Experimental Design of iLEE4

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Abstract

This document describes the design of iLEE4, the fourth wave of the Internet Laboratory for Experimental Economics project at the University of Copenhagen. The project is directed by Jean-Robert Tyran and funded by the Carlsberg Foundation. Tobias Christiani was responsible for coding the web interface and Ulrik Haagen Nielsen was in charge of implementing all other operational aspects of iLEE4. We thank Anders Christiani, Eva Gregersen, Marie Krause, Thomas Stephens and Statistics Denmark for invaluable support and assistance.

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1 Introduction

This document describes the design of iLEE4, an experiment carried out over the internet with approx. 700 participants from the adult Danish population. iLEE4 has two Parts. In Part 1, participants make decisions (data collection part, mid June to mid July 2011). In Part 2, participants get feedback and payments (from 31 August 2011).

Part 1 consists of 9 independent modules, and participants are paid according to their choices in most of these. The average participant takes about one hour to complete, and earns approx. 50 Euros.

Pretest: We randomly selected 1,000 subjects from a database of participants, who had previously completed an internet experiment (in collaboration with the newspaper Politiken), and sent them an invitation by email to participate in the pretest. Participation in the pretest was on a first-come-first-serve basis. Access was denied after 170 subjects had logged into Part 1 of the pretest, and 108 eventually completed it. Six subjects entered invalid bank account numbers. We paid the remaining 102 subjects an average of DKK 377.20. Part 1 took place from 20 May 2011 to 22 May 2011. Part 2 was opened on 8 June 2011. No technical problems occurred and summary checking revealed that the data was recorded correctly. Therefore, iLEE4 was implemented with minor modifications as compared the pretest.

2 Recruitment of subjects

2.1 Overview

We invited 2,291 panelists for iLEE4. 942 of these logged into our webpage (*http://ilee.econ.ku.dk*) and 689 subjects completed iLEE4.

The participants were recruited in the following way:

1. Review of recruiting in the three previous waves.

iLEE1: In May 2008 we carried out iLEE1, the first wave of the panel. Statistics Denmark randomly selected 22,027 Danes of age 18-80. Of these, 2,291 completed iLEE1. Note that the participation rate in iLEE1 is low because we blocked login when a sufficient number of participants had logged in.

iLEE2: All completers of iLEE1 were re-invited for iLEE2 (May-July 2009) and 1,395 completed iLEE2. Thus, all subjects completing iLEE2 have also completed iLEE1.

iLEE3: All completers of iLEE1 were re-invited for iLEE3 (July-September 2010), which 1,047 subjects completed. 873 of 1,047 completers had completed both iLEE1 and iLEE2, while 174 had only completed iLEE1. In summary the numbers of completers are:

iLEE1 2,291
iLEE2 1,395
iLEE3 1,047
iLEE4 689

2. Recruiting for iLEE4 was organized in two rounds: In the first round, Statistics Denmark sent out invitation letters to the 2,291 completers of iLEE1 (on 14 June 2011, standard delivery is 2-3 days). Among these 2,291 invited, about 1,047 had completed iLEE3 (variable iLEE3Yes), while 1,244 had not completed iLEE3 (variable iLEE3No). Of these 1,244 subjects, 522 had completed iLEE1 and iLEE2, but not iLEE3, while 722 had only completed iLEE1.

942 subjects out of the 2.291 invited subjects logged into iLEE4. All invited subjects received the same invitation letter (see Appendix A)[1].

3. The second round of recruiting was a reminder to completers of iLEE3 who had not completed iLEE4 after two weeks (by 28 June 2011). Statistics Denmark sent out reminder letters (see Appendix B) to 831 iLEE3Yes subjects. See Table 1 for a full overview.

Table 1: Invitations, logins, and completions across treatments

N	iLEE3Yes	iLEE3No	Total
Invitations sent	1,047	1,244	2,291
Reminders sent	831	0	831
Logins	737	205	942
Completions	608	81	689

The subjects are anonymous to us. Statistics Denmark assigned unique subject ID numbers to the randomly selected sample invited for iLEE1. Only Statistics Denmark knows the key of how ID numbers relate to persons (e.g. their CPR numbers). Statistics Denmark used the same ID number

[1] iLEE3Yes and iLEE3No were two almost identical waves of iLEE4. The only difference was in Module 5 on ethical voting, in which the iLEE3No subjects were only allocated into treatments 7 and 8, while the iLEE3Yes subjects were allocated into any of the eight treatments. This allocation procedure ensured that the large group of 300 voters was homogenous with respect to experience, since we had a very similar module in iLEE3.

for a given person when sending out invitation letters. Thus, a particular person has had the same ID number across waves, and we can therefore track an individual's behavior across waves.

2.2 Sample representativeness

We now present some data on sample representativeness based on the subjects' self-reported characteristics. The report below refers to the 689 completers (two subjects have been excluded in this section).[2] The sample of iLEE4 completers is clearly not representative of the Danish population in some dimensions (e.g. age), but is close to being representative in others (e.g. gender).

Figure 1: Distribution of participants in iLEE4 by Age

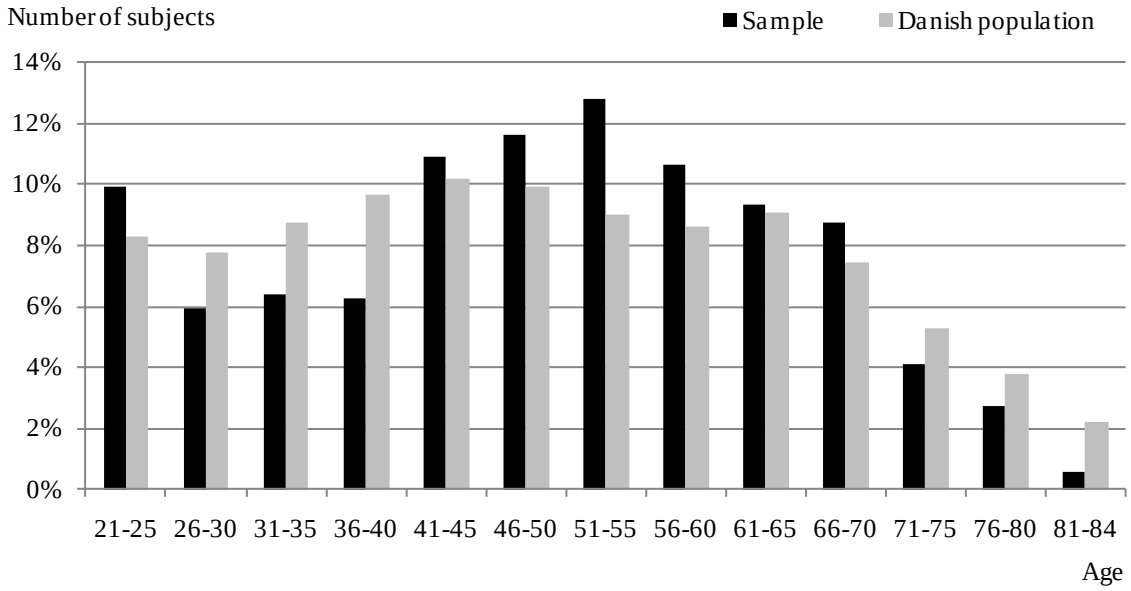
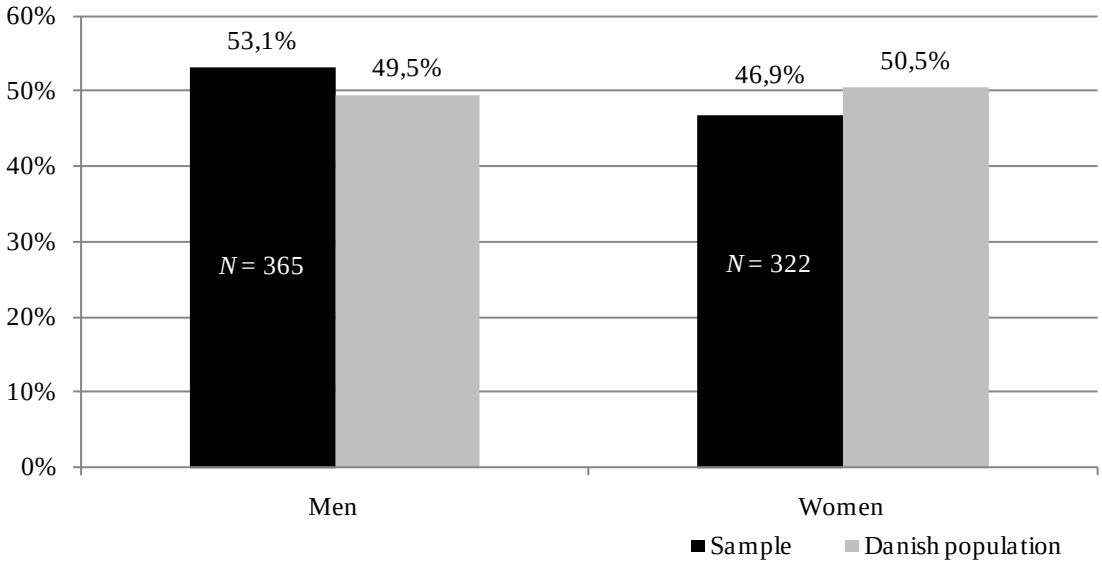


Figure 1 shows the distribution of participants by age, which is significantly different from the distribution in the Danish population ($\chi^2 = 47.83,\ d.f. = 12,\ p < 0.001$). Broadly speaking, the young (ages 25-40) and the old (above 65) tend to be underrepresented and the middle-aged (40-60) tend to be overrepresented.

Figure 2 shows the gender distribution in iLEE4, which is weakly significantly different from the distribution in the population ($\chi^2 = 3.60,\ d.f. = 1,\ p \cong 0.058$).

[2] In May 2008, Statistics Denmark invited Danes aged 18-80, which means that the subjects were of ages 21-84 in June 2011. However, two subjects had reported an age of less than 21 years.

Figure 2: Distribution of participants by Gender



See table 2 below for a discussion of attrition by module.

