "ERC: A theory of equity, reciprocity and competition." *American Economic Review,* 90(1): pp. 166–193.

Camerer, C. F. & Loewenstein, G. (2003) Behavioral Economics: Past, Present, Future. *Advances in Behavioral Economics*. Princeton University Press.

Campbell, D. T. & Stanley, J. C. (1963) *Experimental and Quasi-experimental Designs for Research.* Boston, MA: Houghton Mifflin Company.

Cappelen, A. & Tungodden, B. (2012) Adferdsøkonomi og økonomiske eksperimenter. *Magma,* 15(5): pp. 26-30.

Cappelen, A. W., Hole, A. D., Sørensen, E. Ø. & Tungodden, B. (2007) The pluralism of fairness ideals: An experimental approach. *American Economic Review,* 97(3): pp. 818-827.

Cappelen, A. W., Sørensen, E. Ø. & Tungodden, B. (2010) Responsibility for what? Fairness and individual responsibility. *European Economic Review,* 54(3): pp. 429-441.

Cappelen, A. W., Konow, J., Sørensen, E. Ø. & Tungodden, B. (2011) Just Luck – An Experimental Study of Risk Taking and Fairness, forthcoming in *American Economic Review.*

Cohen, G.A. (1989) On the currency of egalitarian justice. *Ethics,* 99(4), pp. 906–944.

Database for statistikk om høgre utdanning. (2012) *Studenter fordelt på alder* [Internet]. Available at: <http://dbh.nsd.uib.no/dbhvev/student/aldersfordeling_rapport.cfm> [Accessed December 3rd 2012].

Deaton, A. (2010). Instruments, Randomization, and Learning about Development. *Journal of Economic Literature,* 48(June): pp. 425-455.

Engel, C. (2010) Dictator Games: A Meta Study. *Preprints of the Max Planck Institute for Research on Collective Goods.* Bonn 2010/07.

Falk, A. & Heckman, J. J. (2009) Lab Experiments Are a Major Source of Knowledge in the Social Sciences. *Science,* 326(5952): pp. 535-538.

Frederick, S. (2005) Cognitive Reflection and Decision Making. *Journal of Economic Perspectives*, 19(4): pp. 25–42.

Guala, F. (2005) *The Methology of Experimental Economics.* Cambridge: Cambridge University Press.

Hofstede, Geert H. (1980) *Culture's Consequences: International Differences in Work-Related Values*. Newbury Park, CA: Sage Publications.

Jones, S. R. G. (1992) Was There a Hawthorne Effect? *American Journal of Sociology* 98(3): pp. 451-468.

Kahneman, D. & Tversky, A. (1979) Prospect Theory: An Analysis of Decision under Risk, *Econometrica*, XLVII (1979), pp. 263-291.

Lamont, J. & Favor, C. (2008) Distributive Justice, *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition), [Internet] Available at: <http://plato.stanford.edu/archives/fall2008/entries/justice-distributive/> [Accessed October 10th 2012].

Langer, E. J. (1975) The Illusion of Control. *Journal of Personality and Social Psychology*, 32(2): pp. 311-328.

Lem, C. H. (2012) – Nye verktøy skaper spennende tid for økonomer. *Magma*, 15(5): pp. 6-9.

Mathiesen, L. (2010, October 19th). *Asymmetrisk informasjon.* [PowerPoint slides]. Lecture in SAM020 Intermediate Microeconomics at NHH Norwegian School of Economics.

Mill, J. S. (1836) On the Definition of Political Economy; and on the Method of Investigation Proper to It, *London and Westminster Review*, October 1836. Reprint, Mill, Essays on Some Unsettled Questions of Political Economy. 1844. Reprint, Collected Works. Vol. 4. Toronto: University of Toronto Press, 1967, pp. 120-64.

Persky, J. (1995) Retrospectives: The Ethology of Homo Economicus. *The Journal of Economic Perspectives*, 9(2), pp. 221-231.

Savani, K. & Rattan, A. (2012) A Choice Mind-Set Increases the Acceptance and Maintenance of Wealth Inequality. *Psychological Science*, 23(7): pp. 796-804.

Schiller, R. J. (2011) The Neuroeconomics Revolution. *Project Syndicate*. [Internet] Available at <http://www.project-syndicate.org/commentary/the-neuroeconomics-revolution> [Accessed November 20th 2012]

Schwartz, H. (2008) *A Guide To Behavioral Economics*.1st ed. Reston, Virginia: Higher Education Publications, Inc.

