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Risking Other People's Money

Experimental Evidence on Bonus Schemes, Competition, and Altruism*

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Abstract:

We study risk taking on behalf of others in an experiment on a large random sample. The decision makers in our experiment are facing high-powered incentives to increase the risk on behalf of others through hedged compensation contracts or with tournament incentives. Compared to a baseline condition without such incentives, we find that the decision makers respond strongly to these incentives that result in an increased risk exposure of others. However, we find that the increase in risk taking is mitigated by altruistic preferences and pro-social personality traits.

Keywords: Incentives; competition; hedging; risk taking; social preferences
JEL-codes: C72; C90; D30; D81

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1. Introduction

Risk taking on behalf of others is common in many decisions in economics and finance. Examples include fund managers making investments with their clients' money and executives acting on behalf of the shareholders. To motivate decision makers to exert effort, the authority to take decisions on behalf of others is often coupled with high-powered incentives. A basic problem with this practice is that it is typically hard to construct compensation schemes that perfectly align the incentives of the decision makers with those of the other stakeholders. Indeed, in the wake of the recent financial crisis, actors in the financial sector were routinely accused of excessive risk taking on behalf of investors.[1] Rajan (2006) argues that recent developments in the finance industry—such as added layers of financial management and new complex financial products—have exacerbated the problem.

A potential counterbalancing force to excessive risk taking is that decision makers feel responsible or have altruistic preferences; that they intrinsically care about the outcome they generate on behalf of others. Indeed, if such a concern is sufficiently strong it may operate as a natural moderator of the extrinsic incentives to take on more risk. Determining which of these forces dominate is an empirical question, made especially difficult because it is likely that the behavioural response to misaligned incentives differs between people. Understanding this heterogeneity is important because sometimes we can choose whom to bestow the responsibility on to make the decisions on behalf of others, and as well be able to select people according to their characteristics.

Our focus here is on risk-taking behaviour when there are monetary conflicts of interest between the decision maker and the investors (henceforth called receivers). We adopt an experimental approach because it allows us to induce and control incentives for decision makers and the consequences their choices have on behalf of others. Such measuring of the nature and role of incentives, not to speak of controlling them, is difficult in the field. Our unique dataset derives from a large-scale economic experiment and has the added advantage of allowing us to collect extensive information on personal characteristics of the decision makers.

We incorporate two types of incentive structures common in the financial sector into our experiment. First, we consider hedged compensation contracts. The introduction of new

[1] Andrew Haldane, director of the Bank of England, in a speech about the recent financial crisis argues the banking sector´s problem is rooted in the fact that private risks are not aligned with social risks and the latter is of a much larger magnitude (Haldane 2011).

advanced financial products has expanded opportunities to hedge risks against each other. In combination with bonus payment schemes, such hedging opportunities create incentives for increased risk-taking. Indeed, in a public hearing of the CEO of a leading investment bank in the US Senate, evidence from internal e-mails showing that the bank had taken bets against its own clients' investments was presented.[2] In our experiment, the decision makers make choices on behalf of several others. They participate in a bonus-like incentive scheme where compensation is proportional to the total payoffs of the receivers. When the payoffs of the receivers are negatively correlated, the decision makers can exploit such correlation to increase their own payoff without increasing their own risk exposure.

Second, we consider competition among investment managers where rewards depend on relative performance, i.e. a scheme in which the performance of the portfolio of one manager is compared to the performance of her peers. Such tournament incentives are commonplace in financial markets (Chevalier and Ellison 1997) and may trigger conflicts of interest (and thereby excessive risk taking on behalf of others). The reason, of course, is that taking less risk on behalf of the receiver reduces the chance of outperforming one's competitor. In our experiment, we study winner-take-all competition between decision makers who are matched into pairs. The decision maker who generates the higher total payoff on behalf of her receivers earns a bonus, while the other earns nothing. We believe the research reported here is the first to experimentally investigate the effects of such adverse incentives on risk-taking on behalf of others, and are certain it is the first to do so on a large scale, using a random sample of the general population.

Our study yields two main findings. First, ordinary people respond to high-powered incentives to take risks, by and large, as predicted by economic theory. They seem to do so without much apparent concern for what this entails for (totally anonymous) receivers. Individual incentives seem to trump social concerns in the settings studied here. It has been popular to decry decision makers in the financial industry as "financial psychopaths" (see e.g., DeCovny, 2012). We are not in the position to judge whether this is an accurate description but our observation, based on a fairly representative sample of the general population, allows us to conclude that lack of concern for others' risk exposure hardly needs "financial psychopaths" to flourish. Ordinary people tend to do it when the incentives are wrong. The general lesson here is that policy makers should become more circumspect in designing incentives and institutions – because they impact the risks that are taken on behalf of others.

[2] Terry Macalister, The Observer, 25 April 2010, "Revealed: Goldman Sachs 'made fortune betting against clients'".

Our second main finding is that there is considerable heterogeneity in how people respond to adverse financial incentives. To a significant degree this heterogeneity can be accounted for by a combination of socioeconomic data, behavioural measures of generosity, and psychometric measures of personality. Our "virtual lab" approach provides us with access to a large and heterogeneous sample along with a wealth measures from earlier surveys and experiments. This unique data enables us to identify and investigate *who* chooses to expose others to increased risk. We find that measures of personality and pro-social orientation explain risk taking on behalf of others rather well. Indeed, individuals that score low in these dimensions expose others for significantly more risk. One practical implication of these results is that employers may want to screen job applicants (e.g., by use of psychological tests) for professions where it is essential not to exploit other persons' risk exposure for personal benefits.[3]

The outline of the paper is as follows. Section 2 provides a short review of the related literature. We describe our virtual lab approach in Section 3 and the experiment conducted in Section 4. Section 5 presents results and Section 6 concludes.

2. Related Literature

The reasoning that high-powered incentives may distort financial risk-taking on behalf of others is rooted in a venerable tradition (see Jensen and Meckling 1976 for a seminal contribution), but clear supporting empirical evidence is still limited. Laeven and Levine (2008) find that risk taking is higher when ownership is diversified, and Cheng et al. (2010) find that increased reliance on variable compensation leads to higher risk-taking among managers. These papers use cross-sectional data and the evidence provided is correlational in nature rather than causal. A recurrent limitation of such studies is the proper measurement and interpretation of incentive structures and risk taking. For example, the seminal paper by Chevalier and Ellison (1997) relating risk taking and incentives in the mutual fund industry only uses an indirect measure of incentives. While the findings in these papers are consistent

[3] Scientific evidence on the characteristics of individuals working in the financial sector is scant. Concerning risk preferences, Haigh and List (2005) find that professional traders exhibit behaviour consistent with myopic loss aversion to a greater extent than students. In a small sample (n = 21) of traders, Durand, Newby and Sanghani (2008) find that average Big 5 scores among traders are not significantly different from the population averages. Along similar lines, using a small sample of day traders, Lo, Repin and Steenbarger (2005) were unable to relate trader performance to personality traits. Oberlechner (2004) investigates which personal characteristics are perceived as important for being successful as a foreign exchange trader. However, the characteristics emphasized are not directly comparable with the Big 5 inventory. The closest match to agreeableness and extraversion (which we find to be important in Table 3) is probably social skills. Interestingly, social skills were considered the least important of the 23 delineated skills.

with the hypothesis that high-powered incentives lead to excessive risk taking, they need to be interpreted with much care due to endogeneity and measurement problems. Such problems can in principle be circumvented by use of experimental methods.

Our paper contributes to a thin but growing experimental literature on risky decision making on behalf of others.[4] In contrast to what we study here, the bulk of this literature concerns situations where there are no strong monetary conflicts of interest between decision makers and receivers.[5] The results from this literature are difficult to compare and are overall somewhat mixed (see Bolton and Ockenfels 2010, Chakravarty et al. 2011, Sutter 2009 and Eriksen and Kvalöy 2010).[6] In a previous study we have found that when the payoff-domain is positive, as it is in the current study, decisions on behalf of others are indistinguishable from decisions on one's own behalf (Andersson et al. 2013a). Combining this result with that demonstrated in this study suggests that the high-powered incentives introduced here are strong drivers of making risky choices with other people's money and crowd-out the moral imperative of responsible decision making found in our earlier research.

The closest match to our study is Agranov et al. (2012) who also experimentally study a situation with an overt monetary conflict of interest. However, their study is clearly complementary to ours as they use a convenience laboratory sample and study different types of incentives. In their paper, decision makers compete for funds from investors by selecting high-water marks or dividend sharing agreements.[7] The authors find that such competition foments risk taking among decision makers. When decision makers compete by setting high-water marks, the increase in risk taking is rational, i.e. driven by material incentives.[8] But in

[4] In contrast, there is a large and burgeoning literature on individual risk-preferences. One prominent line of this research is dedicated to the structural estimation of such preferences, using experiments (Holt and Laury 2002, Harrison et al. 2007, von Gaudecker et al. 2011). Dohmen et al. (2011) find that gender, age, height, and parental background have a significant impact on the willingness to take risks. The results in Gaudecker et al. (2011) point to the fact that unobserved individual characteristics may play an important role in determining risk-preferences. In this vein, genetic and biological determinants of risk-attitudes have recently been studied (see Cesarini et al. 2010, Barnea et al. 2010 for genetic determinants and Dreber et al. 2009, Apicella et al. 2008 for biological determinants).

[5] There is a literature focusing on distributive preferences for allocation rules (some of which are risky) in different social contexts (see e.g., Cettolin and Riedl 2011, Rohde and Rohde 2011, Linde and Sonnemans 2012, Brock et al. 2013, Cappelen et al. 2013b). These studies are not directly related to the present study since they do not provide clear-cut results on the degree of risk-taking on behalf of others.

[6] See Andersson et al. (2013a) for a more detailed discussion.

[7] A high-water mark is a level of return such that the manager retains rents only for returns exceeding this level.

[8] A similar experimental result is reported by Lefebvre and Vieider (2013) who find that introducing option based payment increases risk taking on behalf of others.

their dividend-sharing treatment, the observed increase in risk taking is irrational.[9] They call this increase “the other peoples’ money effect” and argue that the procedure of framing the situation as “competition for funds” might have caused the increased risk taking.[10] In contrast, we did not find such (irrational) risk taking in our investigation. Since our design does not entail competition for funds, it may simply be more salient to be conscientious with other peoples’ money in our setup.

3. A Virtual Lab Approach

Our paper uses a ”virtual lab” approach which enables us to reach a heterogeneous subject pool while still maintaining a high level of experimental control. We use the iLEE (Internet Laboratory for Experimental Economics) platform developed at the University of Copenhagen.[11] The platform follows the routines and procedures of standard laboratory experiments (with respect to deception, incentives, randomization, instructions etc.). The main difference to a conventional lab experiment is that participants make their choices remotely, e.g., at home in front of the computer. While this environment is arguably more natural to participants than the environs of a typical experimental laboratory, the mode of experimentation does not seem to matter for the elicitation of risk preferences.[12]

3.1 Recruitment and Subject Pool

Subjects were recruited in collaboration with Statistics Denmark (the statistics agency of Denmark). They sent invitation letters by regular mail to a random sample from the Danish population (aged 18-80) which explained invitees were randomly selected from the general population. The letter promised earnings from the experiment would be paid out via electronic bank transfer, and that choices were fully anonymous between subjects and other subjects and the researchers from iLEE. The invitees were asked to log on to the iLEE website using a

9 The dividend-sharing treatment is similar to our setup with the important difference that in our experiment the “dividend” is shared either equally (our Bonus treatment) or not at all (our NoIncentive treatment), whereas in their setup sharing is determined endogenously by the decision makers.

10 One other particularity with the dividends sharing treatment is that, in equilibrium, the decision makers’ share is zero so they should remain agnostic to the level of risk they take on behalf of receivers, which might also be a potential driver of their result.

11 See http://www.econ.ku.dk/cee/iLEE for a detailed description of the iLEE platform. The platform has been used to study a broad range of topics, see Thöni et al. (2012) for an example.