3 Data

Following the procedure in previous waves, the data of iLEE4 is sent to Statistics Denmark (SD) upon closing of iLEE4. SD uses the subject ID numbers to match experimental data with a battery of register data and experimental data from the previous waves (iLEE1-3). The data is stored in an anonymous format at a server at Statistics Denmark. Data analysis on the matched data can only be performed on the servers of SD. Only the data analysis (e.g. regression results) but not the actual data can be downloaded by researchers. Access to the matched data is subject to rigorous regulations by the Danish authorities and requires permission and contractual agreements with SD and the Department of Economics, University of Copenhagen.

4 Overview of experimental design

Part 1 of iLEE4 has 9 “modules” (i.e. elements in which we collect data). Six of these modules are incentivized (i.e. participants earn money according to their choices), one is a non-incentivized experimental module (module 7 on coalition formation reasoning), followed by a questionnaire module and complementary information. Figure 3 provides an overview.

General structure of modules: All main modules start a screen informing subjects that they now enter a new module. Typically, the start screen is followed by some instructions explaining the task or the rule of interaction, often including numerical examples and graphic illustrations. Some modules have control questions (2, 3, 4) that need to be answered correctly to be able to move on, others do not. All modules end with screen alerting them that the module is now over.

Figure 3: Modules in Part 1

0. Introduction
    (a) Login screen
    (b) Welcome and basic information screen
    (c) Preliminary background questions
1. Dictator game
    (d) Instructions for real effort task
    (e) Real effort task (up to 5 minutes)
    (f) Instructions for distribution phase and assignment of roles
    (g) Distribution phase
2. Social risk
    (a) Instructions
    (b) Control questions
    (c) Decision screens (four or eight decisions depending on treatment)
    (d) Revision and confirmation screen
3. Political accountability game
    (a) Instructions and examples
    (b) Control questions
    (c) Assignment of roles
    (d) Decision screens (four decisions)
4. Nominal loss aversion and investments
    (a) Instructions
    (b) Control questions

(c) Decision screens (nine decisions)

5. Costly voting

   (a) Instructions and assignment of roles
   (b) Decision screens (three decisions in groups of 300, 30 or 6 subjects)
   (c) New group matching (300, 30 or 6 subjects)
   (d) Decision screens (three decisions)
   (e) New group matching (300, 30 or 6 subjects)
   (f) Decision screens (three decisions)

6. Gambler's fallacy

   (a) Instructions for 1st lottery
   (b) Betting screen for 1st lottery (bet on orange or keep money)
   (c) Expectations for 1st lottery
   (d) Instructions for 2nd lottery and sequence of five dice rolls
   (e) Betting screen for 2nd lottery
   (f) Expectations for 2nd lottery
   (g) Outcome of 1st lottery
   (h) Outcome of 2nd lottery

7. Coalition formation reasoning

   (a) Instructions
   (b) Question screens (eight distributions of parties on a left-right scale)

8. Questionnaire

   (a) Personal characteristics: Handedness, height, colour preference
   (b) Personal health
   (c) Risk preference questions
   (d) Political preferences
   (e) Political knowledge
   (f) Economic expectations
   (g) World Value Survey questions.

9. End of Part 1

   (h) Bank info and email request
   (i) Additional comments

Randomization of modules: iLEE4 uses a block randomization design in which modules are grouped in to 4 blocks (A, B, C, D). Modules are randomized within blocks and across blocks

(except for A which is always first and D which is always last). The general idea of the design is to randomize as much as possible while avoiding a sequence of two similar modules. Modules 2 and 6 are similar (lottery choices), and modules 3, 5, and 7 are similar (issues in voting). Another consideration is to encourage participants from completing the entire wave. Recall that subjects are only paid if they complete the entire wave. We presented modules with high expected earnings early, and those involving the possibility of losses (and the non-incentivized parts) late.

Figure 4: Ordering of modules

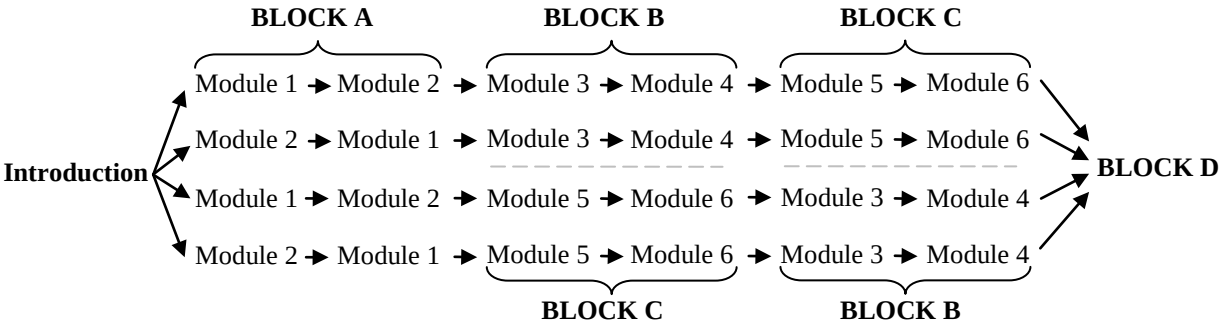


Figure 4 shows the four possible sequences of modules in our block randomization. Block A, which is always first, randomizes modules 1 (*dictator game*) and 2 (*social risk*). Block A is followed either by block B or C (random). Block B contains modules 3 (*political accountability game*) and 4 (*nominal loss aversion and investments*) in fixed order. Block C consists of modules 5 (*costly voting*) and 6 (*gambler's fallacy*) in fixed order. Block D consists of modules 7-9 (*coalition formation reasoning*, *questionnaire*, and *end of part 1*), presented in fixed order.

Assignment of subjects to treatments: Subjects are assigned to treatments, types and roles randomly whenever possible. In practice, allocation is done according to the order in which participants reach a particular module, which is in itself subject to block randomization. For example, in the dictator game (module 1, see below), there are two roles and four treatments. Subject are assigned to the two roles in alternating order, and the 1st, 5th, 10th , ... subject to reach the module is assigned to treatment 1, the 2nd, 6th, .. subjects to treatment 2, etc. Subjects (within a treatment) are generally randomly matched into groups for the calculation of payments *ex post*. The details of the matching procedure in modules in which incomplete matches can occur, are given below.

Attrition by module: Table 2 shows how attrition is distributed over modules. Total attrition in iLEE4 is 26.8 percent (253 out of 942 logins). The modules with control questions (modules 2, 3,

and 4) have the highest attrition: 86, 80, and 31 subjects, respectively. Attrition is much lower for subjects who have participated in the previous wave (iLEE3) than for those that did not. Among the iLEE3Yes participants, 18% (= 129/737) subjects drop out. In iLEE3No 60% do (=124/205).

Table 2: Attrition in iLEE4 by module

	iLEE3Yes		iLEE3No		Total	
N	Completions	Attrition	Completions	Attrition	Completions	Attrition
Introduction	725	12	197	8	922	20
Module 1	704	7	173	3	877	10
Module 2	684	34	143	52	827	86
Module 3	636	42	98	38	734	80
Module 4	617	19	86	12	703	31
Module 5	645	9	108	5	753	14
Module 6	644	1	104	4	748	5
Module 7	612	1	82	1	694	2
Module 8	611	1	81	1	692	2
Module 9	608	3	81	0	689	3
Total	608	129	81	124	689	253

Subjects receive feedback on earnings in Part 2 in the same order as the saw the modules in Part 1. Figure 5 shows the modules in Part 2.

Figure 5: Modules in Part 2

(*insert figure*)

5 Detailed description of modules

General structure of screens: All screens described below have the same basic layout and structure. The bottom band informs that the Department of Economics at the University of Copenhagen hosts the experiment and features a "logout" button. Participants can log out at their discretion and come back any time while Part 1 is open (approx. one month). They are then routed back to the module they left. The top band features a "help" option informing about the closing date of the wave and our contact details. An "Instructions" option on all decision screens allows subjects to review instructions for the current module. Decision buttons are placed in the lower right corner of the screen. Screenshots for specific screens are available on request.

Module 0: Introduction

This module is identical to module 0 in all previous waves of the panel.

(a) Login screen: At the URL (*http://ilee.econ.ku.dk*) indicated in the invitation letter, subjects log in by typing their personal ID number indicated in the letter.

(b) Welcome screen: informs that participation in the experiment is valuable to research and reminds that it is important that the person participating in the experiment is the person named in the invitation letter. Cautions that the experiment has to be completed to be entitled to any payment. Informs that expected time for completion is approximately 60 minutes[3], and that they can log out during the experiment and return at a later point in time until the end of the experiment. Subjects are reassured that they remain anonymous to us and other participants. The subjects have all completed at least one previous iLEE wave and are therefore familiar with the procedure.

(c) Preliminary background questions: about the subject's age, gender and highest completed level of education. These questions are placed at the beginning of the wave when minimal attrition has taken place such that we can later validate the identities of as many subjects as possible. Validation is done by comparing a subject's self-reported demographic data with the register data from Statistics Denmark for the individual to whom the invitation letter was addressed. We thus obtain a proxy control against the participating subject being the wrong individual.

After completing the preliminary background questions, subjects proceed to either module 1 or 2.

[3] We pretested iLEE4 from 20 May 2011 until 22 May 2011. 108 subjects completed the pretest and the median time spent was 59 minutes.

Module 1: Dictator game

This module has been designed by Alexander Cappelen, Ulrik H. Nielsen, Erik Ø. Sørensen, Bertil Tungodden, and Jean-Robert Tyran.

In essence, two subjects are matched. One is in the role of the dictator, the other in the role of the (passive) recipient. Both the dictator and the recipient get DKK 100, and the dictator must decide on how to distribute an additional DKK 100 among them. There are 4 treatments. They vary by the way the initial endowments are allocated (given vs. earned) and by the actions available to the dictator (give vs. take). Module 1 is inspired by List (2007), but has symmetric 2x2 treatments to control for endowment and strategy space variations between subjects.

In detail, we vary the way subjects obtain their endowments in two ways: (i) *NoWork:* Subjects are unconditionally given their endowments by the experimenter (like "manna from heaven"). (ii) *Work:* Subjects have to earn their endowments by completing a real effort task. The task is to count yellow squares on a grid (the same task has been used in module 2 of iLEE2). We vary the strategy spaces of the dictators in two ways: (i) *Baseline*: Dictator's can transfer non-negative amounts from DKK 0 to 100, that are divisible by 10. (ii) *Take*: Dictator's can transfer any amount from DKK -100 to 100, that are divisible by 10, i.e. the dictator can take the recipient's initial endowment.