Smith, A. ([1776] 2009) *The Wealth of Nations.* Unabridged ed. New York, New York: Classic House Books.

Sugden, R. (2010) *UEA School of Economics – Experimental Economics & Decision Making.* [Internet video interview]. Available at: <http://www.youtube.com/watch?v=Gj1AXPp5HA8> [Accessed October 31st 2012].

The Choice Lab. (2012) *About*. [Internet] Available at: <http://blogg.nhh.no/thechoicelab/?page_id=23> [Accessed October 29th 2012].

The Royal Swedish Academy of Sciences. (2002) Foundations of Behavioral and Experimental Economics: Daniel Kahneman and Vernon Smith. *Advanced information on the Prize in Economic Sciences 2002*. Stockholm, Sweden.

University of Bergen (2012) *About UiB.* [Internet] Available at: <http://www.uib.no/about> [Accessed November 21st 2012].

Wild, C. J. & Seber, G. A. F. (1999) *Chance Encounters: A First Course in Data Analysis and Inference.* New York, New York: Wiley & Sons.

Wilson, B. (2010) *Experimental Economist Bart Wilson on the Meaning of "Fair"*. [Internet video interview] Available at: < http://www.youtube.com/watch?v=HaFpB7z5y3Y> [Accessed December 10th 2012].

# Appendix

## A1 – Instructions for the laboratory experiment

The following is translated from Norwegian. The sign  means new screenshot. Writing in brackets refers to procedures not explained explicitly to the participants. Normal writing refers to spoken instructions from the moderator. Writing in italics refers to instructions given on the computer screens.

### *Before the session starts*

[Moderator informs the leader about the number of participants present when all participants are seated. The leader starts when the status page shows that all participants are registered.]

### *General introduction*

Welcome to this experiment. My name is ..... and will lead the experiment.

In this experiment you can, depending on the choices you and others make, earn money. The money will be paid in cash at the end of the experiment.

The results from this experiment will be used in a research project and it is therefore important that everybody comply with the rules of conduct that are handed out:

- You cannot communicate with the other participants.
- If you have questions or problems during the experiment, raise a hand and one of the research assistants will come and help you.
- You cannot open other web pages.
- If you break these rules you will have to leave the room. There will be breaks during the course of the experiment. It is important that you remain quiet and calm during these breaks.

You will be completely anonymous during the experiment. At no time will your identity be requested. Neither is it possible for us, the other participants or anyone else, to find out what choices you have made.

When the experiment is over, a payment code will appear on your screen and we ask you to write down the code on the piece of paper lying next to you. When you leave the room after the experiment, you will provide your code and you will be given an envelope containing the money you have made. The envelopes will be prepared by persons who will not be present in the room when the envelopes are handed out. We do this to prevent that anyone knows how much each of you earn.

The experiment consists of three parts and instructions will appear on the screen prior to each part of the experiment. You will soon get information about the first part of the experiment on your screens. Please read through the instructions carefully and click on the button below the instructions to confirm that you have read them.

[Leader opens for instructions to part 1.]

## *Part 1 – Working task*

*In the first part of this experiment you will work on a language assignment. Five English words will be presented to you and you will be asked to make sentences or expressions using four of these words. The sentences MUST CONTAIN FOUR WORDS. For example, if the words are "sky, blue, is, the, old", you can make the sentence "the sky is blue".*

*We ask you to work on this task for 30 minutes. When you have completed a sentence or expression, you will get five new words. The aim is not to finish as many sentences as possible, but to work carefully with each set of words. Please work continuously with the task until the time is up.*

Everybody has now read the instructions to the first part of the experiment. This task will take half an hour and you will soon be asked to begin. When the assignment is over, there might be some waiting time, and in that case we ask you to wait and remain calm until further instructions are given.

[Production phase 30 minutes.]

You have now completed the first part of the experiment.

## *Part 2 – Lottery & preliminary payment determination*

You will now get information about the second part of the experiment on your screen. Please read through the instructions carefully and click on the button below the instructions to confirm that you have read them. When everybody has read the instructions, the second part of the experiment will appear on the screen. When the assignment is over, there might be some waiting time, and in that case we ask you to wait and remain calm until all the participants are finished.