12 von Gaudecker et al. (2012) estimate risk preferences both for a student sample in the lab and the general population using the internet-based CentERpanel (a platform similar to iLEE) and find that the broad population is on average more risk averse and displays much more heterogeneity than the student population. However, these differences were driven by socio-economics rather than by the mode of experimentation.

personal identification code (the key being known only to Statistics Denmark) to receive detailed instructions about the experiment and gain access to e-mail and telephone support.[13]

The first set of invitation letters were sent out to 22,027 randomly selected individuals in May 2008. The 2,291 completers of the first wave of experiments were re-invited to participate in the following three waves which were conducted annually. Each wave consisted of a range of incentivized experiments and survey questions, which taken together constitute a rich amount of information about each participant. The primary dataset compiled for the research reported here comes from the fourth wave of experiments, although we do make some use of various measures elicited in the first two waves. In total, 827 individuals completed our risk task experiments as decision makers.[14]

4. Experimental Design and Hypotheses

The basic elements of our experiment are decisions made between two risky gambles (denoted "Left" and "Right") on behalf of two other persons (called receivers below). In the main treatments, decision makers face incentives to choose risky options, i.e. options which expose the two receivers to much risk, while in two control conditions they do not face such incentives. More specifically, the four treatments are as follows (payoffs are presented in Table 1 and 2 below):

1. **Bonus:** 8 decisions on behalf of 2 receivers. The decision maker obtains a bonus equal to half of the aggregate payoff of the receivers.
2. **Competition:** 8 decisions on behalf of 2 receivers. Two decision makers are paired as competitors *i* and *j*. The sum of the receivers' payoffs of *i* is compared to the sum obtained by decision maker *j*. The winner (the decision maker with the higher sum for the receivers) obtains a payoff equal to this sum, while the loser gets nothing.[15] In case of a tie, the aggregate outcome is split between the decision makers.
3. **NoIncentive:** 8 decisions on behalf of 2 receivers. The decision maker is not paid.
4. **NoOthers:** 4 decisions over their own payoffs.

[13] The participants could log out at any time and then log in again to continue where they had left off.

[14] Table A1 in the Online Appendix compares our sample with the Danish population with respect to age, gender and education. Our sample is quite representative with respect to age and gender, but highly educated people are somewhat over-represented compared to the Danish population.

[15] The outcomes Heads and Tails are independent random draws for the decision maker and his competitor.

Except for the NoOthers treatment, the choices of the decision maker have consequences for *two* receivers; see Table 1 and 2.[16] In decisions 1-4 reported in Table 1, the two receivers' payoffs are perfectly negatively correlated, which creates a hedging opportunity for the decision maker. Essentially, the decision maker can obtain a safe return by exposing the two receivers to "opposite" risks that cancel each other out. Below, we denote decisions 1-4 by NegCorr. In decisions 5-8 (denoted as PosCorr) we have switched the outcomes for Receiver 2 so that outcomes become perfectly positively correlated. This adjustment removes the hedged property of the decision maker's payoffs, and aligning his risk profile with that of the receivers' payoffs. Note that for treatments Bonus, Competition and NoIncentive the risk exposure and expected payoff for the two receivers remain constant for a chosen gamble in a given decision. Hence, there is no ex ante inequality between the receivers.

Table 1: Decision Tasks in Bonus/Competition and NoIncentive Treatments

	Decision	Left Gamble			Right Gamble		
			Heads	Tails		Heads	Tails
NegCorr	1	Receiver 1	100	0	Receiver 1	30	20
		Receiver 2	0	100	Receiver 2	20	30
	2	Receiver 1	100	0	Receiver 1	40	30
		Receiver 2	0	100	Receiver 2	30	40
	3	Receiver 1	100	0	Receiver 1	50	40
		Receiver 2	0	100	Receiver 2	40	50
	4	Receiver 1	100	0	Receiver 1	60	50
		Receiver 2	0	100	Receiver 2	50	60
PosCorr	5	Receiver 1	100	0	Receiver 1	30	20
		Receiver 2	100	0	Receiver 2	30	20
	6	Receiver 1	100	0	Receiver 1	40	30
		Receiver 2	100	0	Receiver 2	40	30
	7	Receiver 1	100	0	Receiver 1	50	40
		Receiver 2	100	0	Receiver 2	50	40
	8	Receiver 1	100	0	Receiver 1	60	50
		Receiver 2	100	0	Receiver 2	60	50

Notes: The table shows payoffs for the two receivers in points in treatments Bonus and Competition. For the payoffs of decision makers, see text.

[16] A design with at least two receivers is needed to create hedged payoffs for the decision maker.

Table 2: Decision Tasks in the NoOthers Treatment

	Left Gamble		Right Gamble	
Decision	Heads	Tails	Heads	Tails
1	100	0	30	20
2	100	0	40	30
3	100	0	50	40
4	100	0	60	50

Notes: The table shows payoffs for the decision maker in points.

The NoOthers treatment was played out according to Table 2 where the decision maker's payoff is parallel to Receiver 1's payoff. Since this makes decision 1 and 5, 2 and 6 and so forth identical, we have purposively limited this treatment to just four decisions.

We chose a format for the decision tables with a fixed probability and varying payoffs at each screen, as in e.g., Binswanger (1980) or Tanaka et al. (2010). By keeping probabilities fixed, potential effects from probability weighting are held constant (Quiggin 1982, Fehr-Duda and Epper 2012). Using 50-50 gambles also makes the procedure transparent and particularly easy to understand. This is essential to limit noisy behaviour in studies like ours using a highly heterogeneous population.[17]

The experimental procedures are as follows. Subjects were randomly allocated to one of the four treatments. After going through instructions and a set of control questions, they were presented with the decision problems in a randomized order, each in isolation on a separate screen.[18] Subjects were then routed to a confirmation screen which presented all of the problems, and offered the opportunity to revise their choices.[19] We used the strategy method, in which subjects make choices contingent on being the decision maker. Participants knew that they would be paid either as decision maker or as recipient, and that these roles would be randomly allocated. After all the decisions were made, subjects were assigned their roles, and matched into groups. One decision problem per group was randomly selected to be played out, and subjects were paid according to the outcome of that gamble.

[17] Dave et al. (2010) find that people with a low level of numeracy may have problems understanding multiple price-list formats with varying probabilities.

[18] See Online Appendix D for a detailed description of the experimental design and procedures, including screenshots and verbatim translations of the instructions.

[19] Choices were presented in the same order as they were shown to subjects when they made their choices. Between 2 and 9 per cent of the subjects revised their choices when given the opportunity. However, no systematic difference was found between different treatments or across decisions. See Table C1 in the Online Appendix for a table of the frequency of revisions with respect to treatments and decisions.

There is an obvious information problem in making other-regarding decisions in our setup because the decision maker has no information about the risk preferences of the particular receivers with whom he has been matched.[20] Hence, we cannot make inferences on an individual level based on a given stated preference from the receiver. Instead, we analyse behaviour in the aggregate. We simply say that decision making on behalf of others is "conscientious" if it does not depart, on average, from behaviour in NoOthers.[21] Various ethical mechanisms can potentially induce conscientious decision making. Altruism can produce such outcomes in our setup if decision makers on average form correct beliefs about receivers' preferences, and follow these. An alternative motivation is the ethical principle of the "golden rule", which relies on introspection and projection, and simply presumes that the decision maker takes the same decisions as she would do for herself.[22]

The NoIncentive treatment provides a key experimental baseline for the level of risk that decision makers expose the receivers to, in the absence of incentives to deviate from conscientious decision making. We compare behaviour in this treatment to behaviour in the NoOthers treatment to determine if decision makers are conscientious when they do not have strong monetary incentives. The Bonus and Competition treatments are then used to assess the effect of strict incentives to deviate from conscientious risk taking. Our strategy is to use Bonus in conjunction with the hedged payoffs in NegCorr to isolate the effect of exposing the decision maker and the receivers to different risk profiles. Similarly, the effect of competition for compensation is isolated by studying the Competition treatment in PosCorr.

4.1 Hypotheses

In this section we provide hypotheses regarding the degree of risk taking across our treatments (a more formal analysis is presented in Online Appendix B). We start by stating two hypotheses based on the findings of our companion paper (Andersson et al. 2013a) that explores the case when there are no strong conflicts of interest between the decision maker

[20] Note that the situations studied here differ from the standard principal-agent framework where the agent balances his effort against his own risk exposure (see e.g., Hart and Holmström, 1987) and makes decisions on behalf of a risk-neutral principal. Here, it is assumed that effort cost associated with decisions are unimportant (e.g., driving carefully, making a particular portfolio choice), but the risk-exposure of the receiver is potentially relevant. See Stracca (2006) for a detailed discussion of the particularities of this agency problem.

[21] One could of course collect beliefs from the decision makers about the risk-preferences of receivers and see if the decisions systematically depart from what the beliefs would imply. This issue is important, but we view it as separate from what we try to do here. Furthermore, eliciting beliefs in strategic contexts may affect behaviour (see Croson 2000).

[22] The "golden rule" basically states: "Treat others how you wish to be treated" (see Flew 1979) and has been expressed in various forms in a plethora of religions.

and the receiver with respect to the payoffs they earn. In particular, they either share the same payoff or instead a payoff is only given one of them. We found that decision makers have the same risk attitudes when risky choices do not involve losses as is the case in the present setting. This finding should carry over to the NoOthers and NoIncentive treatment in the current experiment because the only relevant difference between the two experiments is the number of receivers.[23]

Hypothesis 1: There is no difference in risk taking between the NoOthers and the NoIncentive treatment.

For PosCorr, decision makers and receivers face the same risk in the Bonus treatment. Hence, using the no difference result of our companion paper, we can expand Hypothesis 1 to include the Bonus treatment for the PosCorr decisions.

Hypothesis 2: There is no difference between NoOthers, NoIncentive and Bonus in PosCorr.

We state our hypotheses regarding Bonus and Competition assuming strict material self-interest. For the NegCorr decisions, the Bonus treatment for all Left gambles yields a risk-free payoff equal to 50. It is therefore optimal to switch at decision 4, independently of risk preferences. The same conclusion holds for the Competitive treatment, but the argument is a bit more complex. For decisions 1-3 it is a dominant strategy for the decision maker to choose Left, whereas it is dominant to choose Right at decision 4. Hence, for each decision, the induced game at that node has an equilibrium in dominant strategies.

The assumption of strict material self-interest does not provide a sharp prediction in treatment NoIncentive, given the absence of such incentives. Nevertheless, our prior study suggests that behaviour in NoIncentive will resemble individual decision making in NoOthers (see Hypothesis 1). This means we should reasonably expect the commonly observed risk-aversion tendency for the average subject in NoIncentive, implying that a substantial number of subjects switch before decision 3.[24] As a consequence, we anticipate observing less risk-taking behaviour in NoIncentive than in the Bonus and Competition treatment.

Hypothesis 3: In NegCorr, decision makers take more risk on behalf of others in Competition and Bonus than in NoIncentive.

[23] In Andersson et al. (2013a) there is only one receiver.

[24] In the experimental risk-elicitation literature, the typical finding is considerable risk aversion also over modest stakes. See for example Harrison et al. (2007) who also use a sample randomly selected from the Danish population.

According to Hypothesis 3, the predictions for the Bonus and Competition treatments are identical in NegCorr, assuming strict material self-interest. This fails to hold for the PosCorr decisions. The optimal decision will now depend on risk preferences, since the payoffs of the Left gamble are no longer risk-free. However, when there is competition, as induced by the Competitive treatment, decisions will be distorted towards taking more risk. Compared to the straightforward NegCorr decisions, analysis of PosCorr is a bit more demanding. We first note that both decision makers choosing Left is a Nash equilibrium at every decision, independently of risk preferences. For high degrees of risk aversion, both decision makers choosing Right is also a Nash equilibrium. Yet, for lower levels of risk aversion, choosing Left is the unique Nash equilibrium at every decision. Indeed, it is even a dominant strategy equilibrium.[25] What is noteworthy here is that under the Bonus treatment it appears that the optimal choice is determined solely by the decision maker's risk preferences. Since we expect the decision makers' preferences to generate less extreme choices than those predicted under Competition, we conclude that competitive incentives lead to more risk taking.

Hypothesis 4: In PosCorr, decision makers take more risk on behalf of others under Competition than under Bonus.

In Section 5.1 we also conduct an analysis of the determinants of non-conscientious decision making on behalf of others. We do this by using a large set of covariates that was collected in previous iLEE waves. This part is more explorative in nature, even though we have clear priors on what might be important drivers of behaviour in these situations (e.g., measures of altruism), so we refrain from stating formal hypotheses here.

5. Results

A total of 827 subjects completed the experiment: 218 subjects were in NoIncentive, 210 in Bonus, 180 in Competition and 219 in NoOthers. Figure 1 shows the average number of safe choices (Nrsafe) by treatment along with 95 per cent confidence intervals.[26]

[25] See Online Appendix B for exact details of this statement. We note that if both subjects are risk-neutral then Left is a dominant strategy. In the appendix we also pinpoint the upper bound on risk aversion, such that Left is a dominant strategy, assuming that subjects have constant relative risk-aversion.

[26] Histograms for Nrsafe by treatment are given in Online Appendix C.