Subjects are allocated to treatments and roles according to their login time in alternating sequence, and they are matched randomly into pairs (for payment) *ex post.* Excess dictators are paid according to their own decisions, and excess recipients are paid as if they had been matched with dictators, who maximized the recipients' payments, i.e. excess recipients earn DKK 200. The allocation into treatments is shown in Table 3. In total, 887 participants enter module 1 and 877 subjects complete it. 689 of these complete the entire wave and are matched and paid. Nine of the 689 iLEE4 completers do not complete the counting task and are sent to the next module. Hence, they are not assigned a role in the distribution phase. Average earnings in this module are DKK 149.80.

Table 3: Number of subjects by treatment (completers of iLEE4 only)

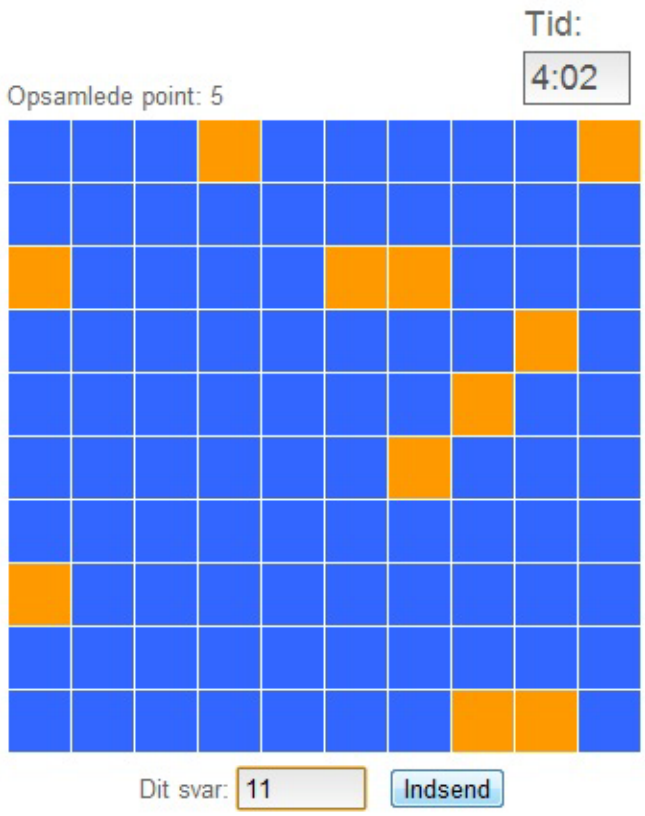
	NoWork	Work	Total
Baseline	173	168	341
Take	166	173	339
Failed to pass the counting task	*N/A*	9	9
Total	339	350	689

The screens are presented in the order shown below. Subjects in NoWork go straight from the start screen to to (c).

(a) **Instructions for the counting task**: The task is to count yellow-colored cells in a 10 x 10 grid as shown in Figure 6. Informs that 12 correct answers are required in five minutes to earn DKK 150. Those who "pass" are double-blindly paired with another subject who "passes", and one of them is be randomly chosen to decide how the income at stake is distributed. Those who do not "pass" earn DKK 0 in this module and are directed to the next module. Subjects could not stop the time after having started the counting task.

(b) The **counting task** is shown in Figure 6. Subjects are shown the remaining time, the number of correct answers produced so far and a 10 x 10 grid. Subjects count the number of yellow cells, type the respective number and press the submit button. When a subject submits the 12th correct answer, he is directed to the distribution phase.

Figure 6: Example of counting task



(c) **Instructions for the distribution phase** are identical to the ones used in List (2007) in three out of four treatments (our BaselineWork treatment was not considered by List).

In each pair, one subjects are randomly chosen to be the dictator or the recipient. The dictator and the recipient are each initially endowed with DKK 100 and the dictator decides how to distribute the additional DKK 100. He can give between DKK 0 and 100 to the recipient. In the Take treatment, the dictator should still decide how to distribute the additional DKK 100, but he can also take up to DKK 100 from the recipient's initial endowment. Hence, he can give between DKK -100 and 100 to the recipient.

The recipient has no choice to make, but both the dictator and the recipient are given the opportunity to read the instructions for the other role by clicking a button.

The recipients are directed to (f), while the dictators are routed to the distribution phase (e).

(d) In the **distribution phase** the dictators are asked: "*How much would you like to transfer to the other subject?*" The dictator makes the choice by clicking on one radio button from a vertical list of transfer options:

Transfer options in Baseline: DKK {0,10,20,…,100}.

Transfer options in Take: DKK {-100,-90,-80,…,100}.

Module 2: Exposing others to risk

This module has been designed by Ola Andersson, Håkan Holm, Jean-Robert Tyran, and Erik Wengström.

In essence, participants are matched into groups of 3: One decision maker and two (passive) receivers. The decision maker repeatedly chooses between a more and a less risky option and these choices affect earnings of the decision maker and other 2 participants' in various ways.

The purpose of the module is to investigate how risk taking on behalf of others (as is typical in financial decision making) depends on the way decision makers are rewarded. More specifically, we ask to what degree decision makers deviate from the risk exposure they believe others want (as measured in treatment Others, where the decision maker is not paid) when they have egoistic incentives to expose others to higher risk. In treatment Bonus, the decision maker gets a fraction of the receivers' total payoffs, and thus has an incentive to hedge his own risk (at the cost of higher risk for the receivers). Treatment Tournament introduces incentives to expose receivers to more risk via competition. In this treatment decision makers only receive compensation if they outperform other decision makers facing identical choices.

The module has 4 treatments: (i) **Others**: Eight decisions on behalf of two receivers. The decision maker is not paid, receivers are paid. (ii) **Bonus**: Eight decisions on behalf of two receivers. The decision maker obtains a bonus equal to half of the aggregate payoff of the receivers. (iii) **Tournament**: Eight decisions on behalf of two receivers. The total payoff to the receivers is compared with the total payoff to another decision maker's receivers. The decision maker whose receivers have the higher total payoff, obtain the same amount as his receivers' total payoffs. The other decision maker earns nothing. In case of a draw they both earn half of the their receivers' total payoffs. (iv) **Individual**: Four decisions over own payoffs (control treatment).

Assignment to treatments is in alternating order according to the sequence of logins. All subjects make choices in the role as decision maker.

Payoffs in the 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. [4]

[4] 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

In total, 913 participants log into module 2 and 827 subjects complete it. 689 subjects complete the entire wave and are paid. See the distribution of these across treatments in Table 4. Average earnings in this module are DKK 41.94.

Table 4: Number of participants by treatment (completers of iLEE4 only)

	Others	Bonus	Tournament	Individual	Total
Total	187	178	157	167	689

Description of gambles: The decisions for each treatment are shown in Tables 4-7.

Decision makers choose between two risky gambles (*left* or *right*) as decision makers. For treatments Others, Bonus, and Tournament the decisions 1-4 (see Tables 5-7), the receivers' payoffs are the same and constructed such that the decision maker's risk has been eliminated in treatment Bonus. In decisions 5-8, the receivers' payoffs are again the same across the three treatments, but now the decision maker in treatment Bonus also faces a risk (more uncertainty in left than in right gamble). In treatment Individual, the decision maker faces the same payoffs as the decision maker does in treatment Bonus in decision 5-8.

Sequence of screens

(a) **Instructions** inform about the game. In the Others, Bonus, and Tournament treatments, 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 Others and Bonus, 4 in treatment Tournament, and 2 in treatment Individual) questions have to be answered correctly before subjects could proceed.

(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 Individual treatment) as if they are decision makers. Once matched, one subject per group, will *ex post* be the decision maker. 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.

Tournament treatment, the group, which could not be matched with another group, has its payments calculated as if it had been matched with a group, in which the sum of the receivers' earnings was zero.

Table 5: Decisions in treatment Others (amounts in DKK)

		Left Gamble				Right Gamble		Your choice:	
Decision		Heads	Tails			Heads	Tails	Left Gamble	Right
1	Receiver 1	100	0		Receiver 1	30	20		
	Receiver 2	0	100		Receiver 2	20	30		
	(you)	(0)	(0)		(you)	(0)	(0)		
2	Receiver 1	100	0		Receiver 1	40	30		
	Receiver 2	0	100		Receiver 2	30	40		
	(you)	(0)	(0)		(you)	(0)	(0)		
3	Receiver 1	100	0		Receiver 1	50	40		
	Receiver 2	0	100		Receiver 2	40	50		
	(you)	(0)	(0)		(you)	(0)	(0)		
4	Receiver 1	100	0		Receiver 1	60	50		
	Receiver 2	0	100		Receiver 2	50	60		
	(you)	(0)	(0)		(you)	(0)	(0)		
5	Receiver 1	100	0		Receiver 1	30	20		
	Receiver 2	100	0		Receiver 2	30	20		
	(you)	(0)	(0)		(you)	(0)	(0)		
6	Receiver 1	100	0		Receiver 1	40	30		
	Receiver 2	100	0		Receiver 2	40	30		
	(you)	(0)	(0)		(you)	(0)	(0)		
7	Receiver 1	100	0		Receiver 1	50	40		
	Receiver 2	100	0		Receiver 2	50	40		
	(you)	(0)	(0)		(you)	(0)	(0)		
8	Receiver 1	100	0		Receiver 1	60	50		
	Receiver 2	100	0		Receiver 2	60	50		
	(you)	(0)	(0)		(you)	(0)	(0)		

Table 6: Decisions in treatment Bonus (amounts in DKK)

		Left Gamble				Right Gamble		Your choice:	
Decision		Heads	Tails			Heads	Tails	Left Gamble	Right
1	Receiver 1	100	0		Receiver 1	30	20		
	Receiver 2	0	100		Receiver 2	20	30		
	(you)	(50)	(50)		(you)	(25)	(25)		
2	Receiver 1	100	0		Receiver 1	40	30		
	Receiver 2	0	100		Receiver 2	30	40		
	(you)	(50)	(50)		(you)	(35)	(35)		
3	Receiver 1	100	0		Receiver 1	50	40		
	Receiver 2	0	100		Receiver 2	40	50		
	(you)	(50)	(50)		(you)	(45)	(45)		
4	Receiver 1	100	0		Receiver 1	60	50		
	Receiver 2	0	100		Receiver 2	50	60		
	(you)	(50)	(50)		(you)	(55)	(55)		
5	Receiver 1	100	0		Receiver 1	30	20		
	Receiver 2	100	0		Receiver 2	30	20		
	(you)	(100)	(0)		(you)	(30)	(20)		
6	Receiver 1	100	0		Receiver 1	40	30		
	Receiver 2	100	0		Receiver 2	40	30		
	(you)	(100)	(0)		(you)	(40)	(30)		
7	Receiver 1	100	0		Receiver 1	50	40		
	Receiver 2	100	0		Receiver 2	50	40		
	(you)	(100)	(0)		(you)	(50)	(40)		
8	Receiver 1	100	0		Receiver 1	60	50		
	Receiver 2	100	0		Receiver 2	60	50		
	(you)	(100)	(0)		(you)	(60)	(50)		

