SUPPLEMENTARY TO "ELICITING RISK AND
TIME PREFERENCES"
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BY STEFFEN ANDERSEN, GLENN W. HARRISON, W. HARRISON,
MORTEN I. LAU, AND E. ELISABET RUTSTRÖM

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APPENDIX A: QUESTIONNAIRES

This appendix presents the survey questions asked of subjects in Parts I and IV of the experiment, as well as the data coding for responses. These are all translations of the original Danish, available on request.

A.1. *Part I of the Experiment: Socio-Demographic Questionnaire*

In this survey most of the questions asked are descriptive. The questions may seem personal, but they will help us analyze the results of the experiments. Your responses are completely confidential. Please think carefully about each question and give your best answer.

1. What is your age? _____ years
2. What is your sex?
    01   Male
    02   Female
3. Where do you live?
    01   Copenhagen including suburbs
    02   Greater Copenhagen area
    03   Municipality with towns of more than 100,000 inhabitants
    04   Municipality with towns of 40,000–99,999 inhabitants
    05   Municipality with towns of 20,000–39,999 inhabitants
    06   Municipality with towns of 10,000–19,999 inhabitants
    07   Other
4. What type of residence do you live in?
    01   Owner-occupied house
    02   Owner-occupied apartment
    03   Rented house
    04   Rented apartment
    05   Multi-ownership of residence, cooperative
    06   Rented room
    07   Official residence, etc.
5. What has been your primary occupation during the last 12 months?
    [Primary occupation is defined as the type of occupation where you spend
    most of your working time.]
    01   Farmer
    02   Other self-employed
    03   Assisting spouse
    04   White collar worker
    05   Skilled worker
    06   Unskilled worker
    07   Apprentice
    08   Student
    09   Retired
    10   Unemployed
    11   Other
6. What is your highest level of education?
    01   Basic school
    02   General upper secondary education
    03   Vocational upper secondary education
    04   Vocational education and training
    05   Short higher education
    06   Medium higher education
    07   Long higher education
A. *Vocational education and training:*
    01   Commercial and clerical vocational courses
    02   Metal manufacturing vocational courses

     03   Construction vocational courses
     04   Graphic vocational courses
     05   Service-related vocational courses
     06   Food-related vocational courses
     07   Health-related auxiliary programs
     08   Other vocational courses

B. *Short higher education:*
     01   Social sciences and humanities
     02   Technical and natural sciences
     03   Health-related sciences
     04   Other

C. *Medium higher education:*
     01   Social sciences
     02   Technical and natural sciences
     03   Health-related sciences
     04   Educational courses and humanities
     05   Officers

D. *Long higher education:*
     01   Social sciences
     02   Technical and natural sciences
     03   Health-related sciences
     04   Educational courses and humanities
     05   Veterinary and agricultural courses

7. What are the characteristics of your household?
[A household is an economic unit, and it is defined as a group of persons who live in the same residence and each person contributes to general expenditures.]
     01   Single under 30 years
     02   Single 30–59 years
     03   Single older than 59 years
     04   2 adults, oldest person is under 30 years
     05   2 adults, oldest person is 30–59 years
     06   2 adults, oldest person is older than 59 years
     07   Single with children, oldest child 0–9 years
     08   Single with children, oldest child 10–17 years
     09   2 adults with children, oldest child 0–9 years
     10   2 adults with children, oldest child 10–17 years
     11   Household with at least 3 adults

8. How many persons (including children) are there in your household?
     01   1 person
     02   2 persons
     03   3 persons
     04   4 persons
     05   5 or more persons

9. What was the amount of total income before tax earned in 2002 by all members of your household (including children)?

[Consider all forms of income, including salaries, income from unincorporated business enterprises, pension scheme contributions, interest earnings and dividends, retirement benefits, student grants, scholarship support, social security, unemployment benefits, parental support, alimony, child support, and other types of income.]

01   Below 150,000 kroner
02   150,000–299,999 kroner
03   300,000–499,999 kroner
04   500,000–799,999 kroner
05   800,000 kroner or more

10. How often do you participate in extreme sports?

[Extreme sports include bungee jumping, para-gliding, parachute jumping, gliding, rafting, diving and other dangerous sports.]