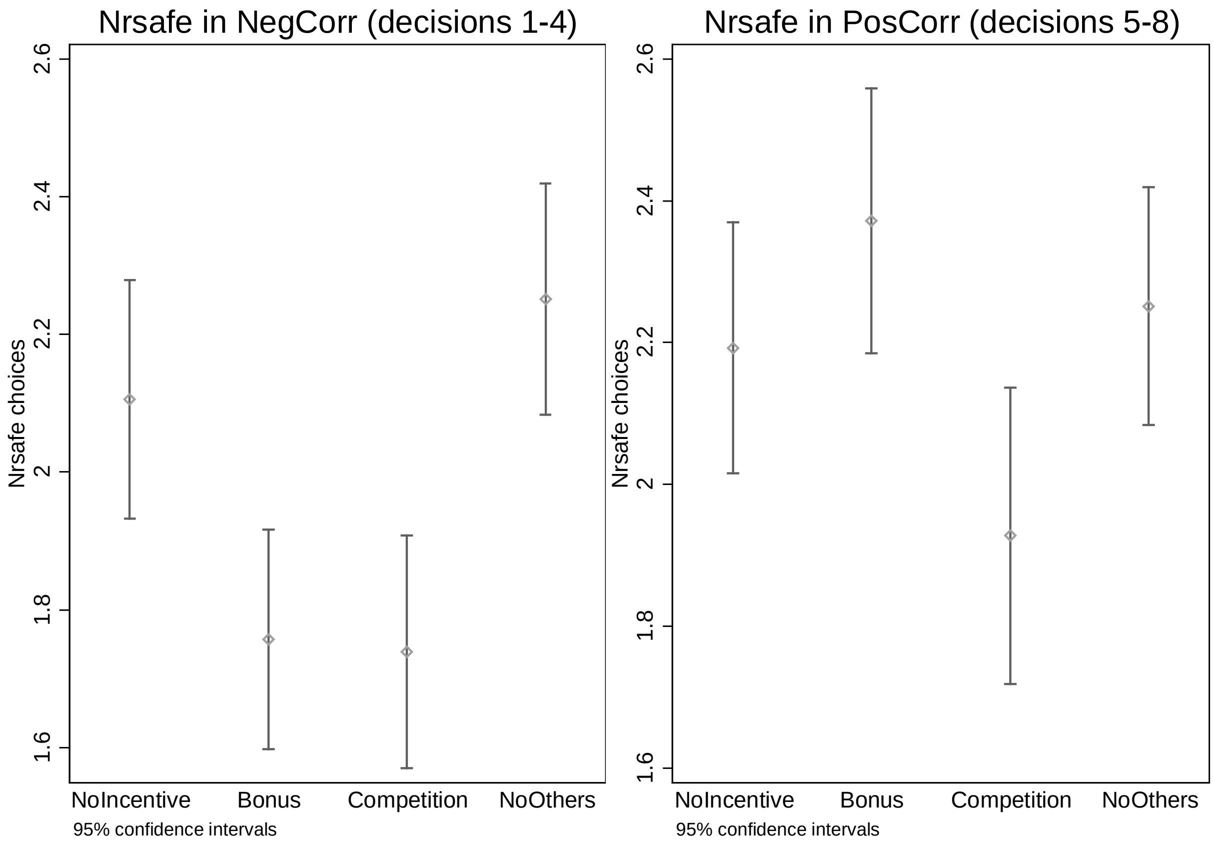

Figure 1: Average Number of Safe Choices (Nrsafe) with 95% Confidence Intervals

As expected, we find for the NegCorr decisions that decision makers take more risk on behalf of others when they have incentives to risk other people's money (Bonus and Competition) than when they do not (NoOthers/NoIncentive), as expected. For the PosCorr decisions, only the Competition treatment stands out in terms of having fewer safe choices, on average. These casual observations are in line with our hypotheses and to formally test them we use the Mann-Whitney U-test.[27] We find support for hypothesis 1, which basically states that behaviour is equivalent between NoOthers and NoIncentive (NegCorr: p = 0.202; PosCorr: p = 0.599). We also find support for hypothesis 2, that behaviour is equal between NoIncentive and Bonus over PosCorr (p = 0.155), and between NoOthers and Bonus (p = 0.305).

We find strong support for hypothesis 3, i.e. that Competition and Bonus when paired with hedged payoff schemes create particularly strong incentives for risk taking. In particular, we find significant differences between Competition (Bonus) and NoIncentive in NegCorr (NoIncentive vs. Competition: p = 0.002; NoIncentive vs. Bonus: p = 0.002). We can also

[27] See Online Appendix C for test results.

confirm hypothesis 4. In PosCorr, Competition induces more risk taking than Bonus (p = 0.003).[28]

In summary, our results are in line with our hypotheses and clearly show that decision makers expose receivers to increased risk in order to exploit hedging opportunities or to get a competitive edge. These results hold on average, for the typical decision maker. Since we have a large and heterogeneous sample with individual personality and socioeconomic measures, our next step is to investigate who chooses to expose others to increased risk.

5.1 Who Exposes others to Risk when it is Privately Beneficial to Do so?

In theory, both the Competition treatment and the hedging structure in NegCorr create strong incentives for risk taking on behalf of others. Indeed, under these circumstances it is optimal to switch at the very last row or not at all, as explained above. One reason for not switching at the last row is that it imposes a negative externality on the two receivers, exposing them to an increased risk. If the decision maker has altruistic preferences he might take this into account when making his decisions and switch earlier than what our theoretical predictions suggest. As we expect the level of altruistic concerns to vary across the population, the response to our treatments is likely to be heterogeneous. The dataset created within the iLEE project presents a unique opportunity to zoom-in on this issue, since we can link behaviour in our experiment to socio-economic and psychometric variables, as well as to behavioural measures from other incentivized experiments. We restrict our attention to our main treatments, Competition and Bonus, where we have a clear theoretical interpretation of why people may expose others to risks.[29]

In what follows, we present the results of OLS regressions with the number of safe choices (Nrsafe) as the dependent variable, and a battery of socio-economic, psychometric and experimental measures as independent variables.[30] As a proxy for altruistic preferences we use the variable “Dictator give”, i.e. the amount of an endowment of 150 DKK shared

[28] We find no evidence of concerns about the ex post inequality in payoffs between receivers. The Left gamble under NegCorr has dramatically higher ex post inequality than the Left gamble under PosCorr. If decision makers were averse to ex post inequality, we should see a within-subject difference in behaviour between the PosCorr and NegCorr decisions in the NoIncentive treatment. Using the Wilcoxon signed rank test to investigate within-subject differences between PosCorr and NegCorr in NoIncentive, we find no difference (p = 0.706). It is vital to stress that this does not contradict the previous results (see e.g., Bolton and Ockenfels 2010, Rohde and Rohde 2011, Linde and Sonnemans 2012) because these arose from investigating distributive preferences between the decision maker and a sole receiver. Such preferences are muted here since the decision maker is not paid in any of the decisions in NoIncentive.

[29] This choice cuts the number of observations to about half of our full sample (827 subjects).

[30] Online Appendix C presents results from ordered logit estimations. The results presented here are robust to this change in specification.

with a receiver in a dictator game (for further details on the measures from previous waves of iLEE see Online Appendix E). In addition, we also include variables for the Big-five personality factors agreeableness, conscientiousness, extraversion, neuroticism and openness to experience. Our inclusion of both experimentally elicited measures and personality constructs seems reasonable in the light of Becker et al. (2012), who conclude that the two concepts are complementary in explaining the heterogeneity in behaviour.

In addition to gender and age, we use controls for cognitive ability and a measure of risk aversion. Cognitive ability has been claimed to affect risky choices in previous studies (e.g. Dohmen et al. 2010, Andersson et al. 2013b). We include two controls for Cognitive ability (elicited in iLEE1): a standard intelligence test called "IST 2000 R" which is a variation of Raven's Progressive Matrices (Beauducel et al. 2010), and the cognitive reflection test (Frederick 2005). Table C3 in the Online Appendix contains descriptive statistics of our regression variables.

As a measure of risk aversion, we take the number of safe choices the participant made in a standard risk-elicitation task in iLEE1. We control for the individuals' own risk preferences for two reasons. First, if people choose for others as they would like others to choose on their behalf, their own risk preferences will naturally determine how much risk they will impose on others. Second, as noted when stating the hypotheses above, both players choosing the Right gamble is a Nash equilibrium for extreme levels of risk aversion. Taken together, a higher level of risk aversion is likely to decrease the amount of risk that decision makers expose others to. Controlling for individual risk preferences reduces confound because any significant estimate for a control variable is not likely to come from a correlation with individual risk preferences, which otherwise easily might be the case. For example, gender and risk preferences have been shown to be correlated (see Croson and Gneezy 2009 for a review) and if we find a gender effect in our regressions it is not likely due to this correlation.

Table 3 shows regression results from five specifications that use data from the NegCorr decisions and where the sample is restricted to the Bonus and Competition treatments. Hence, each specification in Table 3 shows the regression coefficients for the groups that have high-powered incentives to take additional risk on behalf of others, for reasons of either hedging (Bonus treatment) or competition (Competition treatment).

Table 3: OLS Estimation Nrsafe, NegCorr, Competition and Bonus Treatments

	(1)	(2)	(3)	(4)	(5)
Competition	-0.026	0.012	-0.031	0.04	-0.018
Risk Aversion	-0.004	-0.004	-0.005	-0.01	-0.009
Female	-0.049	-0.092	-0.281**	-0.099	-0.277*
Age	0.004	0.005	0.007	0.004	0.006
Education 1		0.204	0.213	0.269	0.273
Education 2		0.118	0.131	0.206	0.208
Education 3		-0.122	-0.06	0.041	0.031
Self employed		-0.463*	-0.464*	-0.547**	-0.598**
Employed		0.092	0.105	0.038	0.038
Student		-0.074	-0.111	-0.133	-0.228
Cognitive ability			0.02		0.032
Cognitive reflection			-0.085		-0.071
Big 5 Agreeableness			0.025**		0.022**
Big 5 Conscientiousness			-0.002		-0.006
Big 5 Extraversion			0.023**		0.030***
Big 5 Neuroticism			0.019*		0.017
Big 5 Openness			0.004		0.002
Dictator give				0.006***	0.006***
Constant	1.660***	1.434***	-0.378	1.158**	-0.662
Observations	390	390	390	361	361

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Bonus treatment is the baseline treatment. Risk aversion refers to the number of safe choices in the risk elicitation task of iLEE1. For education, primary school is baseline. Education 1 indicates participants with high school or technical/practical basic education, Education 2 university education up to 3 years and Education 3 university degree taking more than 3 years to earn. For occupational status variables, the baseline is a combination of retired, unemployed and other. Cognitive ability measures the number of correct answers on a progressive matrices test (Beauducel et al., 2010). Cognitive reflection indicates the number of correct answers to the cognitive reflection test proposed by Frederick (2005). Dictator give refers to the amount (between 0 and 150) given to an anonymous receiver in a dictator game.

The first row in Table 3 shows that the Bonus and Competition treatments are not significantly different for any of our regression specifications. This corroborates our previous findings from non-parametric tests. Two of our personality trait measures turn out to be significant: Big5a, which measures agreeableness (friendly/compassionate vs. cold/unkind), and Big5e, which measures extraversion, are positively related to the number of safe choices. In addition, Dictator give has a significant positive impact on the number of safe choices. That is, decision makers who give more in a dictator game are more prone to choose the safe option. It can be argued that Dictator give, agreeableness and to some degree extraversion measure the degree of altruism and concern for others' well-being.[31] The moderating effect of

[31] We are well aware that Dictator give is an imperfect proxy of altruism, see e.g. Cappelen et al. (2013a) for recent evidence on the debate about the extent dictator giving reflects generosity.

altruism on the level of risk taking on behalf of others is sizable. A person who takes everything in the dictator game makes 0.45 fewer safe choices than someone who opts for an equal split in the dictator game. This effect is larger than the average treatment effect of going from NoIncentives to Bonus or Competition.

Concerning the other covariates, neither age nor educational level show any significant predictive power for risking other people's money. Interestingly, in the specifications controlling for personality traits, we find that females take on average more risks on behalf of others, i.e. fewer safe choices. At first sight this seems to contradict previous findings. However, because we control for risk preferences and personality traits which are known to correlate with gender, this effect is not likely to come from these channels. In terms of occupational status, we see that self-employed subjects tend to make fewer safe choices, and that this is not the case for the employed or students (the baseline is a merger of retired, "other" and "at home" occupational status). We also note that risk aversion (the number of safe choices in the risk-aversion task of iLEE1) has no significant impact here, which is not surprising since there is no risk involved for the decision maker.[32]

Table 4 gives the corresponding coefficients for the PosCorr decisions. Since only subjects of the Competition treatment have incentives to expose others to increased risk in these decisions, we restrict our sample to that treatment. Consequently, the number of observations is reduced to less than one fourth of the original sample and one half of the sample in Table 3. Hence, the models in Table 4 estimate effects when self-interested decision makers have incentives to take more risk on behalf of others only for reasons of competition.