Table 7: Decisions in treatment Tournament (amounts in DKK)

		Left Gamble				Right Gamble		Your choice:	
Decision		Heads	Tails			Heads	Tails	Left Gamble	Right Gamble
1	Receiver 1	100	0		Receiver 1	30	20		
	Receiver 2	0	100		Receiver 2	20	30		
	(sum)	(100)	(100)		(sum)	(50)	(50)		
2	Receiver 1	100	0		Receiver 1	40	30		
	Receiver 2	0	100		Receiver 2	30	40		
	(sum)	(100)	(100)		(sum)	(70)	(70)		
3	Receiver 1	100	0		Receiver 1	50	40		
	Receiver 2	0	100		Receiver 2	40	50		
	(sum)	(100)	(100)		(sum)	(90)	(90)		
4	Receiver 1	100	0		Receiver 1	60	50		
	Receiver 2	0	100		Receiver 2	50	60		
	(sum)	(100)	(100)		(sum)	(110)	(110)		
5	Receiver 1	100	0		Receiver 1	30	20		
	Receiver 2	100	0		Receiver 2	30	20		
	(sum)	(200)	(0)		(sum)	(60)	(40)		
6	Receiver 1	100	0		Receiver 1	40	30		
	Receiver 2	100	0		Receiver 2	40	30		
	(sum)	(200)	(0)		(sum)	(80)	(60)		
7	Receiver 1	100	0		Receiver 1	50	40		
	Receiver 2	100	0		Receiver 2	50	40		
	(sum)	(200)	(0)		(sum)	(100)	(80)		
8	Receiver 1	100	0		Receiver 1	60	50		
	Receiver 2	100	0		Receiver 2	60	50		
	(sum)	(200)	(0)		(sum)	(120)	(100)		

Table 8: Decisions in treatment Individual (amounts in DKK)

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

Module 3: Political accountability game

This module has been designed by Raymond Duch, Ulrik H. Nielsen, and Jean-Robert Tyran.

In essence, the module studies redistribution between a group of proposers (called "parties") and a group of responders (called "voters"). The game proceeds in three stages. Stage 1 presents proposers with an exogenous "proposal" on how to distribute money between proposers and responders, and elicits expectations about outcomes in the rest of the game. In stage 2, proposers vote (by simple majority, no abstentions) on the proposal. If it is accepted, the proposed distribution is implemented; if it is rejected, all players receive a payoff of zero. The proposals are all (more or less) biased in favor of the "parties", i.e. are (more or less) disadvantageous to the "voters". In stage 3, responders have the option to punish the proposers at a cost to themselves.

There are four **proposals**: (i) DKK 33 to each party and DKK 27 to each voter, (ii) DKK 57 to each party and DKK 3 to each voter, (iii) DKK 63 to each party and DKK -3 to each voter, and (iv) DKK 87 to each party and DKK -27 to each voter. A matching group has 3 parties and 3 voters (note that incomplete matches may occur).

The two **treatments** differ by the weight (called "number of seats") given to individual parties in the vote on the exogenous proposal: (i) **Equal**: Party 1, Party 2, and Party 3 have 20 seats each. (ii) **Majority**: Party 1 has 40 seats, Party 2 and Party 3 have 10 seats each. All subjects are assigned one role only. No feedback until the end of the wave.

The module serves to study a) whether the punishment of proposers by responders in stage 3 differs by the weight parties have in the vote (i.e. across treatments) and by the unfairness of the proposal (i.e. across situations), b) whether punishment is differs by the "responsibility" of parties, i.e. whether responders punish Party1 more severely in treatment Majority than in treatment Equal for unfair outcomes (and *vice versa* for the other parties). Assuming that we find such regularities, we ask c) whether proposers anticipate differentiation of punishment. If Party 1 anticipates to be held accountable (punished severely) for implementing an unfair proposal, we may find that coalitions in which power is concentrated are more likely to refrain from implementing unfair policies in stage 2. But this may be rather inefficient (accepting any of the policies increases the sum of payoffs above the zero payoff in case of rejection). In short, we ask if "political accountability breeds fairness".

Subjects are assigned to treatments and roles during the module, but matching for payments takes place *ex post*. In matches with less than three voters, parties receive no punishment from the

missing voter(s). In matches with less than three parties, the missing parties are counted as having voted yes to the proposal. Table 9 shows the allocation of subjects to treatments.

In total, 814 participants logged into module 3 and 734 subjects completed it. 689 subjects completed the entire wave and were paid. See the distribution of these across treatments in Table 9. Subjects earned DKK 16.25 on average in this module.

Table 9: Distribution of subjects (iLEE4 completers only)

	Majority	Equal	Total
Parties	170	172	342
Voters	177	170	347
Total	347	342	689

(a) **Instructions** come in seven screens. **Instructions1**: informs that subjects are in groups of six. Three subjects are in the role of "parties" and three in the role of "voters" and that subjects have to make decisions concerning 4 proposals. Subjects do not know their role at this stage, i.e. whether they are parties or voters, and all subjects read instructions for both roles. **Instructions2:** explains that parties are presented with 4 separate exogenous proposals and decide on accepting or rejecting it. The parties have 60 votes in total and one seat corresponds to one vote. The choice is made by majority vote. Each party votes either yes or no (no abstentions) and the vote receives a weight according to the number of seats. A proposal needs to be approved by at least 31 seats to be accepted. If it is rejected, all parties and voters receive DKK 0. **Instructions3:** shows an example of a proposal and decision making in stage 2 to illustrate the task. **Instructions4:** explains that voters have the opportunity to punish the parties. Voters do not receive feedback on whether the proposal is accepted, but they are told how the 60 seats are distributed among the three parties. Punishment is according to the strategy method, i.e. voters indicate how much they punish each party in case of acceptance and in case of rejection. Each voter can punish the three parties by maximum of DKK 40 in total and the unit cost of punishment was DKK 0.10, i.e. a maximum cost to the voter of DKK 4. Explains that losses are possible for both parties and voters. **Instructions5:** shows an example of the punishment stage 3. **Instructions6:** explains how payments are calculated. One of the four situations is drawn at random to determine payoffs. Each party receives the payoff according to the choice in stage 2 minus the punishment that the voters assign to the party. Each voter

receives the outcome of one of the parties' decisions minus the punishment cost. **Instructions7:** summary of instructions.

(b) **Control questions**. All control questions have to be answered correctly to proceed. The questions are: (i) What is the maximum total punishment the parties can receive from the voters? (ii) What is the minimum total punishment the parties can receive from the voters? (iii) In which scenarios can the voters punish the parties? In case of acceptance of a proposal? In case of rejection of a proposal? Or in both? (iv) What is the minimum number of votes required for a proposal to get accepted? (v) If a voter punishes the parties by a total of DKK 10, what is then the cost to the voter?

(c) **Role assignment screen**: Subjects are assigned to roles (party or voter). The parties are assigned an ID number (Party 1, Party 2, or Party 3).

(d) **Decisions screens for parties**: The first screen (stage 1), which is non-incentivized, presents the proposal and elicits expectations about the outcome of the vote in stage 2 and punishment received in stage 3 in case of acceptance and rejection. The second screen (stage 2) is the voting decision (*yes* or *no* , no abstentions). The 4 proposals are presented to parties in random order.

Decision screen for Voters: presents the proposal and the distribution of votes among the three parties and asks how much they punish each party (positive integers) in case the proposal is accepted or rejected (8 decisions in total). On the decision screens we remind the subjects of the punishment cost. For each scenario (acceptance or rejection) the punishments must sum to between DKK 0 and 40. Each decision screens pertains to one proposals, and the 4 screens are presented in random order.

Module 4: Nominal loss aversion and investments

This module was designed by Thomas Stephens and Jean-Robert Tyran.

In essence, subjects decide how much to invest in 3 types of situations which differ by how profitable investing in fact is on average (high, neutral, low). Each type of situation is framed such that investing appears more or less attractive if participants think in terms of nominal gains and losses. The framing manipulation results from scaling nominal returns up or down ("inflation" or "deflation" compared to some neutral state). Investments in a given situation thus appear attractive, neutral or unattractive as they involve high nominal gains ("inflation"), "neutral" nominal returns ("stability") or nominal losses ("deflation"). Standard economic theory predicts that investors systematically react to the profitability of investments but not to the nominal presentation or framing. The main purpose of the module is to test whether investment choices are affected by the nominal presentation.

We present subjects with a series of investment tasks in which we vary both **real** investment returns and **nominal** representations of those returns. Each task is an individual optimization problem, with one task randomly selected for payment after the experiment has been completed. Together with randomization of the presentation order of the tasks, this allows each task to be viewed as an independent problem.

Tasks

Participants are presented with nine tasks. In each task, subjects are given the opportunity to invest in a pair of projects with uncertain outcomes. The pair of projects includes a **safe** project and a **risky** project. Both projects either succeed or fail, with a joint success probability of 0.5. If the projects succeed, they pay higher returns than if they fail, with the precise returns depending on the treatment.

To invest in either project, subjects are required to borrow money, which must be repaid with interest. To that end, for each task, a subject is offered a credit sufficient to invest up to 10 **units** between the two projects. The real interest rate charged on any money borrowed is 5% in all treatments. As a result, an investment return above 5% results in a gain, whilst an investment return below 5% results in a loss.

Treatments

The experiment includes **nine treatments**, each of which consists of a task and reflects the combination of one of three real treatments and one of three nominal treatments. The real treatments include a control treatment labeled **stagnation**, together with an **expansion** treatment and a **recession** treatment. The nominal treatments include a control treatment labeled **stability**, together with an **inflation** treatment and a **deflation** treatment. The real treatment affects the project returns in real terms and the nominal treatment affects their presentation.