[Leader opens for lottery.]

*You have now worked on the language assignment for 30 minutes. You will get paid for this work and we will now explain how your payment will be determined. In the next part of the experiment there will be a distribution phase, you will get more information on that later.*

[Each participant sees only one of the following three treatments:]

*(1)*

*How much money you make will be determined by a lottery where you with equal probability will make 800 kr or 0 kr. In the lottery, a ball will be randomly drawn from a ballot with an equal amount of yellow and green balls. If a yellow ball is drawn you will make 800 kr, if a green ball is drawn you will make 0 kr.*

*(2)*

*We first ask you to make a choice between two colors, yellow and green. Your choice will determine the outcome of a lottery that decides how much money you will make, where you with equal probability can make 800 kr or 0 kr. In the lottery, a ball will be randomly drawn from a ballot with an equal amount of yellow and green balls. If you have chosen the same color as the ball that is drawn you will make 800 kr, if you have chosen the color of the ball that is not drawn you will make 0 kr.*

*We now ask you to make a choice by clicking on one of the two pictures below.*

*If you have chosen the same color as the ball that is drawn you will make 800 kr, if you have chosen the color of the ball that is not drawn you will make 0 kr.*

*Remember that the ballot contains an equal amount of yellow and green balls.*

*(3)*

*You can choose between two different payments. You can either choose to make 25 kr or you can let the payment be decided by a lottery where you with equal probability can make 800 kr or 0 kr. In the lottery, a ball will be randomly drawn from a ballot with an equal amount of yellow and green balls. If a yellow ball is drawn you will make 800 kr, if a green ball is drawn you will make 0 kr.*

*We now ask you to make a choice by clicking on one of the two pictures below.*

*If you choose the picture of the coins, you will make 25 kr, if you choose the picture of the lottery your payment will be decided by a lottery where you with equal probabilities can make 800 kr or 0 kr.*

## *Part 3 – The redistribution phase*

*We have now reached the distribution phase of the experiment. On the next screenshot you will be asked to decide the distribution of the money that two other participants in this experiment have earned. Your choice will with a certain probability decide how much these two participants will be paid in this experiment. Your choice will not affect your own payment in this experiment.*

*You will decide the distribution for two other participants in the experiment, who we refer to as person A and person B. Both have worked for 30 minutes, and the payment was determined the same way as for you.*

[The participants of all treatments are informed that person A had made 800 kr and person B had made 0 kr.]

*In the box below you will write how much of the 800 kr you will transfer from person A to person B. Remember that your choice may determine how much person A and person B will get paid in this experiment.*

*Explain what motivated your distributive choice.*

Everyone has now completed this part of the experiment.

## *Part 4 – Questions*

We now ask you to answer some questions which soon will appear on your screen. The questions will not affect your payment. When you have answered the questions, you click on the continue button. When you have completed the questions, there might be some waiting time, and in that case we ask you to wait and remain calm until all the participants are finished.

*We now ask you to specify to which degree you believe the following factors play an important part in determining the size of a person's income.*

*"1" means that you completely agree with the statement to the left, "10" means that you completely agree with the statement to the right. The numbers in between specify to what degree you agree or disagree with the each of the statements respectively.*

*Please answer all the questions below. Mark the number on the scale that you think reflects your view the best.*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1: Luck *plays* an important part in determining the size of a person's income.** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10: Luck *does not play* an important part in determining the size of a person's income.** |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1: Hard work *plays* an important part in determining the size of a person's income.** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10: Hard work *does not play* an important part in determining the size of a person's income.** |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1: Talent *plays* an important part in determining the size of a person's income.** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10: Talent *does not play* an important part in determining the size of a person's income.** |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

*We now ask you to specify to which degree you believe the following factors play an important part in determining the size of a person's income.*

*"1" means that you completely agree with the statement to the left, "10" means that you completely agree with the statement to the right. The numbers in between specify to what degree you agree or disagree with the each of the statements respectively.*

*Please answer all the questions below. Mark the number on the scale that you think reflects your view the best.*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1: It is *fair* that luck plays an important part in determining the size of a person's income.** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10: It is *not fair* that luck plays an important part in determining the size of a person's income.** |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1: It is *fair* that hard work plays an important part in determining the size of a person's income..** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10: It is *not fair* that hard work plays an important part in determining the size of a person's income.** |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1: It is *fair* that talent plays an important part in determining the size of a person's income.** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10: It is *not fair* that talent plays an important part in determining the size of a person's income.** |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