The table's first line shows that the risk-preference coefficients are not significant. In contrast to the NegCorr decisions, where decision makers do not face any risk, this is not an obvious result because decision makers do face risk in PosCorr. But in the Competition treatment, risk stems from uncertainty regarding the opponent's behaviour (i.e. strategic risk), and this might well be different from the perception of risk stemming from nature.[33]

[32] If we instead look at the NoOthers treatment, we find a significant relationship between the number of safe choices in the current experiment and the number of safe choices in the iLEE1 experiment. This is reassuring and indicates some degree of stability of the measured risk preferences.

[33] Indeed, if we estimate the model on the Bonus treatment, the risk-preference coefficient is significant (see Table C10 in Online Appendix C). This is natural since under these decisions the decision maker's payoff is also subject to risk. Given that individual risk preferences were elicited approximately 3 years earlier, the significance of the earlier risk-preference measure indicates that individual risk-preference estimates show a strong and comforting correlation over time. For behavioural differences with respect to strategic and non-strategic risk in experiments see e.g., Holm et al. (2013).

Table 4:OLS Estimation Nrsafe, PosCorr, Competition Treatment

	(1)	(2)	(3)	(4)	(5)
Risk aversion	0.011	0.013	-0.010	0.025	0.008
Female	0.076	0.063	0.079	0.163	0.275
Age	-0.004	-0.014	-0.022*	-0.014	-0.021*
Education 1		-0.247	-0.087	-0.081	0.118
Education 2		-0.386	-0.097	-0.189	0.161
Education 3		-0.690	-0.199	-0.280	0.253
Self employed		-0.334	-0.148	-0.437	-0.281
Employed		-0.221	-0.085	-0.225	-0.046
Student		-0.875	-0.543	-0.900	-0.493
Cognitive ability			-0.135***		-0.144***
Cognitive reflection			0.001		0.021
Big 5 Agreeableness			0.007		-0.002
Big 5 Conscientiousness			0.000		-0.011
Big 5 Extraversion			0.004		0.015
Big 5 Neuroticism			0.017		0.012
Big 5 Openness			-0.038**		-0.044***
Dictator give				0.009**	0.009**
Constant	2.036***	3.105***	4.708***	2.424**	4.500***
Observations	180	180	180	165	165

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Risk aversion refers to the number of safe choices in the risk elicitation task of iLEE1. For education, primary school is baseline. Education 1 indicates participants with high school or technical/practical basic education, Education 2 university education up to 3 years and Education 3 university degree taking more than 3 years to earn. For occupational status variables, the baseline is a combination of retired, unemployed and other. Cognitive ability measures the number of correct answers on a progressive matrices test (Beauducel et al., 2010). Cognitive reflection indicates the number of correct answers to the cognitive reflection test proposed by Frederick (2005). Dictator give refers to the amount (between 0 and 150) given to an anonymous receiver in a dictator game.

Compared to Table 3, three new variables are significantly related to excessive risk taking in Table 4 (other variables cease to be significant, probably due to the much lower number of observations): older people who are more prone to expose others to risk in this setting (see Age in model (3) and (5)), those open to experience (see Big5o) and those with higher Cognitive ability who make fewer safe choices. The latter result is intuitively plausible since the Competitive treatment is cognitively more demanding, requiring subjects to think strategically and calculate payoffs for many scenarios.

The coefficient on Dictator give is positive and significant, making it reasonable to infer that in competitive environments altruism is a moderator of risk taking on behalf of others. The effect size is quite large; giving nothing in the dictator game compared to an equal split reduces the number of safe choices by 0.68, which can be compared to an average treatment effect of 0.27 between NoIncentives and Competition. Together with our finding from Table 3, we can conclude that altruism measured by the amount given in a Dictator game seems to be a robust and economically significant predictor of foregoing exposing others to risks for personal gain.

6. Concluding remarks

This paper experimentally investigates how people take risks on behalf of others, an issue of particular importance in financial decision making. In the wake of the recent financial crisis many blamed excessive risk taking on a dreadful cocktail of material incentives from ill-conceived bonus systems and the personalities of actors in the financial sector bordering on the pathological. We have shown that material incentives from bonus systems do indeed lure decision makers to risk other people's money more than would risk their own.

The fact that incentives matter is old news. Moreover, that they matter also in risk taking on behalf of others is predicted by standard economics in our setting, and as such is perhaps unsurprising. That being said, our experiment points to significant news on at least two levels. First, these incentives operate on perfectly regular people which are drawn from a random sample of the general population. Second, we find strong evidence that a pro-social orientation ("altruism") indeed moderates the propensity to risk other people's money beyond what a decision maker deems reasonable for himself or herself. To the degree that actors in the financial sector tend to be selected or self-select on the basis of their personality characteristics and their generosity, a lack of moderation by actors in the financial market (compared to the general population) can indeed to some extent be attributed to particular personality profiles. Our unique data set allows us to isolate this effect from other potential determinants like socio-economic factors, attitudes to risk, cognitive ability, and personality measures.

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Online Appendix

This document contains additional materials for "Risking Other People's Money. Experimental Evidence on Bonus Schemes, Competition, and Altruism" by Ola Andersson, Håkan J. Holm, Jean-Robert Tyran and Erik Wengström.

Section A compares our sample to the Danish population with respect to key socio-demographic variables. Section B derives theoretical predictions. Section C contains additional statistical analysis. Details about the experimental design, including screenshots, are provided in Section D. Section E describes the measures elicited in previous experiments on the same sample.

A. Comparison with the Danish Population

Table A1: Representativeness of sample

	Experimental sample	**Danish population**
Gender		
Female	48.1%	50.2%
Male	51.9%	49.8%
Age		
18-29 years	14.0%	18.5%
30-44 years	21.5%	29.1%
45-59 years	33.0%	27.0%
60-80 years	31.4%	25.3%
Education (highest completed)		
Basic education (up to 10 years)	11.1%	26.3%
High school or vocational education	25.6%	45.4%
Medium tertiary education	45.0%	21.1%
Long tertiary education	18.3%	7.1%

Notes: For gender and age, the data in the column Danish population refers to individuals from 18-80 years of age. For educational levels, the population is restricted to individuals from 20-69.

B. Theoretical Predictions

Throughout this analysis, we make the following maintained assumptions: the decision maker is rational, selfish and has monotone preferences. Let *V* denote the decision maker's expected utility and u the utility over certain monetary outcomes. In what follows we analyse the NegCorr and the PosCorr separately for treatments NoIncentive, Bonus and Competition. The NoOthers treatment is analysed separately at the end of this section.

NegCorr (Decisions 1-4)

Consider the case where the decision maker is facing NegCorr decision problems (generalized from Table 1):

Table B1: Generic decision taken from Table 1 under NegCorr

Left Gamble			Right Gamble		
	Heads	Tails		Heads	Tails
Receiver 1	100	0	Receiver 1	a	b
Receiver 2	0	100	Receiver 2	b	a

Firstly, we notice that there is no risk for the decision maker in these decisions. We now go on to analyse the decision problem under the different incentive schemes.

NoIncentive: Since decision makers are assumed to be selfish, we cannot make any formal prediction. However, the empirical evidence reported by Andersson et al. (2013a) suggests that we should expect behaviour similar to what occurs in the NoOthers treatment. This will be our reference point for conscientious decision making.

Bonus: By choosing Left the decision maker earns 100 for sure and by choosing Right she earns $(a + b)/2$. As long as $(a + b)/2 \leq 100$, it is optimal to choose Left, irrespective of risk preferences. Comparing these payoffs with those in Table 1 it is easy to see that it is optimal for the decision maker to choose Left in decisions 1-3 and then switch to Right at decision 4. So the number of safe choices is precisely one.

Competition: In this case there is some *strategic risk* in the sense that the decision maker's payoff depends on the decision of the opponent. Yet this strategic risk turns out to be minimal. Let us analyse each decision problem by setting up a normal form bimatrix (for simplicity we assume that *u* is symmetric across players and hence focus on the utility of the row-player).

	Left	Right
Left	u(50)	u(100) if $a + b < 100$ otherwise u(0)
Right	u(0) if $a + b < 100$ otherwise u(100)	u((a+b)/2)

Figure B1: Normal form representation under NegCorr in Competition treatment

If $a + b < 100$ then Left is the dominant strategy, and if $a + b > 100$ Right is dominant. Note that we ignore the case when $a + b = 100$, essentially due to the structure of decision problems at hand (in Table 1). In that case every outcome generates u(50), so the decision maker is indifferent. Consequently, we expect exactly one safe choice in this treatment.

PosCorr (Decisions 5-8)

Consider that the decision maker is facing PosCorr decision problems (generalized from Table 1):

Table B2: Generic decision taken from Table 1 under PosCorr

Left Gamble			Right Gamble		
	Heads	Tails		Heads	Tails
Receiver 1	100	0	Receiver 1	a	b
Receiver 2	100	0	Receiver 2	a	b

Contrary to NegCorr the decision maker now also faces risk. We continue as before to analyse the situation treatment by treatment.

NoIncentive: Since decision makers are selfish we cannot make any prediction. Again the results reported by Andersson et al. (2013a) might guide us to expect behaviour similar to what occurs in the NoOthers treatment.

Bonus: The optimal decision will depend on the decision maker's risk preferences. If the decision maker is risk neutral he will switch at decision 8. If he is a risk seeker he will switch at decision 8, or not at all depending on his degree of preference for risk taking. A risk averse decision maker will switch at 8 or earlier, depending on his degree of risk aversion. In general, the switch point decreases the greater the degree of risk aversion.

Competition: We set up a bimatrix to analyse the situation under the assumption that $2a < 200\ and\ 2b < 200$, which is satisfied by all the decision problems in Table 1.

	Left	Right
Left	$\frac{u(200)}{4}+\frac{u(100)}{4}+\frac{2u(0)}{4}$	$\frac{u(200)}{2}+\frac{u(0)}{2}$
Right	$\frac{u(2a)}{4}+\frac{u(2b)}{4}+\frac{2u(0)}{4}$	$\frac{u(2a)}{4}+\frac{u(b)}{4}+\frac{u(a)}{4}+\frac{u(0)}{4}$

Figure B2: Normal form representation under PosCorr in Competition treatment

Since $2a < 200$ and $2b \leq 100$ the strategy pair (L,L) constitutes a Nash-equilibrium in every decision, independent of risk preferences. If $V(L,R) \leq V(R,R)$ for both players (R,R) is then clearly also a Nash equilibrium. As shown below this might happen for high degrees of risk aversion so we cannot rule it out. However, we note that under risk neutrality it is not a Nash-equilibrium, as will become clear in what follows. The strategy pair (L,L) will also be an equilibrium in dominant strategies, if the decision maker is not too risk averse. To understand this first note that under the assumption of risk neutrality (L,L) will be a dominant equilibrium. Indeed, then u is linear and $u(a) + u(b) = u(a + b) < u(2a)$, so that

$$V(R,R) = \frac{u(2a)}{4}+\frac{u(b)}{4}+\frac{u(a)}{4}+\frac{u(0)}{4} < \frac{u(2a)}{2}+\frac{u(0)}{2} < \frac{u(200)}{2}+\frac{u(0)}{2} = V(L,R)$$

Since there is strict inequality between $\mathrm{V(R,R)}$ and $\mathrm{V(L,R)}$, it would seem reasonable that for some degree of risk aversion (L,L) will be a dominant strategy. How much, of course, will invariably depend on the utility specification. For example, if one takes the CRRA specification: $u(x) = x^r$, where x is the monetary outcome and r the degree of relative risk aversion; then $r > 0.41$ would make (L,L) a dominant equilibrium for any decision problem. Under such preferences, it would appear optimal to only choose the safe option in the NoOthers treatment. In point of fact about 45 per cent of subjects in the NoOthers treatment behave in such a manner. Unfortunately it is harder to make a precise prediction here than under NegCorr, but one such (Nash equilibrium) prediction is that there will be zero safe choices.

NoOthers Treatment

In the NoOthers treatment (see Table 2) the optimal decision will depend on the degree of risk aversion. A risk neutral decision maker will switch at decision 4, and overall risk aversion above a certain level leads to earlier switch.