The baseline condition is a control treatment combining the **stagnation** real treatment with the **stability** nominal treatment. In this condition, the **safe** project offers a gain of 2% above the interest rate charged on the credit if the projects succeed, and a gain equal to the interest rate if they fail. This gives an expected profit of 1%, without any possibility of a loss. In the same treatment, the **risky** project offers a gain of 12% above the credit interest rate if the projects succeed and a return of 8% below the interest rate, a loss, if they fail. This gives an expected profit of 2%, but exposes the subject to a potential loss.

Real treatment variations

The real treatment variation involves shifting the returns for both investments by a fixed amount. For the **recession** treatment, all returns are decreased by 17 percentage points, whilst for the **expansion** treatment, all returns are increased by the same. The resulting real percentage returns are shown in Table 10.

Table 10: Real percentage gains/losses by treatment

		Investment	
Real treatment		*Safe*	*Risky*
Recession	*Success*	-15	-5
	Failure	-17	-25
Stagnation	*Success*	2	12
	Failure	0	-8
Expansion	*Success*	19	29
	Failure	17	9
Real interest rate		5%	

Subjects are not directly given the gain/loss percentages, but are rather given nominal investment returns in money (DKK) terms, together with borrowing and repayment requirements, also in money terms.

Nominal treatment variations

In order to simulate changes in the price level during the investment holding period, the nominal investment returns and interest rates are adjusted. In the baseline **stability** treatment, the real interest rate is 5%. The resulting nominal investment returns in the **stagnation/stability** combination for success and failure, respectively, are therefore 7% and 5% for the **safe** project and 17% and –3% for the **risky** project.

The four nominal percentage returns for each of the nine treatment combinations, together with the nominal interest rates for each nominal treatment variation, are shown in Table 11.

Table 11: Nominal percentage returns by treatment

Nominal		*Deflation*		*Stability*		*Inflation*	
Real		*Safe*	*Risky*	*Safe*	*Risky*	*Safe*	*Risky*
Recession	*S*	-28.0	-20.0	-10.0	0.0	8.0	20.0
	F	-29.6	-36.0	-12.0	-20.0	5.6	-4.0
Stagnation	*S*	-14.4	-6.4	7.0	17.0	28.4	40.4
	F	-16.0	-22.4	5.0	-3.0	26.0	16.4
Expansion	*S*	-0.8	7.2	24.0	34.0	48.8	60.8
	F	-2.4	-8.8	22.0	14.0	46.4	36.8
Nominal interest rate		-16%		5%		26%	

S - Success, *F* - Failure

Compared with the baseline, the **deflation** treatment involves a 20% decline in the price level, whilst the **inflation** treatment involves a 20% increase in the price level. The resulting nominal effects are visible in both the investment returns and the nominal interest rates.

As noted previously, neither percentage returns nor interest rates (nominal or real) are directly given to subjects. Rather, they are given initial unit prices required to invest in one unit of either project,

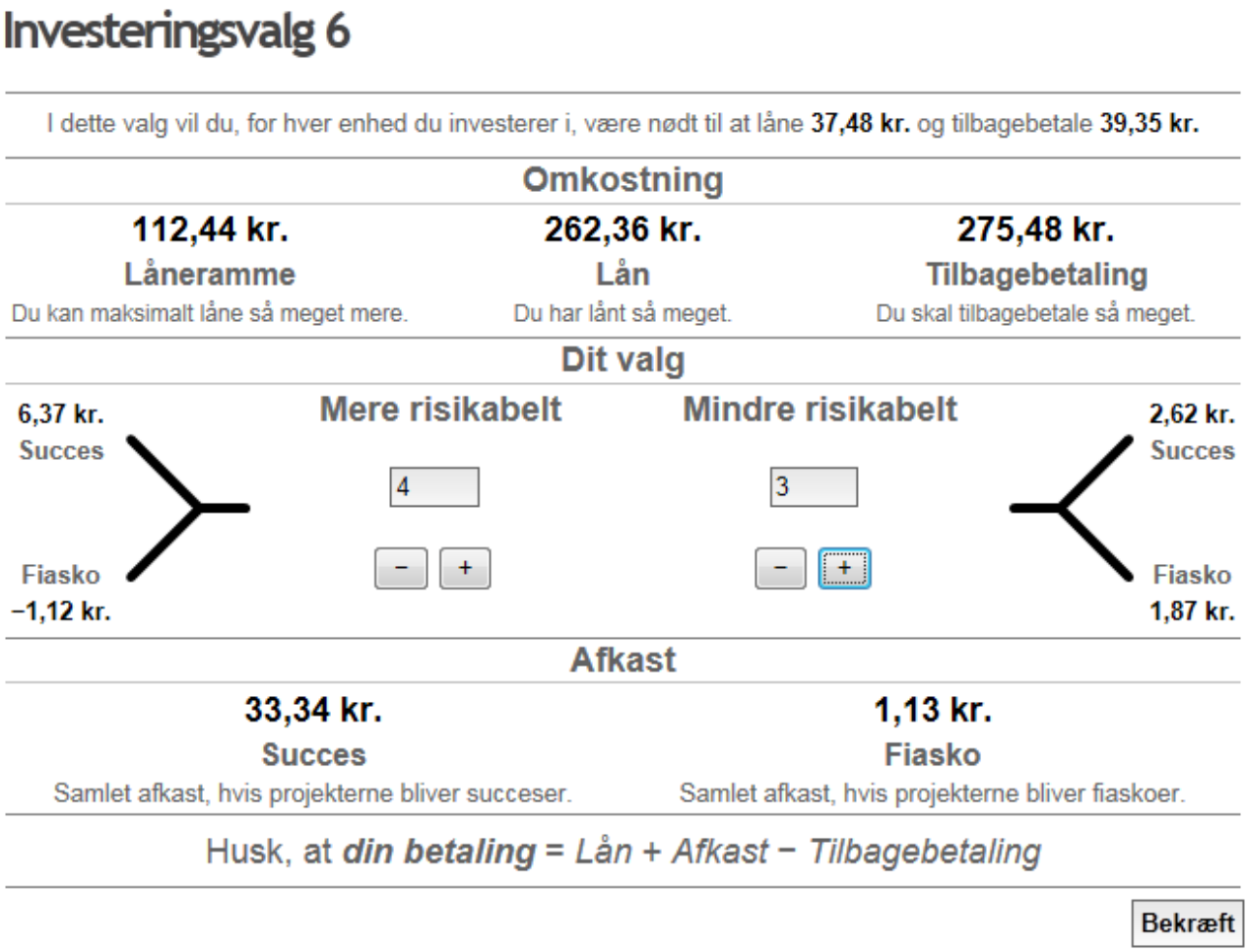
which is always the same for both projects and identical by definition with borrowing requirements, together with nominal returns and repayment requirements in money terms.

An example of the information given to subjects on a task screen is shown in Figure 7. At the top are the unit investment and repayment costs, respectively, which vary according to the nominal treatment. Below this are the costs (*Omkostning*), including the available credit (*Låneramme*), borrowing requirement (*Lån*) and repayment requirement (*Tilbagebetaling*), which update as the investment quantities below them are changed.

The third row shows the nominal unit returns for the **risky** (*Mere risikabelt*) and **safe** (*Mindre risikabelt*) projects in the case of success (*Succes*) or failure (*Fiasko*), and contains the input boxes used to choose the quantities. In this case, the risky project is shown on the left and the safe project on the right, but this placement was randomized.

The fourth row shows the overall nominal returns (*Afkast*) for the selected investment quantities in the case of success and failure. Finally, subjects are reminded that their earnings (*din betaling*) equal the amount borrowed plus the investment return less the repayment amount.

Figure 7: Example task screen in stagnation/stability control treatment



Allocation of subjects to treatments

A within-subject design was used, so all subjects were assigned to all treatments. However, as noted above, only one task was realized for payment and the presentation order was randomized. As a result, each decision can be viewed as independent of the others and any order or learning effects will be independent of the treatment.

Display sequence

The module began with an introduction screen, followed by a sequence of six instructions screens which explained the decision problem and included an example. After the instructions, subjects were required to answer five control questions.

In the first two control questions, the subjects were required to give the minimum (0) and maximum (10) number of units they could invest. The next three were true/false questions asking: (i) whether

the success or failure of the two projects is linked (true); (ii) whether success or failure is equally likely (true); (iii) whether losses are impossible (false).

After answering the control questions, subjects went through the nine task screens. As noted previously, the screens were presented in random order. Additionally, subjects were not allowed to revise decisions after having submitted them. The last decision screen was followed by an end screen.

Payments

For the realization of payments, one of the nine tasks was drawn at random, along with a project outcome (success or failure). A subject's earnings were then computed for the given task, based on the investment decisions and the outcome drawn.

Subjects earned DKK 12.52 on average, but earnings ranged from gains of DKK 108.70 to losses of DKK 93.74. The relatively low average is an effect of the random treatment draw. Approximately one third of subjects were paid for decisions in the **recession** treatment, where the optimal decision is to invest nothing, but potential losses could exceed DKK 93. Another third were paid for decisions in the **stagnation** treatment, with roughly half of this group expected to make losses or earn nothing and the other half potentially earning up to DKK 45. The final third were paid for decisions in the **expansion** treatment, where potential gains exceeded DKK 108.

Module 5: Ethical voting

This module has been designed by Rebecca Morton and Jean-Robert Tyran.

In essence, subjects are in the role of voters (type 1 or 2) who decide on a distribution of money between the two types by voting for Party 1 or Party 2. Voters earn more if the party of their type wins. The outcome is determined by majority voting. Voting is costly (either low or high), and abstention is allowed and free. Voters make choices in 3 situations ("elections") in groups ("electorates") of different sizes. Treatments differ by the sequence with which subjects go through the electorates. Some participants make the 3 voting choices twice (in a small and a large electorate), some make the choices three times (small, large, and very large electorate). Participants get feedback about the outcomes only at the end of the experiment.

The purpose of the module is to test if 1) abstention is more common if voting is more costly 2) abstention is more common if an individual vote is the less likely is to affect the outcome (i.e. when the electorate is large), 3) "ethical voting" exists, 4) "ethical voting" is relatively more common in large electorates[5].