*We will now ask you a more specific question about the current situation in Norway.*

*"1" means that you completely agree with the statement to the left, "10" means that you completely agree with the statement to the right. The numbers in between specify to what degree you agree or disagree with the each of the statements respectively.*

*Please answer the question below. Mark the number on the scale that you think reflects your view the best.*

| **1: In the current situation in Norway we should do more to even out income inequality.** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10: In the current situation in Norway we should do less to even out income inequality.** |
|---|---|---|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

*Please answer all the questions below:*

*1. A bat and a ball cost 110 NOK in total. The bat costs 100 NOK more than the ball. What is the price of the ball?*

*2. 5 machines spend 5 minutes making 5 things, how long will it take for 100 machines to make 100 things?*

*3. Parts of a lake are covered by water lilies. Every day this area is doubled. If it takes 48 days to cover the whole lake is with water lilies, how long will it take to cover half the lake with water lilies?*

[Additional questions on age, gender, educational degree pursued (bachelor/master/other), and political views.]

Everyone has now answered the questions and we will therefore continue to the payment procedure.

## *Payment*

All questions have been answered and you will soon get an overview of your own personal payment. When you are finished looking at the payment you can click on the link below taking you to another screenshot showing your personal payment code. You will write down the code on the piece of paper lying next to you. Make sure you write the code correctly as this identifies the payment you will get at the end of the experiment.

[Leader opens payment page.]

When you are finished writing down the codes, we will wait for the envelopes with the payments to be brought here before we can start handing them out. In the meantime we ask you to remain seated quietly without communicating.

[Envelopes arrive and the person who prepared them leaves the room.]

Before we start handing out, let me take this opportunity to say thank you for taking part in this experiment. Your contribution is very important for our research. We will also ask you not to talk to others about this experiment until the end of the day as we arrange multiple sessions. Thank you very much!

You will now get the envelopes with your payments.

# A2 – The Wilcoxon rank-sum test (Mann-Whitney)

The Wilcoxon rank-sum test, or the Mann-Whitney test, is a non-parametric test for testing whether two groups differ on a variable (Wild & Seber, 1999). It is used when we cannot use a parametric test because we cannot assume normal distribution of the data or equal variances, or if the data are measurements on an ordinal scale. Another advantage of this test compared to a two-sample t-test, is that it is much less sensitive to outliers.

Simply put, this test looks at the order of the observations from the two samples. In this case, all observations are ranked according to inequality, with the most equal distribution getting the rank 1, the second most equal getting the rank 2, and so on. Then all the ranks are summed for the two groups, and we look at the difference between these two sums when we have controlled for the sample sizes. For a given sample size, one can calculate the expected rank sum for a sample under the null hypothesis that the two samples are equal. The more the reported rank sum deviates from the expected sum, the more likely it is that the null hypothesis is false.

***1) Is the inequality for NC and NO different?***

Stata output:

| Treatment | N | Rank sum | Expected |
|---|---|---|---|
| **NO** | 145 | 18295 | 20735 |
| **NC** | 140 | 22460 | 20020 |
| **Combined** | 285 | 40755 | 40755 |

Anadjusted variance: 483816.67

Adjustment for ties: -74397.34

---

Adjusted variance: 409419.32

$H_0$: Inequality(NC) = Inequality(NO)

z = -3.813

Prob > |z| = 0.0001

→ Reject $H_0$ about equal inequality. Inequality under NC is significantly larger than under NO at a 1 per cent level.

***2) Is the inequality for FC and NO different?***

Stata output:

| Treatment | N | Rank sum | Expected |
|---|---|---|---|
| **NO** | 145 | 18754.5 | 20517.5 |
| **FC** | 137 | 21148.5 | 19385.5 |
| **Combined** | 282 | 39903 | 39903 |

Unadjusted variance 468482.92
Adjustment for ties -82807.68
---
Adjusted variance 385675.23

$H_0$: Inequality(FC) = Inequality(NO)

z = -2.839

Prob > |z| = 0.0045

→ Reject $H_0$ about equal inequality. Inequality under FC is significantly larger than under NO at the 1 per cent level.