C. Additional Statistical Analysis

In this section, we provide some additional descriptions and analysis. Figure C1 illustrates the number of safe choices for NegCorr (1-4) and PosCorr (5-8) with histograms.

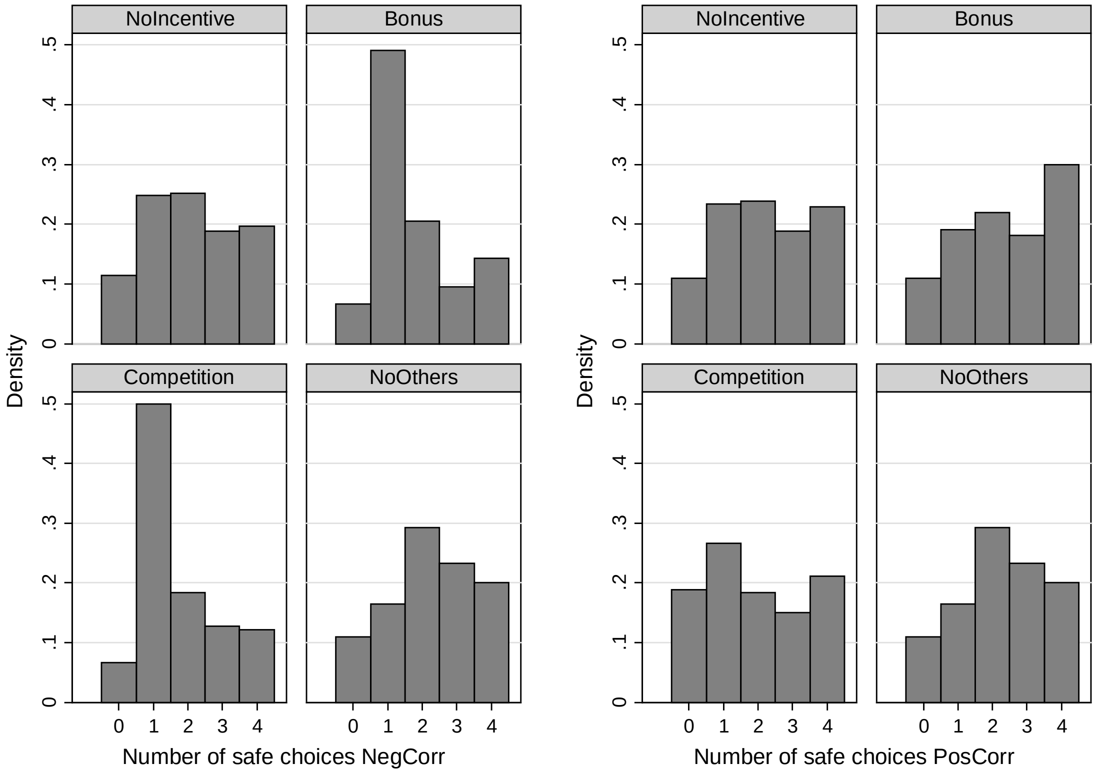


Figure C1: Number of Safe Choices by Treatment

Table C1 gives the frequency of subjects revising their choice.

Table C1: Frequency of Subjects Revising their Choice (Per cent)

		NoIncentive	Bonus	Competition	NoOthers
NegCorr	choice1	5.96	3.33	5.00	4.57
	choice2	7.34	5.24	2.78	6.85
	choice3	4.59	3.33	4.44	7.76
	choice4	3.21	1.90	6.11	5.94
PosCorr	choice5	8.26	6.67	7.78	-
	choice6	4.13	4.76	7.78	-
	choice7	5.05	7.14	7.22	-
	choice8	3.67	3.33	8.89	-

Table C2 reports p-values from the Mann-Whitney U-test. The average number of safe choices is reported on the main diagonal, and the between treatment p-values is reported off the main diagonal.

Table C2: Treatment Averages on the Main Diagonal and Mann-Whitney *p*-Values between Treatments off Diagonal

		NegCorr		
	NoIncentive	Bonus	Competition	NoOthers
NoIncentive	2.106			
Bonus	0.002	1.757		
Competition	0.002	0.884	1.739	
NoOthers	0.202	0.000	0.000	2.251
		PosCorr		
	NoIncentive	Bonus	Competition	NoOthers
NoIncentive	2.193			
Bonus	0.155	2.371		
Competition	0.050	0.002	1.928	
NoOthers	0.599	0.305	0.015	2.251

Estimations

First, we report summary statistics for the variables in the logit estimations, given the fact that the sample was restricted considering only the Bonus and Competition treatment. The lower number of observations given for the Dictator give is because this variable was collected in the second wave of the iLEE project (iLEE2), while the other variables were collected in the first wave (iLEE1).

Table C3: Summary Statistics of Regression Variables

Variable	Obs	Mean	Std. Dev	Min	Max
Risk aversion	390	4.021	2.841	0	10
Female	390	0.523	0.500	0	1
Age	390	46.746	15.803	18	78
Education 1	390	0.287	0.453	0	1
Education 2	390	0.441	0.497	0	1
Education 3	390	0.141	0.348	0	1
Self employed	390	0.059	0.236	0	1
Employed	390	0.574	0.495	0	1
Student	390	0.128	0.335	0	1
Cognitive ability	390	8.769	3.080	0	16
Cognitive reflection	390	1.518	1.117	0	3
Big 5 Agreeableness	390	32.423	5.692	14	48
Big 5 Conscientiousness	390	33.326	5.548	12	46
Big 5 Extraversion	390	30.392	6.346	9	46
Big 5 Neuroticism	390	19.197	7.306	2	46
Big 5 Openness	390	26.482	6.273	9	45
Dictator give	361	46.163	32.919	0	150

Below we give different models of the ordered logit for NegCorr and PosCorr. The sample is restricted to the Bonus and Competition treatment.

Table C4: Ordered Logit Estimation Nrsafe, NegCorr, Competition and Bonus

	(1)	(2)	(3)	(4)	(5)
Competition	-0.005	0.025	0.004	-0.008	-0.037
Risk aversion	-0.017	-0.018	-0.017	-0.035	-0.030
Female	0.005	-0.075	-0.136	-0.330	-0.390
Age	0.006	0.007	0.008	0.004	0.007
Education 1		0.418	0.411	0.704	0.655
Education 2		0.279	0.277	0.576	0.524
Education 3		-0.152	-0.100	0.264	0.211
Self employed		-1.120**	-1.099**	-1.400**	-1.420***
Employed		0.040	0.048	-0.049	-0.064
Student		-0.148	-0.117	-0.391	-0.415
Cognitive ability			0.022		0.049
Cognitive			-0.124		-0.094
Big 5 Agreeableness				0.042**	0.042**
Big 5 Conscientiousness				-0.016	-0.015
Big 5 Extraversion				0.057***	0.056***
Big 5 Neuroticism				0.030*	0.029*
Big 5 Openness				0.001	0.003
Dictator give				0.012***	0.011***
cut1	-2.435***	-2.257***	-2.278**	0.970	1.304
cut2	0.458	0.704	0.689	4.139***	4.479***
cut3	1.347**	1.611*	1.600*	5.065***	5.409***
cut4	2.088***	2.358***	2.350**	5.882***	6.229***
Observations	390	390	390	361	361

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Bonus treatment is the baseline treatment. Risk aversion refers to the number of safe choice in the risk elicitation task of iLEE1. For education, primary school is baseline. Education 1 indicates participants with high school or technical/practical basic education, Education 2 university education up to 3 years and Education 3 university degree taking more than 3 years for completion. For occupational status variables, the baseline is a combination of retired, unemployed and other. Cognitive ability measures the number of correct answers on a progressive matrices test (Beauducel et al., 2010). Cognitive reflection indicates the number of correct answers to the cognitive reflection test proposed by Frederick (2005). Dictator give refers to the amount (between 0 and 150) given to an anonymous receiver in a dictator game.

The output from an ordered logit estimation is not straightforward to interpret (see Greene, 2000 for a discussion).[34] Table C5 gives, for the most general specification in the Online Appendix, marginal effects divided up by the different outcome-categories for Nrsafe. For each outcome of Nrsafe, a coefficient shows the estimated change in probability of belonging to that category for a marginal increase in that variable.

Table C5: Marginal Effects NegCorr Decisions

	NrSafe				
	0	1	2	3	4
Competition	0.002	0.007	-0.003	-0.003	-0.004
Risk aversion	0.001	0.006	-0.002	-0.002	-0.003
Female	0.019	0.076	-0.027	-0.029	-0.040
Age	-0.000	-0.001	0.000	0.001	0.001
Education 1	-0.033	-0.128	0.045	0.049	0.067
Education 2	-0.026	-0.102	0.036	0.039	0.054
Education 3	-0.011	-0.041	0.014	0.016	0.022
Self employed	0.071**	0.277**	-0.097**	-0.106**	-0.145***
Employed	0.003	0.013	-0.004	-0.005	-0.007
Student	0.021	0.081	-0.028	-0.031	-0.042
IQ	-0.002	-0.009	0.003	0.004	0.005
Cognitive reflection	0.005	0.018	-0.006	-0.007	-0.010
Big 5 Agreeableness	-0.002**	-0.008**	0.003**	0.003**	0.004**
Big 5 Conscientiousness	0.001	0.003	-0.001	-0.001	-0.002
Big 5 Extraversion	-0.003***	-0.011***	0.004**	0.004**	0.006***
Big 5 Neuroticism	-0.001	-0.006*	0.002	0.002	0.003*
Big 5 Openness	-0.000	-0.001	0.000	0.000	0.000
Dictator give	-0.001***	-0.002***	0.001***	0.001***	0.001***
Observations	361	361	361	361	361

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Bonus treatment is the baseline treatment. Risk aversion refers to the number of safe choices in the risk elicitation task of iLEE1. For education, primary school is baseline. Education 1 indicates participants with high school or technical/practical basic education, Education 2 university education up to 3 years and Education 3 university degree taking more than 3 years to earn. For occupational status variables, the baseline is a combination of retired, unemployed and other. Cognitive ability measures the number of correct answers on a progressive matrices test (Beauducel et al., 2010). Cognitive reflection indicates the number of correct answers to the cognitive reflection test proposed by Frederick (2005). Dictator give refers to the amount (between 0 and 150) given to an anonymous receiver in a dictator game.

[34] In particular the signs of the coefficients are only interpretable for the end categories Nrsafe=0 and Nrsafe=4.

Table C6: Ordered Logit Estimation Nrsafe, PosCorr

	(1)	(2)	(3)	(4)	(5)
Risk aversion	0.007	0.010	-0.013	0.031	0.006
Female	0.094	0.085	0.112	0.363	0.383
Age	-0.006	-0.019	-0.029**	-0.016	-0.028*
Education 1		-0.283	-0.252	0.082	0.132
Education 2		-0.485	-0.389	0.069	0.200
Education 3		-0.839	-0.572	0.048	0.229
Self employed		-0.522	-0.366	-0.454	-0.243
Employed		-0.386	-0.198	-0.238	-0.043
Student		-1.193	-0.884	-0.959	-0.580
IQ			-0.161***		-0.196***
Cognitive reflection			-0.024		0.023
Big 5 Agreeableness				-0.016	-0.002
Big 5 Conscientiousness				-0.018	-0.020
Big 5 Extraversion				0.022	0.023
Big 5 Neuroticism				0.010	0.014
Big 5 Openness				-0.048**	-0.053**
Dictator give				0.014**	0.012**
cut1	-1.657***	-3.147***	-4.956***	-3.128	-5.079**
cut2	-0.372	-1.837	-3.609***	-1.766	-3.655*
cut3	0.382	-1.065	-2.806**	-0.958	-2.807
cut4	1.130**	-0.301	-2.013*	-0.148	-1.964
Observations	180	180	180	165	165

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Bonus treatment is the baseline treatment. Risk aversion refers to the number of safe choices in the risk elicitation task of iLEE1. For education, primary school is baseline. Education 1 indicates participants with high school or technical/practical basic education, Education 2 university education up to 3 years and Education 3 university degree taking more than 3 years to earn. For occupational status variables, the baseline is a combination of retired, unemployed and other. Cognitive ability measures the number of correct answers on a progressive matrices test (Beauducel et al., 2010). Cognitive reflection indicates the number of correct answers to the cognitive reflection test proposed by Frederick (2005). Dictator give refers to the amount (between 0 and 150) given to an anonymous receiver in a dictator game.

Table C7 gives marginal effects for the most general specification in Table C6.