Payoffs in the 3 elections: The payoff tables are shown in Table 12. Please note that the payoff tables are presented in random order. All decisions (6 or 9 in total) are paid. In payoff table 1 (Table 12 (a)), there is no ethical choice. We thus expect that subjects vote their type if they vote at all. In payoff table 2 (Table 12 (b)) and payoff table 3 (Table 12 (c)) voting for Party 1 is the ethical choice (maximizes the sum of payoffs and is more equal). Thus, ethical type 2 voters vote for Party 1, against their material self-interest. Voting is costly (1 DKK or 5 DKK). Final payoffs depend on the outcome of the election and whether the subject voted (independent of what party the subject voted).

[5] Note that a somewhat similar module was part of iLEE3. However, the distribution of types (50:50), the labeling of parties (A and B) and types (xx?), and the group sizes (600, 60, 6) were different in that module. Importantly, subjects made the three choices (which had the same payoffs xx?) only in one groups size. That is, the design in iLEE4 allows for within-subject comparisons which the one in iLEE3 does not.

Table 12: Payoffs (in DKK) in the 3 elections per electorate

(a)
Payoff table 1 (DKK)

	Party 1 wins	Party 2 wins	Tie
Type 1	15	5	10
Type 2	5	15	10

(b)
Payoff table 2 (DKK)

	Party 1 wins	Party 2 wins	Tie
Type 1	19	15	17
Type 2	5	15	10

(c)
Payoff table 3 (DKK)

	Party 1 wins	Party 2 wins	Tie
Type 1	19	15	17
Type 2	5	19	12

Allocation of participants to treatments. Module 5 has electorates of 3 sizes: 300, 30, and 6 subjects. Treatments differ by the sequence of electorates presented to participants. There are 8 possible sequences in this module. In treatments 1 to 6, participants make the voting choices in 3 electorates, in treatments 7 and 8 they make the decisions in 2 electorates (see Table 13).

The first 300 subjects in wave iLEE3Yes to reach this module are allocated to treatment 1 to 6 which include the very large electorate of 300. The remaining subjects in iLEE3Yes are allocated to treatments 7 and 8. All subjects in iLEE3No are allocated to treatments 7 and 8.

Table 13: Treatments and sizes of electorates in module 5

	Election number				
Treatment	1-3		4-6		7-9
1	6	→	30	→	300
2	30	→	6	→	300
3	6	→	300	→	30
4	30	→	300	→	6
5	300	→	6	→	30
6	300	→	30	→	6
7	6	→	30		
8	30	→	6		

Voter types and voting cost: The distribution of voter types and voting costs is the same in all elections and treatments: 2/3 of the voters are of type 1, 1/3 are of type 2. 50% of type 1 voters have a low voting cost of DKK 1 if they vote and 50% have high cost (DKK 5). The same holds for type 2 voters. Within an electorate, voter types and costs are assigned randomly.

If an electorate remains incomplete (e.g. because a subject that enters the module does not complete it), the missing voters are counted as abstentions for the calculation of payoffs. Table 15 shows the distribution of the subjects across treatments.

In total, 767 participants logged into module 1 and 753 subjects completed it. 689 of these completed the entire wave and were matched and paid. See the distribution of these across treatments in Table 14. Subjects earned on average DKK 86.37.

Table 14: Distribution of subjects (iLEE4 completers only)

	Treatment								
	1	2	3	4	5	6	7	8	Total
iLEE3Yes	56	55	58	59	28	30	167	155	608
iLEE3No	0	0	0	0	0	0	45	36	81
Total	56	55	58	59	28	30	212	191	689

Description of screens

(a) **Instructions** are split into four screens. **Instructions1:** i) informs about the size of the electorate for the first three elections. Subjects do not know at this point that they are later repeating the same elections (one or twice) with differently sized electorates. ii) informs about the rules of the election: The party obtaining more yes votes wins. If the two parties obtain equally many votes, the election results in a draw. iii) informs about the distribution of voting costs in the electorate. Subjects are told their own voting cost, the distribution of voting costs (50% have DKK 1, 50% 5 DKK) and that abstaining is costless. iv) informs about payment: all elections are paid out according to the respective outcome minus their voting costs, if they vote.

Instructions2: informs about the distribution of types (2/3 are type 1, 1/3 are type 2). Shows and example of an election (see payoff table 1 in Table 12 (a)). Provides detailed explanation of what payments are for different outcomes.

Instructions3: informs about their own type and voting cost and illustrates the distribution of types and voting costs as well as the size of the electorate. The illustration also highlights the type and voting cost for the particular subject (i.e. there are 4 versions of this illustration per electorate, see red symbol in Figure 8 for an example. In this example, the voter is of type 1, has a voting cost of DKK 1, and is in an electorate of 300 voters).

Instructions4: summarizes the instructions.

(b) **3 decision screens:** decision screen1 shows the payoffs for the first election in tabular form (same as in payoff table 1 in Table 12(a)). The other two decision screens for the first electorate are presented in random order. All decision screens show the payoffs for both types of voters and for all possible outcomes (Party 1 wins, Party 2 wins, and draw). A miniature version of the illustration is also presented (see Figures 8 and 9 for examples).

Decisions are made by clicking on one of three vertically arranged radio buttons (vote for Party 1, vote for Party 2, and abstain). The position of the radio button “abstention” is randomized to appear either on top or at the bottom of the list (the button for Party 1 is always on top of that for Party 2).

Figure 8: Subject is type 1, has a voting cost of DKK 1 and is in a group of 300 voters[6]

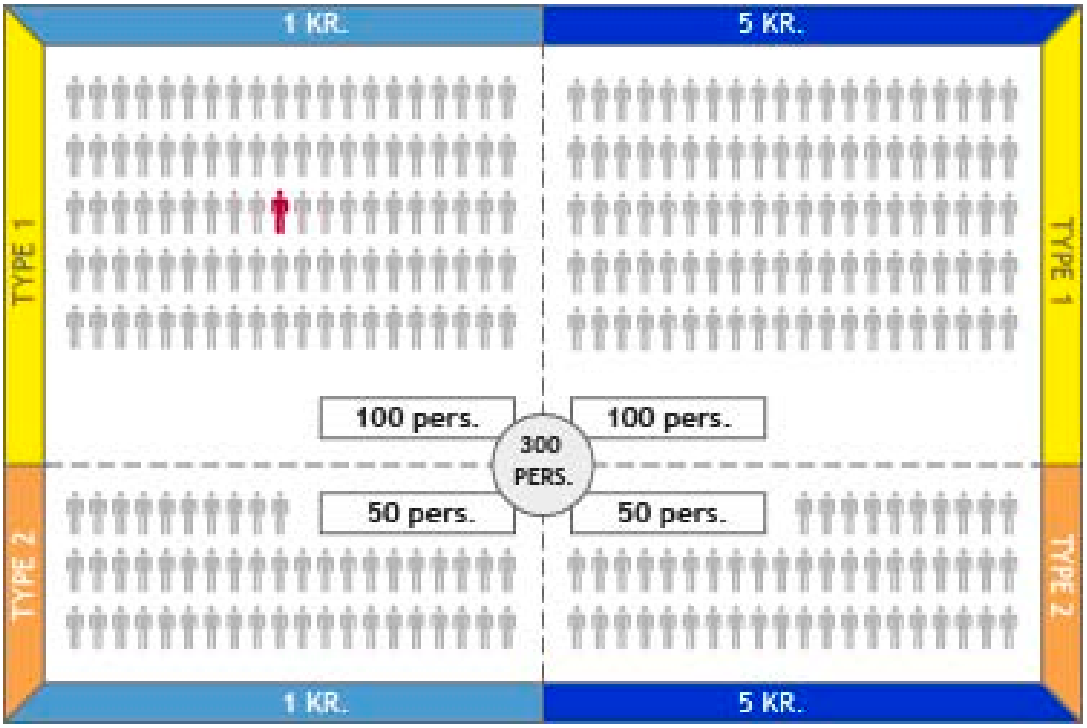
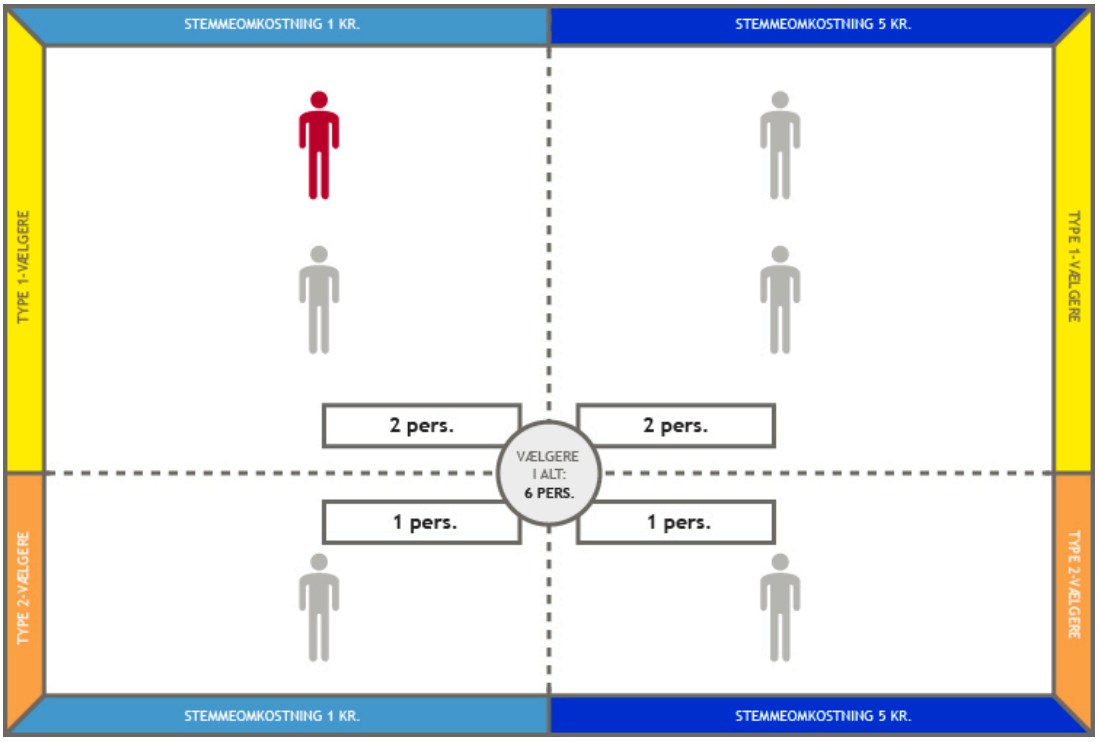


Figure 9: Subject is type 1, has a voting cost of DKK 1 and is in a group of 6 voters



[6] The graphics for Module 5 have been produced by graphical designer Marie Krause, marysometimes@gmail.com, (+45) 30 28 99 09.