Table C7: Marginal Effects PosCorr Decisions

	NrSafe				
	0	1	2	3	4
Risk aversion	-0.001	-0.001	0.000	0.000	0.001
Female	-0.051	-0.043	0.007	0.029	0.059
Age	0.004	0.003	-0.001	-0.002	-0.004*
Education 1	-0.018	-0.015	0.002	0.010	0.020
Education 2	-0.027	-0.022	0.004	0.015	0.031
Education 3	-0.031	-0.026	0.004	0.017	0.035
Self employed	0.033	0.027	-0.005	-0.018	-0.037
Employed	0.006	0.005	-0.001	-0.003	-0.007
Student	0.078	0.065	-0.011	-0.043	-0.089
IQ	0.026***	0.022**	-0.004	-0.015**	-0.030***
Cognitive reflection	-0.003	-0.003	0.000	0.002	0.004
Big 5 Agreeableness	0.000	0.000	-0.000	-0.000	-0.000
Big 5 Conscientiousness	0.003	0.002	-0.000	-0.002	-0.003
Big 5 Extraversion	-0.003	-0.003	0.000	0.002	0.004
Big 5 Neuroticism	-0.002	-0.002	0.000	0.001	0.002
Big 5 Openness	0.007**	0.006**	-0.001	-0.004**	-0.008**
Dictator give	-0.002**	-0.001**	0.000	0.001**	0.002**
Observations	165	165	165	165	165

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Bonus treatment is the baseline treatment. Risk aversion refers to the number of safe choices in the risk elicitation task of iLEE1. For education, primary school is baseline. Education 1 indicates participants with high school or technical/practical basic education, Education 2 university education up to 3 years and Education 3 university degree taking more than 3 years to earn. For occupational status variables, the baseline is a combination of retired, unemployed and other. Cognitive ability measures the number of correct answers on a progressive matrices test (Beauducel et al., 2010). Cognitive reflection indicates the number of correct answers to the cognitive reflection test proposed by Frederick (2005). Dictator give refers to the amount (between 0 and 150) given to an anonymous receiver in a dictator game.

We also include, for completeness, estimations and marginal effects for PosCorr with Bonus and Competition as sample.

Table C8: Ordered Logit Estimation Nrsafe, PosCorr, Competition and Bonus

	(1)	(2)	(3)	(4)	(5)
Competition	-0.585***	-0.595***	-0.603***	-0.583***	-0.592***
Risk aversion	0.090**	0.096**	0.093**	0.097**	0.093**
Female	-0.157	-0.239	-0.267	-0.291	-0.320
Age	-0.002	-0.004	-0.006	-0.005	-0.008
Education 1		-0.313	-0.311	-0.120	-0.125
Education 2		-0.289	-0.270	-0.035	-0.026
Education 3		-0.862**	-0.742*	-0.395	-0.290
Self employed		-0.261	-0.200	-0.368	-0.289
Employed		-0.076	-0.057	-0.205	-0.179
Student		-0.290	-0.217	-0.332	-0.241
IQ			-0.023		-0.027
Cognitive Reflection			-0.107		-0.118
Big 5 Agreeableness				0.012	0.013
Big 5 Conscientiousness				0.005	0.006
Big 5 Extraversion				0.012	0.007
Big 5 Neuroticism				0.015	0.012
Big 5 Openness				-0.011	-0.009
Dictator give				0.010***	0.009***
cut1	-3.066***	-3.669***	-4.140***	-2.290	-2.938*
cut2	-1.794***	-2.388***	-2.854***	-0.976	-1.616
cut3	-0.936*	-1.514*	-1.976**	-0.094	-0.728
cut4	-0.158	-0.721	-1.179	0.731	0.101
Observations	390	390	390	361	361

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Bonus treatment is the baseline treatment. Risk aversion refers to the number of safe choices in the risk elicitation task of iLEE1. For education, primary school is baseline. Education 1 indicates participants with high school or technical/practical basic education, Education 2 university education up to 3 years and Education 3 university degree taking more than 3 years to earn. For occupational status variables, the baseline is a combination of retired, unemployed and other. Cognitive ability measures the number of correct answers on a progressive matrices test (Beauducel et al., 2010). Cognitive reflection indicates the number of correct answers to the cognitive reflection test proposed by Frederick (2005). Dictator give refers to the amount (between 0 and 150) given to an anonymous receiver in a dictator game.

Table C9: Marginal Effects PosCorr, Competition and Bonus Treatments

	Nrsafe				
	0	1	2	3	4
Competition	0.066***	0.070***	0.010	-0.035***	-0.110***
Risk aversion	-0.010**	-0.011**	-0.002	0.005*	0.017**
Female	0.035	0.038	0.005	-0.019	-0.060
Age	0.001	0.001	0.000	-0.000	-0.002
Education 1	0.014	0.015	0.002	-0.007	-0.023
Education 2	0.003	0.003	0.000	-0.002	-0.005
Education 3	0.032	0.034	0.005	-0.017	-0.054
Self employed	0.032	0.034	0.005	-0.017	-0.054
Employed	0.020	0.021	0.003	-0.011	-0.033
Student	0.027	0.028	0.004	-0.014	-0.045
IQ	0.003	0.003	0.000	-0.002	-0.005
Cognitive reflection	0.013	0.014	0.002	-0.007	-0.022
Big 5 Agreeableness	-0.001	-0.002	-0.000	0.001	0.002
Big 5 Conscientiousness	-0.001	-0.001	-0.000	0.000	0.001
Big 5 Extraversion	-0.001	-0.001	-0.000	0.000	0.001
Big 5 Neuroticism	-0.001	-0.001	-0.000	0.001	0.002
Big 5 Openness	0.001	0.001	0.000	-0.001	-0.002
Dictator give	-0.001***	-0.001***	-0.000	0.001**	0.002***
Observations	361	361	361	361	361

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Bonus treatment is the baseline treatment. Risk aversion refers to the number of safe choices in the risk elicitation task of iLEE1. For education, primary school is baseline. Education 1 indicates participants with high school or technical/practical basic education, Education 2 university education up to 3 years and Education 3 university degree taking more than 3 years to earn. For occupational status variables, the baseline is a combination of retired, unemployed and other. Cognitive ability measures the number of correct answers on a progressive matrices test (Beauducel et al., 2010). Cognitive reflection indicates the number of correct answers to the cognitive reflection test proposed by Frederick (2005). Dictator give refers to the amount (between 0 and 150) given to an anonymous receiver in a dictator game.

Table C10: OLS Estimation Nrsafe, PosCorr, Bonus and Competition Treatment

	(1)	(2)	(3)	(4)	(5)
Competition	-0.007	0.012	-0.003	0.001	-0.018
Risk aversion	-0.006	-0.004	-0.004	-0.012	-0.009
Female	-0.047	-0.092	-0.128	-0.233	-0.277*
Age	0.004	0.005	0.006	0.004	0.006
Education 1		0.204	0.192	0.310	0.273
Education 2		0.118	0.108	0.247	0.208
Education 3		-0.122	-0.091	0.070	0.031
Self employed		-0.463*	-0.447	-0.593**	-0.598**
Employed		0.092	0.092	0.048	0.038
Student		-0.074	-0.068	-0.206	-0.228
Cognitive ability			0.015		0.032
Cognitive Reflection			-0.085		-0.071
Big 5 Agreeableness				0.006***	0.006***
Big 5 Conscientiousness				0.021*	0.022**
Big 5 Extraversion				-0.007	-0.006
Big 5 Neuroticism				0.031***	0.030***
Big 5 Openness				0.017	0.017
Dictator give				0.001	0.002
Constant	1.612***	1.434***	1.468***	-0.458	-0.662
Observations	390	390	390	361	361

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Bonus treatment is the baseline treatment. Risk aversion refers to the number of safe choices in the risk elicitation task of iLEE1. For education, primary school is the baseline. Education 1 indicates participants with high school or technical/practical basic education, Education 2 university education up to 3 years and Education 3 university degree taking more than 3 years to earn. For occupational status variables, the baseline is a combination of retired, unemployed and other. Cognitive ability measures the number of correct answers on a progressive matrices test (Beauducel et al., 2010). Cognitive reflection indicates the number of correct answers to the cognitive reflection test proposed by Frederick (2005). Dictator give refers to the amount (between 0 and 150) given to an anonymous receiver in a dictator game.

D. Experimental Designs and Screenshots

This section summarizes some basic concrete guidelines in our experimental design, including screenshots.

Details about the Experiment

The experiment has 4 treatments:

1. **NoIncentive:** 8 decisions on behalf of 2 receivers. The decision maker is not paid.
2. **Bonus:** 8 decisions on behalf of 2 receivers. The decision maker obtains a bonus equal to half of the aggregate payoff of the receivers.
3. **Competition:** 8 decisions on behalf of 2 receivers. Two decision makers are paired as competitors *i* and *j*. The sum of the receivers' payoffs of *i* is compared to the sum obtained by decision maker *j*. The winner (the decision maker with the higher sum for the receivers) obtains a payoff equal to this sum, while the loser gets nothing.[35] In the case of a tie, the aggregate outcome is split between the decision makers.
4. **NoOthers:** 4 decisions over own payoffs (control treatment).

Assignment to treatments is in alternating order according to the sequence of logins. All subjects make choices in their role as decision maker. Payoffs in the three main treatments are calculated as follows: Subjects are randomly assigned to the role of decision maker and receiver ex post. One decision of the selected decision maker is drawn, and the group is paid according to the outcome of this choice. [36] Average earnings in this module are DKK 41.94 (average also includes DM in NoIncentive, who received no payment from this module).

The screens were presented in the order shown below.

(a) **Instructions,** 2-3 screens inform about the game. In the NoIncentive, Bonus, and Competition treatments, the subjects are told that they are randomly matched with two other subjects. One of them is randomly chosen to be decision maker at the end of the experiment, while the other subjects are receivers.

(b) **Control questions**: All (3 in treatments NoIncentive and Bonus, 4 in treatment Competition, and 2 in treatment NoOthers) questions have to be answered correctly before subjects may proceed.

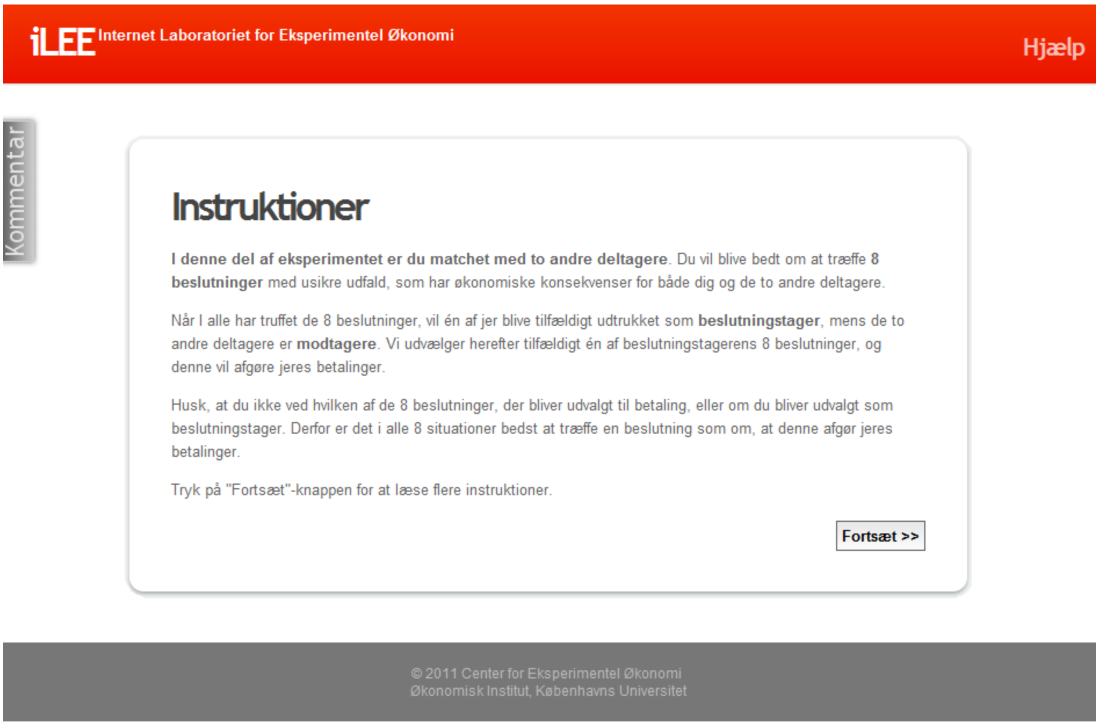
[35] The outcomes Heads and Tails are independent random draws for the decision maker and his competitor.

[36] In the case of groups with only one or two subjects, the payment of subjects in the group is calculated as if the group was complete (the first subject would always be the decision maker). In case of an uneven number of groups in the Competition treatment, payments of the residual unmatched group are calculated as if it had been matched with a group in which the sum of the receivers' earnings was zero.