(c) **Instructions5**: informs that another set of three elections is up next. Informs that their own type and voting cost, as well as the distribution of types and voting costs are unchanged. The payoffs are also the same (see Table 12). Informs about the new size of the electorate and shows an illustration *à la* Figure 8 or 9. Subjects are not informed about the possibility of further elections.

(d) **3 decision screens**: Screens for the second set of 3 elections are the same (except for electorate size) as described in b). Screens appear in random order. Upon completion, subjects in treatments 7 and 8 are routed to the end screen of the module, subjects in all other treatments are routed to (e).

(e) **Instructions6**: same as (c).

(f) **3 decision screens**: Same as (d).

Module 6: Gambler's fallacy

This module has been designed by Sigrid Suetens and Jean-Robert Tyran.

In essence, participants are given 30 DKK and decide on how much of that amount to bet on the outcome of rolling a die. The bet is double or nothing. They win if the die ends on a particular outcome (orange) and lose the amount bet for all other outcomes (blue). They make the betting choice twice. In the first choice, they do not see realizations of previous rolls. In the second choice, participants are shown five (truly random) realizations of dice rolls before deciding how much to bet. We separately measure the strength of participants' beliefs for either outcome (orange or blue). This allows us to study the relation between "gambling" (how much they bet on orange) and proneness to the "gambler's fallacy" (how much their belief is influenced by observing previous, possibly unbalanced, rolls of dice).

This module does not have any treatment variations or matching (individual decision making). Subjects earn DKK 59.41 on average (min.: DKK 0; max.: DKK 120).

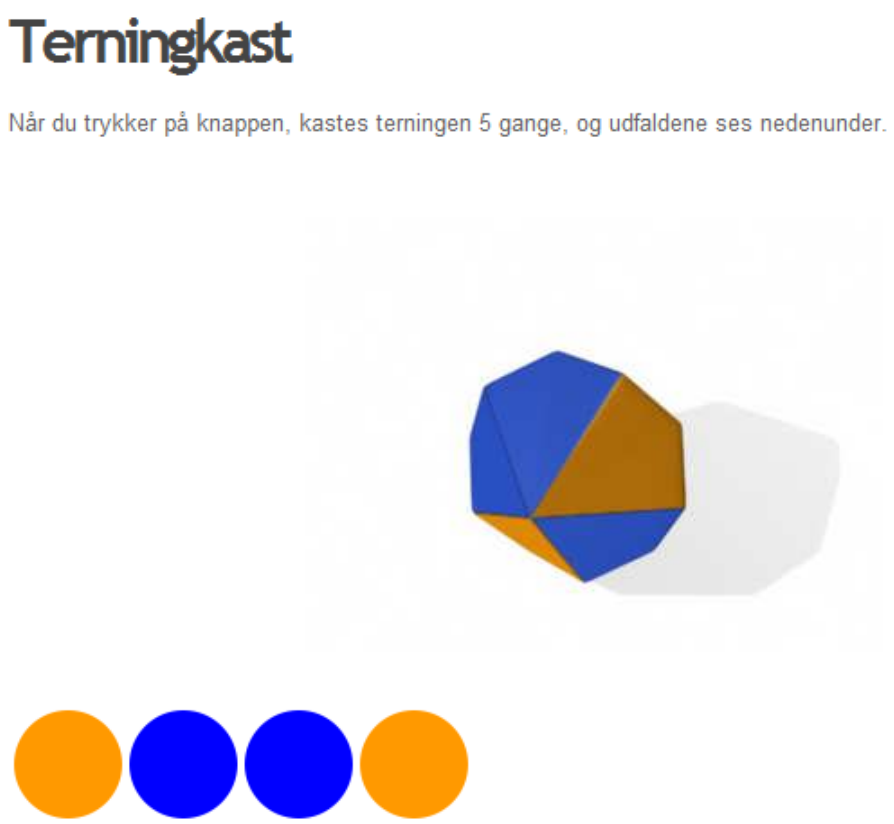
(a) **Instructions1**: informs that subjects are endowed with DKK 30 and decide how much, if anything, to bet on the outcome of a fair die roll. The die has 10 sides. Five are orange and five blue. The bet is double or nothing. That is, the amount bet is doubled if the outcome is orange, the amount bet is lost if the outcome is blue.

(b) **Bet screen1:** shows two empty boxes. The "*bet box*" and the "*keep box*". Half the subjects type numbers in the "bet box", the other half in the "keep box" (random assignment). Subjects choose any integer bet between DKK 0 and 30. The other box automatically displays the difference to DKK 30. Half of the subjects are shown the "bet box" on top of the "keep box" and *vice versa* for the other half.

(c) **Expectations screen:** asks subjects to indicate their expectation on how likely the next roll is going to result in orange (position a slider on an 11-point scale, 1 = 100% orange; 5 = 50% orange & 50% blue; 11 = 100% blue).

(d) **Instructions2**: informs subjects that the betting choice is repeated. Subjects do not learn the outcome of the 1st lottery. Subjects are again endowed with DKK 30. The instructions are the same. Subjects press on a button "roll die now" and see the outcome of five rolls in an animation before making their decision. The resulting sequence of the five rolls is random. See a snapshot of the animation in Figure 10.

Figure 10: Snapshot during the roll of the fifth die



(e) **Bet screen2:** same as (c) above.

(f) **Expectations2:** same as (d) above.

(g) **Animation1**: The subjects click on a button "roll die now" and the die is rolled in an animation. The **outcome of the 1st lottery** is calculated and the subject's payoff is shown below the animation.

(h) **Animation2**: The die is rolled again in another animation. The **outcome of the 2nd lottery** is calculated and the subject's payoff is shown below the animation.

Module 7: Coalition formation reasoning

This module has been designed by Raymond Duch and Jean-Robert Tyran.

In essence, subjects indicate the most likely coalition of political parties when knowing the parties' position (on the left-right spectrum) and relative strength (share of seats in the parliament). The purpose of the module is to i) investigate heuristics on coalition formation in the general (Danish) population, ii) compare these heuristics with those in the German population (a similar module has been run on a sample of the German population for comparison).

Subjects make choice in 8 scenarios. Scenarios with parties clustering in the center are labeled below C, those with parties clustering at one end (either left or right) are labeled E. Half of the subjects see a clustering to the left for a given number of parties, the other half see a clustering to the right. The sequence of scenarios is (in fixed order): (1) 2 parties, C. (2) 2 parties, E. (3) 3 parties, C. (4) 3 parties, E. (5) 4 parties, C. (6) 4 parties, E. (7) 5 parties, C. (8) 5 parties, E.

We have two treatments: (i) **Incumbent cue** and (ii) **no incumbent cue**. 345 subjects are in the former, 344 subjects are in the latter. Subjects are allocated to treatments alternating order as they reach the module.

In the incumbent cue treatment, subjects are told that one particular party has been member of a majority coalition before the election. For instance, the Circle Party was a member of the majority coalition (see Figure 11 where the party symbol of the incumbent (Circle) is highlighted). In the no incumbent cue treatment, there is no further information besides what is shown in Figure 12.

Subjects learn on the start screen of this module that the module is non-incentivized.

Figure 11: Example of task (4): 3 parties, clustering on the left, incumbent cue

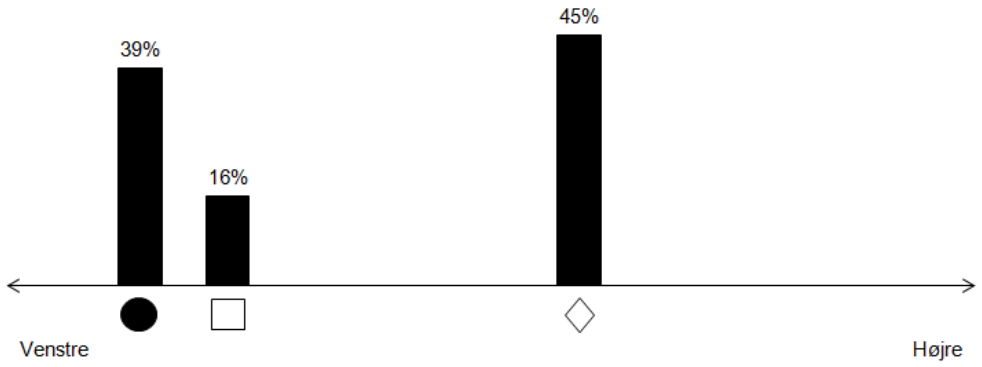
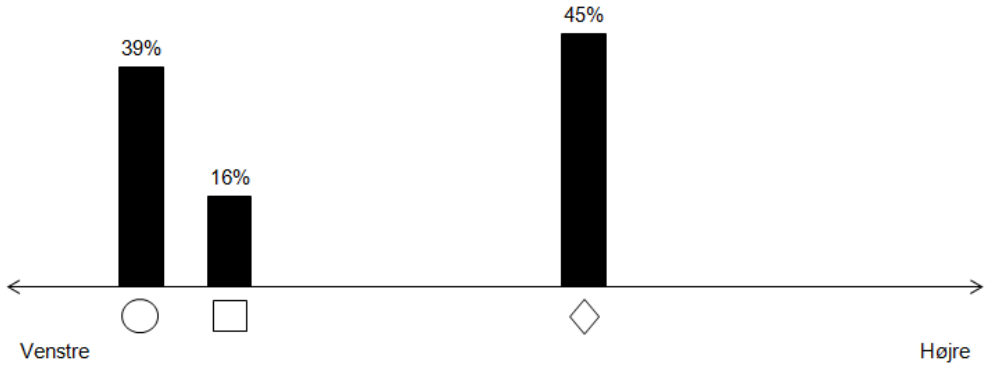


Figure 12: Example of task (4): 3 parties, clustering on the left, no incumbent cue



(a) **Instructions1:** informs that subjects will be presented with 8 scenarios and are asked to indicate the most likely majority coalition. Each party is characterized by its location on a left-right scale and its relative strength (percentage of seats in parliament). Figure 9 illustrates how the information is presented. In this example, there are 3 parties: The Circle Party, the Square Party, and the Diamond Party with 39%, 16%, and 45% of the seats in the parliament, respectively.

(b) **Decision screen**: Shows a figure similar to figure 9. Scenarios involve between 2 and 5 parties. Each screen lists the party names vertically as they appear in the illustration (from left to right). Each party on the list has a check box and subjects have to click at least one check box per screen. Eight decision screens in total.

Module 8: Questionnaire

Subjects are informed that completing the questionnaire is a precondition for payment of earnings in the other modules.

(a) **Questions about the participant**: handedness (left or right), body height (in cm) and color preference with respect to orange and blue (these are the colors used in module 6). All questions are presented in one screen in fixed order. The first two questions have the option "prefer not to answer".

(b) ((suppressed item – copyright issues pending))

(c) **Risk preferences:** Indicate your willingness to take risk in general, in traffic, in financial matters, in sports and leisure, in your career, and with respect to personal health, i.e. six questions in total, 0-10 scale. The question about general risk willingness is always on top. The others are randomized. Questions are translated from Dohmen et al. (2011).

(d) **Political attitudes**: Rate your political orientation on a 1-10 scale (1: left-winger, 10: right-winger). Which party would you vote for if there was an election tomorrow? Possible answers are (drop-down menu): Socialdemokraterne, Radikale Venstre, Konservative, Socialistisk Folkeparti, Kristendemokraterne, Dansk Folkeparti, Venstre, Liberal Alliance, Enhedslisten, "I would vote blank", "I do not have the right to vote", or "I would abstain".

(e) **Political knowledge**: Screen1: Which political parties constitute the current government in Denmark? Parties are listed in the same order as in (d). Tick one or more check buttons. Screen2: What percentage of the ministers are from each of the two government parties. Use a slider to indicate the percentages (the start value is 50%-50%). Which party are some of the most prominent ministers in the Danish government member of? Prime minister is on top, the others are randomized. Possible answers are: Venstre, Konservative, or "I do not know".

(f) General economic conditions: How do you think the general economic situation in Denmark has developed over the past 12 months {much better, better, unchanged, worse, much worse, don't know}; What are your expectations for the development of the Danish economy in the coming 12 months {much better, better, remain unchanged, worse, much worse, don't know}; What do you think has been the impact of the government's policy on the economy? {much better, better, unchanged, worse, much worse, don't know}

(g) Five questions taken from the *World Values Survey 2005-06*[7]: subjective well-being on scale 1-10 (V22), general trust on scale 1-10 (V47) and scale "yes" or "no" (V23), and two on political values on scale 1-10 (V118, V119).

Module 9: End of Part 1

(a) On an encrypted (https) screen we ask the subjects to indicate their bank account number as well as their email address if they wish to be contacted for further experiments. We tell them that it is important for our research, that they actually receive the money they are entitled to. We also tell them that we will keep the information confidentially and that the banking information is not stored together with their actions and answers in the other modules.

(b) On the last screen of the module, subjects are told that they can login again from 31 August 2011 to see the outcome of the experiment and their payments from each module.

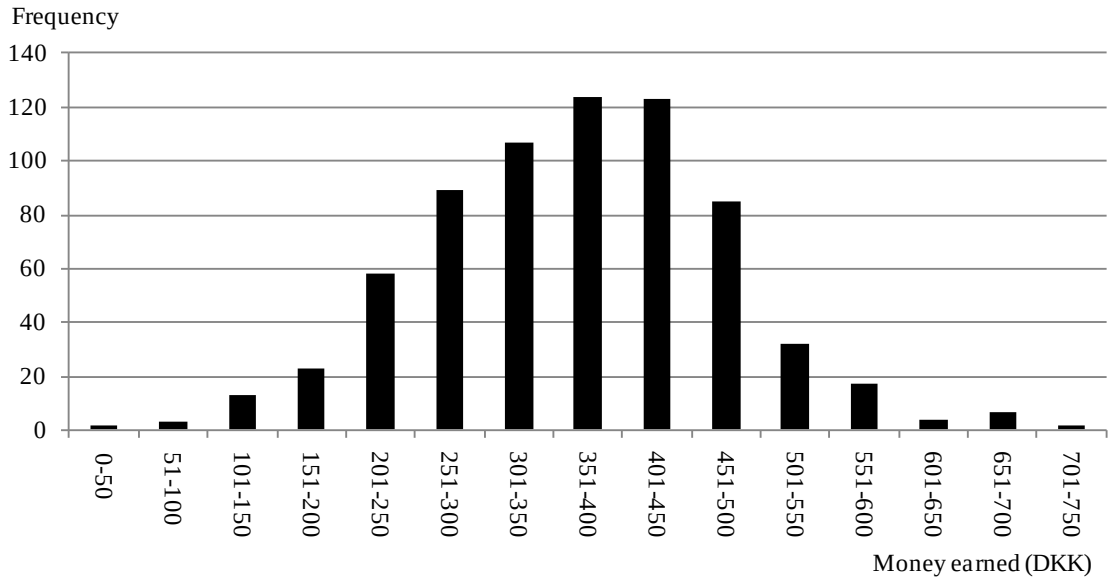
6 Payoff information

About 60 percent (= 392/689) of participants complete the entire wave within 100 minutes or less. Total completion times of more than 100 minutes are likely to be due to logout. Focusing only on those who spent less than 100 minutes, the median time spent was 59.5 minutes.

Figure 13 shows the distribution of payments for iLEE4. The average and median payments were DKK 366 and DKK 367 (slightly below 50 Euro), respectively. Subjects were paid on 17 August 2011 via bank transfers.

[7] http://www.worldvaluessurvey.org/wvs/articles/folder_published/survey_2005/files/WVSQuest_SplitVers_OECD_Aballot.pdf

Figure 13: Distribution of earnings



References

Dohmen, T., Falk, A. Huffman, D. Sunde, U. Schupp, J. and Wagner, G.G. (2011): Individual Risk Attitudes: Measurement, Determinants and Behavioral Consequences. *Journal of the European Economic Association*, 9(3): 522-550.

List, J.A. (2007): On the Interpretation of Giving in Dictator Games. *Journal of Political Economy*, 115(3): 482-493.

Appendix A: Invitation letter

DANMARKS STATISTIK

«Navn»
«Adresselabel»
«Postnr» «Postnavn»

Referencenr.: «Respnr»

Kære [Fornavn]

Danmarks Statistik og Internet Laboratoriet for Eksperimentel Økonomi (iLEE) ved Økonomisk Institut på Københavns Universitet inviterer dig hermed til at deltage i et eksperiment vedrørende økonomiske beslutningsprocesser, da du tidligere har gennemført et eller flere af vores eksperimenter.

Din deltagelse er naturligvis frivillig, men vi håber meget, at du igen vil deltage, da det er interessant for os at se, hvordan beslutninger i de forskellige eksperimenter hænger sammen. **Dette eksperiment er åbent for deltagelse til og med søndag d. 24. juli 2011.**

Ved at deltage i eksperimentet får du mulighed for at tjene penge. Vi kan ikke garantere dig, at du vil tjene et bestemt beløb, idet din indtjening vil afhænge af dine egne samt andre deltageres beslutninger. De nærmere regler er beskrevet på hjemmesiden.

Dine beslutninger i eksperimentet bliver behandlet strengt fortroligt og anonymt. For at sikre deltagerne fuld anonymitet logger alle deltagere ind med et tilfældigt udvalgt nummer. For at se detaljerne om eksperimentet, herunder opgaven, tidsforbrug mv., bedes du snarest muligt logge ind på vores hjemmeside:

ilee.econ.ku.dk med dit login-nummer: **«logincode»**

Hvis du har problemer med at logge ind eller har yderligere spørgsmål, er du velkommen til at kontakte os enten ved at sende en e-mail til **ilee@econ.ku.dk** eller ved at ringe til os på telefon 35 32 39 97.

Med venlig hilsen og på forhånd tak for din hjælp.

Isak Isaksen
Kontorchef, Danmarks Statistik

Jean-Robert Tyran
Professor, Økonomisk Institut

Appendix B: Reminder letter

«Navn»
«Adresselabel»
«Postnr» «Postnavn»

Referencenr.: «Respnr»

Kære «navn»

Danmarks Statistik og Internet Laboratoriet for Eksperimentel Økonomi (iLEE) ved Økonomisk Institut på Københavns Universitet inviterer dig hermed til at deltage i et eksperiment vedrørende økonomiske beslutningsprocesser, da du tidligere har gennemført et eller flere af vores eksperimenter.

Vi har tidligere sendt dig en invitation til dette eksperiment, men da du d. 28. juni 2011 klokken 14.00 endnu ikke havde gennemført eksperimentet, tillader vi os at sende dig en høflig påmindelse.

Din deltagelse er naturligvis frivillig, men vi håber meget, at du igen vil deltage, da det er interessant for os at se, hvordan beslutninger i de forskellige eksperimenter hænger sammen. **Dette eksperiment er åbent for deltagelse til og med søndag d. 24. juli 2011.**

Ved at deltage i eksperimentet får du mulighed for at tjene penge. Vi kan ikke garantere dig, at du vil tjene et bestemt beløb, idet din indtjening vil afhænge af dine egne samt andre deltageres beslutninger. De nærmere regler er beskrevet på hjemmesiden.

Dine beslutninger i eksperimentet bliver behandlet strengt fortroligt og anonymt. For at sikre deltagerne fuld anonymitet logger alle deltagere ind med et tilfældigt udvalgt nummer. For at se detaljerne om eksperimentet, herunder opgaven, tidsforbrug mv., bedes du snarest muligt logge ind på vores hjemmeside:

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Hvis du har problemer med at logge ind eller har yderligere spørgsmål, er du velkommen til at kontakte os enten ved at sende en e-mail til **ilee@econ.ku.dk** eller ved at ringe til os på telefon 35 32 39 97.

Med venlig hilsen og på forhånd tak for din hjælp.

Isak Isaksen
Kontorchef, Danmarks Statistik

Jean-Robert Tyran
Professor, Økonomisk Institut