(c) **Decision screens.** Problems are presented to subjects in a randomized order with one decision problem per screen. All subjects have perfect information about payoffs and make eight decisions (four decisions in the NoOthers treatment) as if they are decision makers. Once matched, one subject per group will *ex post* be the decision maker and the others will be given the roles of receiver 1 and receiver 2.

(d) **Revise screen**: Subjects are shown all their decisions on one screen and have the possibility to revise them.

Sample Instruction Screen 1 (Bonus Treatment)



Translation of Instruction Screen 1 (Bonus Treatment)

Instructions

In this part of the experiment you are grouped together with two other participants. You will all be asked to make 8 decisions over risky prospects that have monetary consequences also for the other two participants.

After you have made your decisions, one of you will be randomly selected to be the actual **decision maker** and the other two will serve as **receivers**. We will then select one of the decision problems at random, and this will determine your payoffs.

Remember, you don’t know which decision problem will be selected for payments, so the best you can do is simply to approach each decision as if you were paid according to the instructions of that decision problem.

Please press the “Continue” button to continue with the instructions.

CONTINUE>>

Sample Instruction Screen 2 (Bonus Treatment)

iLEE Internet Laboratoriet for Eksperimentel Økonomi

Hjælp Instruktioner

Kommentar

Instruktioner

I hver beslutningssituation skal du vælge mellem to lotterier: **Det venstre lotteri** og **det højre lotteri**. Hvert lotteri har to mulige udfald: **Plat** eller **krone**. Der er lige stor chance for begge udfald. Det vil sige: Chancen for at udfaldet er krone, er 50%, og chancen for at udfaldet er plat, er 50%.

Hver enkelt beslutningssituation beskriver for hvert udfald betalingerne til de to modtagere, der kaldes **Modtager 1** og **Modtager 2**.

Betalingen til dig som beslutningstager er halvdelen af, hvad modtagerne får tilsammen. Hvis modtagerne eksempelvis får 20 og 30 kr., så får du (20+30)/2=25 kr.

Her er et **eksempel** på en beslutningssituation:

	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
1	Modtager 1	100 kr.	0 kr.	Modtager 1	30 kr.	20 kr.	○	○
	Modtager 2	0 kr.	100 kr.	Modtager 2	20 kr.	30 kr.		
	Dig	50 kr.	50 kr.	Dig	25 kr.	25 kr.		

Eksempel 1: Hvis du vælger det **højre lotteri**, og udfaldet bliver plat, så vil Modtager 1 få 30 kr., mens Modtager 2 vil få 20 kr. Hvis udfaldet derimod bliver krone, vil Modtager 1 få 20 kr., mens Modtager 2 vil få 30 kr. Uanset udfaldet tjener modtagerne 50 kr. tilsammen, og du tjener dermed 25 kr.

Eksempel 2: Hvis du i stedet vælger det **venstre lotteri**, så vil den ene modtager få 100 kr., og den anden modtager vil få 0 kr. I dette tilfælde tjener de 100 kr. tilsammen, og du tjener dermed 50 kr.

Tryk på "Fortsæt"-knappen for at gå videre til endnu et eksempel.

<< Tilbage Fortsæt >>

Translation of Instruction Screen 2 (Bonus Treatment)

Instructions

In each decision problem you have to choose between two gambles. **The Left gamble** and **the Right gamble**. Each gamble has two possible outcomes: **Head** or **Tail**. The chances of getting either one are equally big, i.e. in each gamble there is a 50% probability for Heads and a 50% probability for Tails.

Each decision problem describes the payoffs of the two receivers denoted **Receiver 1** and **Receiver 2**, for each outcome.

The payoff for you as a decision maker is equal to half of the sum of the receivers' payoffs. For example, if the receivers get 30 and 20 you will get (30+20)/2=25.

Here is an **example** of what the decision problems will look like:

		Left Gamble			Right Gamble		Your choice:	
		Head	Tail		Head	Tails	Left Gamble	Right Gamble
Decision								
	Receiver 1	100	0	Receiver 1	30	20		
1	Receiver 2	0	100	Receiver 2	20	30		
	You	50	50	You	25	25		

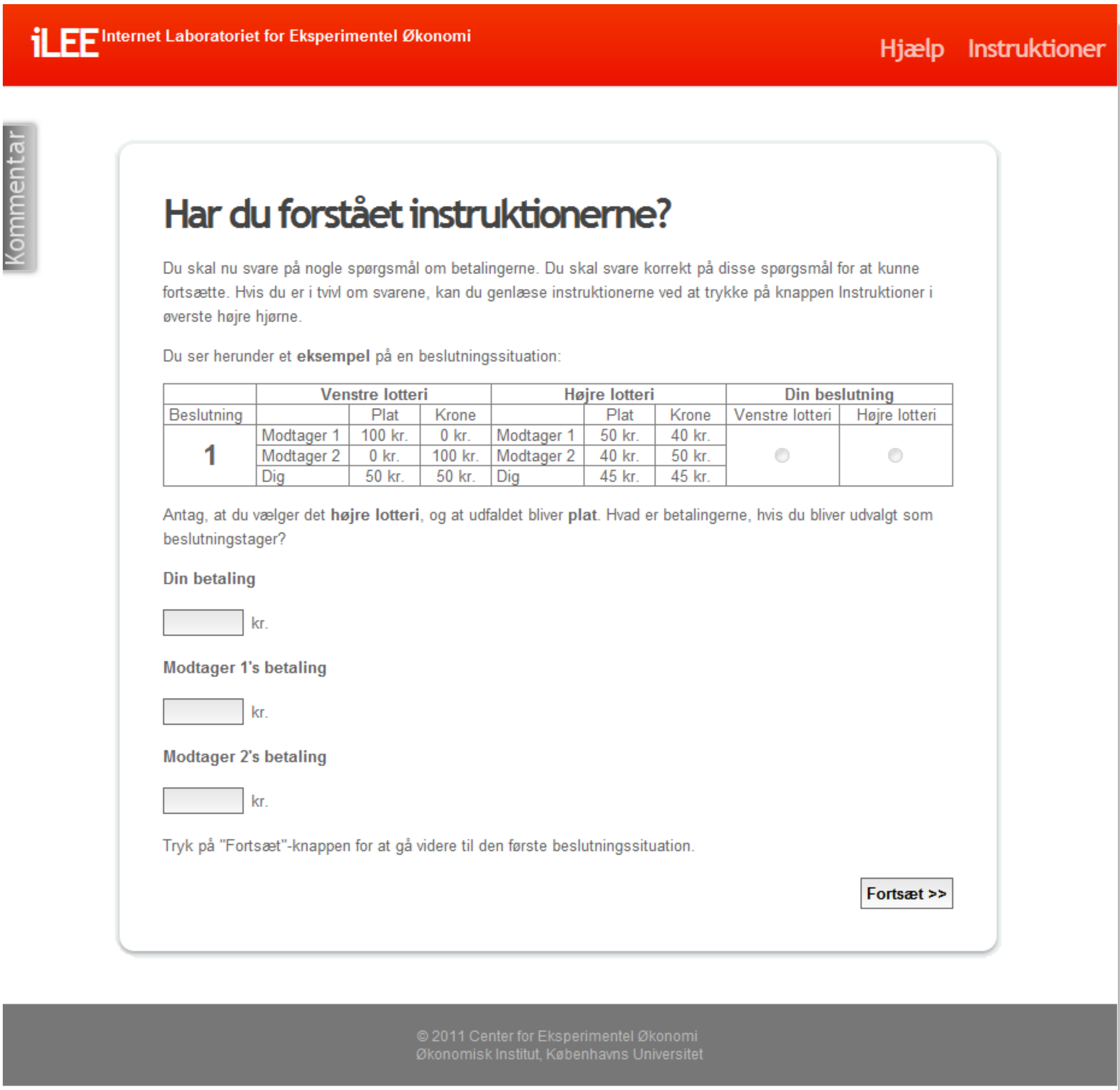
Example 1: If you choose the **Right gamble** and Head comes up, the first of the other participants will receive 30 kroner and the second participant will receive 20 kroner. If the outcome is Tail instead, the first participant will receive 20 kroner and the second 30 kroner. Irrespective of the outcome of the "coin toss" you will receive 25 kroner.

Example 2: If you instead choose the **Left gamble**, one of the participants will receive 100 kroner, the other participant 0 kroner and you will get 50 kroner.

Please press continue to proceed to yet another example.

CONTINUE>>

Sample Control Questions Screen (Bonus Treatment)



iLEE Internet Laboratoriet for Eksperimentel Økonomi

Hjælp Instruktioner

Kommentar

Har du forstået instruktionerne?

Du skal nu svare på nogle spørgsmål om betalingerne. Du skal svare korrekt på disse spørgsmål for at kunne fortsætte. Hvis du er i tvivl om svarene, kan du genlæse instruktionerne ved at trykke på knappen Instruktioner i øverste højre hjørne.

Du ser herunder et **eksempel** på en beslutningssituation:

	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
1	Modtager 1	100 kr.	0 kr.	Modtager 1	50 kr.	40 kr.		
	Modtager 2	0 kr.	100 kr.	Modtager 2	40 kr.	50 kr.		
	Dig	50 kr.	50 kr.	Dig	45 kr.	45 kr.		

Antag, at du vælger det **højre lotteri**, og at udfaldet bliver **plat**. Hvad er betalingerne, hvis du bliver udvalgt som beslutningstager?

Din betaling

kr.

Modtager 1's betaling

kr.

Modtager 2's betaling

kr.

Tryk på "Fortsæt"-knappen for at gå videre til den første beslutningssituation.

Fortsæt >>

Translation of the Control Screen (Bonus Treatment)

Did you understand the instructions?

We would now like you to answer a few questions about the payments. Please note that you have to answer these questions correctly before moving on to the actual decisions. If you hesitate about the answers, you can read the instructions again by pressing the instruction button at the upper right corner of the screen.

Below, you find an **example** of a decision problem.

		Left Gamble			Right Gamble		Your choice:	
		Head	Tail		Head	Tails	Left Gamble	Right Gamble
Decision								
1	Receiver 1	100	0	Receiver 1	50	40		
	Receiver 2	0	100	Receiver 2	40	50		
	You	50	50	You	45	45		

Assume you choose the **Right Gamble** and that the outcome is **Head**

What then would the payoffs if you are selected to be the decision maker?

Your payment:____

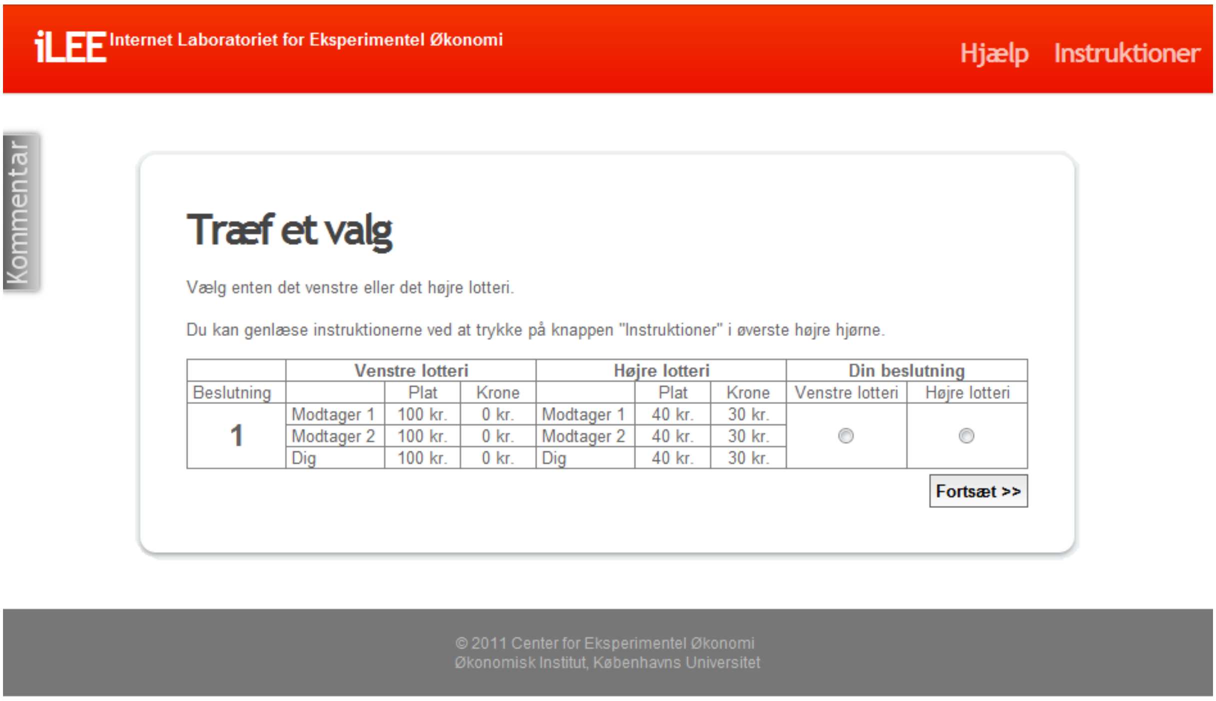
Receiver 1's payment: ____

Receiver 2's payment: ____

Please press continue to proceed to the first decision problem.

CONTINUE>>

Sample Decision Screen (Bonus Treatment)



iLEE Internet Laboratoriet for Eksperimentel Økonomi

Hjælp Instruktioner

Kommentar

Træf et valg

Vælg enten det venstre eller det højre lotteri.

Du kan genlæse instruktionerne ved at trykke på knappen "Instruktioner" i øverste højre hjørne.

	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
1	Modtager 1	100 kr.	0 kr.	Modtager 1	40 kr.	30 kr.		
	Modtager 2	100 kr.	0 kr.	Modtager 2	40 kr.	30 kr.		
	Dig	100 kr.	0 kr.	Dig	40 kr.	30 kr.		

Fortsæt >>

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Økonomisk Institut, Københavns Universitet

Translation of a Decision Screen (Bonus Treatment)

Please make a choice

Please choose the Left gamble or Right gamble.

You can review the instructions by clicking the “Instructions” button on the upper right corner of the screen.

		Left Gamble			Right Gamble		Your choice:	
		Head	Tail		Head	Tails	Left Gamble	Right Gamble
Decision								
1	Receiver 1	100	0	Receiver 1	40	30		
	Receiver 2	100	0	Receiver 2	40	30		
	You	100	0	You	40	30		

CONTINUE>>

Sample Revision Screen (Bonus Treatment)

Gense dine beslutninger

Før du bekræfter dine beslutninger, har du nu chancen for at gense dine tidligere beslutninger og ændre disse.
Når du er tilfreds, bedes du trykke på "Bekræft"-knappen.

	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
1	Modtager 1	100 kr.	0 kr.	Modtager 1	40 kr.	30 kr.	○	●
	Modtager 2	100 kr.	0 kr.	Modtager 2	40 kr.	30 kr.		
	Dig	100 kr.	0 kr.	Dig	40 kr.	30 kr.		
	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
2	Modtager 1	100 kr.	0 kr.	Modtager 1	50 kr.	40 kr.	●	○
	Modtager 2	0 kr.	100 kr.	Modtager 2	40 kr.	50 kr.		
	Dig	50 kr.	50 kr.	Dig	45 kr.	45 kr.		
	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
3	Modtager 1	100 kr.	0 kr.	Modtager 1	60 kr.	50 kr.	●	○
	Modtager 2	100 kr.	0 kr.	Modtager 2	60 kr.	50 kr.		
	Dig	100 kr.	0 kr.	Dig	60 kr.	50 kr.		
	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
4	Modtager 1	100 kr.	0 kr.	Modtager 1	40 kr.	30 kr.	●	○
	Modtager 2	0 kr.	100 kr.	Modtager 2	30 kr.	40 kr.		
	Dig	50 kr.	50 kr.	Dig	35 kr.	35 kr.		
	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
5	Modtager 1	100 kr.	0 kr.	Modtager 1	60 kr.	50 kr.	○	●
	Modtager 2	0 kr.	100 kr.	Modtager 2	50 kr.	60 kr.		
	Dig	50 kr.	50 kr.	Dig	55 kr.	55 kr.		
	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
6	Modtager 1	100 kr.	0 kr.	Modtager 1	50 kr.	40 kr.	●	○
	Modtager 2	100 kr.	0 kr.	Modtager 2	50 kr.	40 kr.		
	Dig	100 kr.	0 kr.	Dig	50 kr.	40 kr.		
	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
7	Modtager 1	100 kr.	0 kr.	Modtager 1	30 kr.	20 kr.	●	○
	Modtager 2	0 kr.	100 kr.	Modtager 2	20 kr.	30 kr.		
	Dig	50 kr.	50 kr.	Dig	25 kr.	25 kr.		
	Venstre lotteri			Højre lotteri			Din beslutning	
Beslutning		Plat	Krone		Plat	Krone	Venstre lotteri	Højre lotteri
8	Modtager 1	100 kr.	0 kr.	Modtager 1	30 kr.	20 kr.	○	●
	Modtager 2	100 kr.	0 kr.	Modtager 2	30 kr.	20 kr.		
	Dig	100 kr.	0 kr.	Dig	30 kr.	20 kr.		

Bekræft

Translation of the Revision Screen (Bonus Treatment)

Review your choices

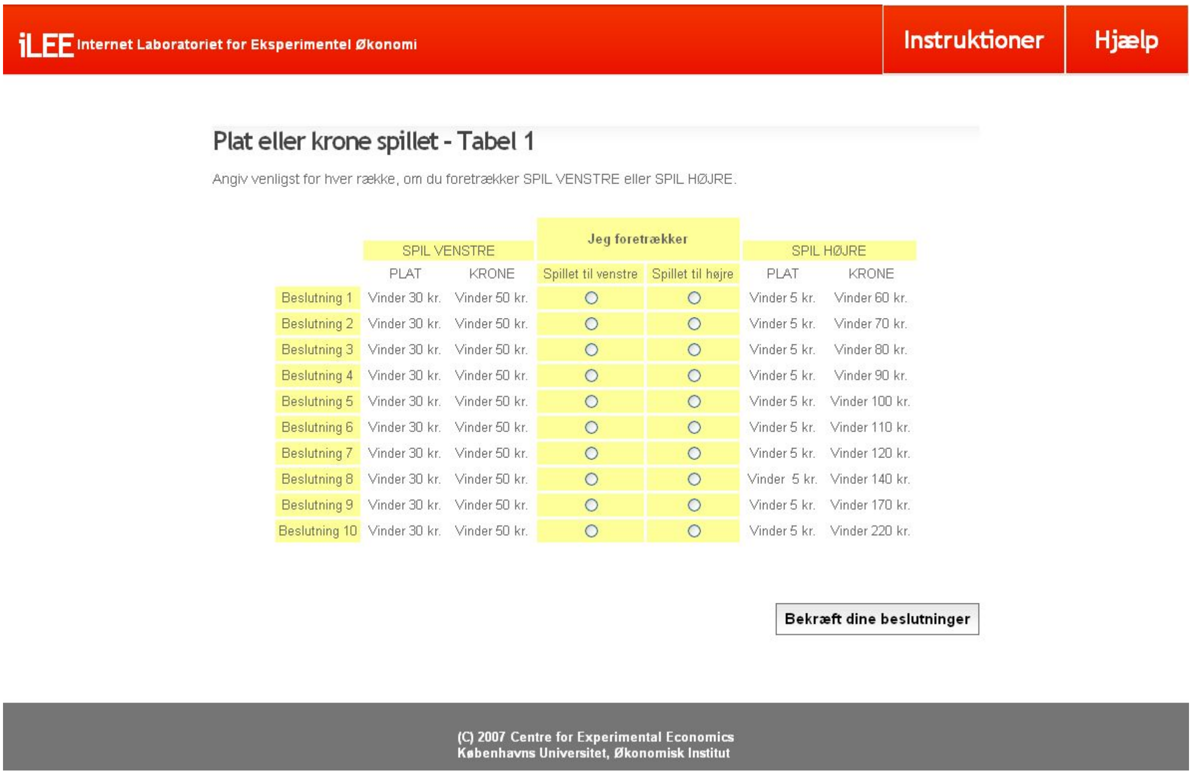
Before you confirm your choices, you now get the chance to review and change your choices if you prefer. Once you are satisfied with your choices press the button marked “Confirm”.

E. Description of Measures Obtained from Earlier Waves of Experiments

In this section, we describe the measures we use from the earlier waves of experiments.

Number of Safe Choices iLEE1

This variable comes from the first wave of experiments (iLEE1) conducted in May 2008 and contains the number of left (safe) choices that the participants made on a screen with the payoffs according to the screenshot below (only gains). A higher number indicates more risk averse behaviour. The task was incentivized and one out of a total of 17 decisions was chosen for payments. We only use information from the 10 decisions displayed below since the other 7 rows were constructed to elicit loss aversion using the methodology proposed by Tanaka et al. (2010) and by construction they do not yield much information about the subjects' risk preferences.



iLEE Internet Laboratoriet for Eksperimentel Økonomi | Instruktioner | Hjælp

Plat eller krone spillet - Tabel 1

Angiv venligst for hver række, om du foretrækker SPIL VENSTRE eller SPIL HØJRE.

	SPIL VENSTRE		Jeg foretrækker		SPIL HØJRE	
	PLAT	KRONE	Spillet til venstre	Spillet til højre	PLAT	KRONE
Beslutning 1	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 60 kr.
Beslutning 2	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 70 kr.
Beslutning 3	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 80 kr.
Beslutning 4	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 90 kr.
Beslutning 5	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 100 kr.
Beslutning 6	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 110 kr.
Beslutning 7	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 120 kr.
Beslutning 8	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 140 kr.
Beslutning 9	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 170 kr.
Beslutning 10	Vinder 30 kr.	Vinder 50 kr.	○	○	Vinder 5 kr.	Vinder 220 kr.

Bekræft dine beslutninger

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Københavns Universitet, Økonomisk Institut

Big 5 Personality Test

These variables come from the first wave of experiments (iLEE1) conducted in May 2008 and are based on the Big Five Inventory (BFI), which is the most prominent measurement system for personality traits developed by personality psychologists. It organizes personality traits into the following five factors: Openness to Experience (also called intellect or culture), Conscientiousness, Extraversion, Agreeableness, and Neuroticism (also called by its obverse, Emotional Stability). We used the Danish NEO-PI-R Short Version with 60 items in total that takes most people 10 to 15 minutes to complete. The Danish NEO-PI-R Short Version consists of five 12-item scales measuring each domain.

Cognitive Ability

This variable comes from the first wave of experiments (iLEE1) conducted in May, 2008 and provides the number of correct answers in a cognitive ability test. The variable could in principle take any value between 0 and 20, but we found no one with more than 19 correct answers. The test we used is part of a more extensive test called "IST 2000 R" that contains several modules. We use a part that is a variation of Raven's Progressive Matrices test, one advantage of which is that it does not depend heavily on verbal skills or other kinds of knowledge taught during formal education.

Cognitive Reflection

This variable comes from the first wave of experiments (iLEE1) conducted in May, 2008. The variable contains the number of correct answers to the Cognitive Reflection Test (CRT), a short three-question test aimed at capturing a specific dimension of cognitive ability. Frederick (2005) introduced the test and claimed it captures individuals' ability or disposition to reflect on a question and resist reporting the first response that comes to mind. The test is composed of the following three questions:

1. A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost? .... cents
2. If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets? .... minutes
3. In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake? .... days

Dictator Give

This variable comes from the second wave of experiments (iLEE2) conducted in May, 2009. In essence, subjects play a strategy method version of the dictator game. They are matched into pairs and each endowed with DKK 75 (DKK 150 in total). Each subject is involved in two decisions. In the first, subject X is matched with subject Y, and subject X decides whether to take or pass money, i.e. determining how the total endowment of DKK 150 is distributed among them. More specifically, the subjects chose an allocation from a list of 11 options, shown in Figure E1 below. In the second decision, subject X is matched with a different subject Z ≠ Y and Z decides on the allocation of the total endowment. One of the decisions is chosen for payments ex post. There are no treatment variations in this module. Our variable "Dictator give" simply gives the amount passed by X to Y.

Din beslutning

Vælg en af mulighederne nedenfor og tryk **Indsend beslutning**.

	Fordeling (dig - den anden)	Du får	Den anden får	Din beslutning
1	100% - 0%	150 kr.	0 kr.	
2	90% - 10%	135 kr.	15 kr.	
3	80% - 20%	120 kr.	30 kr.	
4	70% - 30%	105 kr.	45 kr.	
5	60% - 40%	90 kr.	60 kr.	
6	50% - 50%	75 kr.	75 kr.	
7	40% - 60%	60 kr.	90 kr.	
8	30% - 70%	45 kr.	105 kr.	
9	20% - 80%	30 kr.	120 kr.	
10	10% - 90%	15 kr.	135 kr.	
11	0% - 100%	0 kr.	150 kr.	

Figure E1: Decision Screen in the Dictator Game