01   Never
02   A few times
03   Occasionally
04   Often
05   Every chance I get

11. Do you currently smoke cigarettes?

01   No
02   Yes

A.   If yes, how much do you smoke in one day? _____ cigarettes

A.2. *Questionnaire About Plans With Money in IDR Part*

1. Suppose you win the money today. What do you plan to do with the money you will receive?

01   Spend 25% or less when you receive the money and save the rest
02   Spend 26–50% when you receive the money and save the rest
03   Spend 51–75% when you receive the money and save the rest
04   Spend more than 75% when you receive the money and save the rest
05   Spend 100% when you receive the money

A.3. *Part IV of the Experiment: Questionnaire About Finances*

In this survey most of the questions asked are descriptive. The questions may seem personal, but they will help us analyze the results of the experiments. Your responses are completely confidential. Please think carefully about each question and give your best answer.

1.   Do you have a checking account?

01   No
02   Yes

A.   If yes, what (annual) interest rate does your checking account currently earn?

　　_____ %
　　_____ Don't know (88)

B.   What is the current balance on your checking account?
01   5,000 kroner or less
02   5,001–10,000 kroner
03   10,001–25,000 kroner
04   25,001–50,000 kroner
05   More than 50,000 kroner
08   Don't know

2.   Do you have a line of credit?
01   No
02   Yes

A.   If yes, what (annual) interest rate do you currently pay on your line of credit?

　　_____ %
　　_____ Don't know (88)

B.   Do you ordinarily carry a balance from month to month on your line of credit?
01   No
02   Yes

C.   If yes, what is the balance owed on your line of credit?
01   1–500 kroner
02   501–1,000 kroner
03   1,001–5,000 kroner
04   5,001–10,000 kroner
05   10,001–25,000 kroner
06   25,001–50,000 kroner
07   More than 50,000 kroner
08   Don't know

3.   Do you have a credit card?
01   No
02   Yes

A.   If yes, what (annual) interest rate do you currently pay on your credit card?
[If you have more than one credit card, please consider the highest interest rate on any credit card with outstanding balances.]

　　_____ %
　　_____ Don't know (88)

C.   What is the balance owed on this credit card?
01   1–500 kroner
02   501–1,000 kroner
03   1,001–5,000 kroner

04   5,001–10,000 kroner
05   10,001–25,000 kroner
06   25,001–50,000 kroner
07   More than 50,000 kroner
08   Don't know

3.1   Do you have more than one credit card?
01   No
02   Yes

C.   What is the lowest interest rate you currently pay on any credit card with credit left.
_____%
_____ Don't know (88)

D.   What is the balance owed on this credit card?
01   1–500 kroner
02   501–1,000 kroner
03   1,001–5,000 kroner
04   5,001–10,000 kroner
05   10,001–25,000 kroner
06   25,001–50,000 kroner
07   More than 50,000 kroner
08   Don't know

4.   Do you have outstanding student loan balances?
01   No
02   Yes

A.   If yes, what is the (annual) interest rate on your student loan balances?
_____ %
_____ Don't know (88)

B.   What is the balance owed on your student loan?
01   10,000 kroner or less
02   10,001–25,000 kroner
03   25,001–50,000 kroner
04   50,001–100,000 kroner
05   100,001–250,000 kroner
06   More than 250,000 kroner
08   Don't know

5.   Do you have a savings account, excluding contributions to pension schemes?
01   No
02   Yes

A.   If yes, what (annual) interest rate does your savings account currently earn?
_____ %
_____ Don't know (88)

B. What is the balance on your savings account?
    01 5,000 kroner or less
    02 5,001–10,000 kroner
    03 10,001–25,000 kroner
    04 25,001–50,000 kroner
    05 50,001–100,000 kroner
    06 100,001–250,000 kroner
    07 More than 250,000 kroner
    08 Don't know
6. Do you have other investment accounts not described above, excluding contributions to pension schemes?
    01 No
    02 Yes
A. If yes, what (annual) interest rate does your investment account currently earn?
    [If you have more than one of these investment accounts, please consider the account currently earning the highest annual interest rate.]
    _____%
    _____ Don't know (88)
B. What is the balance on this investment account?
    01 5,000 kroner or less
    02 5,001–10,000 kroner
    03 10,001–25,000 kroner
    04 25,001–50,000 kroner
    05 50,001–100,000 kroner
    06 100,001–250,000 kroner
    07 More than 250,000 kroner
    08 Don't know
7. If you were to go to the bank to obtain a loan, line of credit, or credit card, what do you think your chances would be of being approved?
    01 At least 90% likely
    02 At least 75% likely
    03 At least 50% likely
    04 Less than 50% likely
8. How often do you find yourself short of cash between paychecks?
    01 Every time
    02 3 out of 4 times
    03 2 out of 4 times
    04 1 out of 4 times
    05 Almost never
9A. Would you say that you and your family are better off or worse off financially than you were 1 month ago?
    01 Better now
    02 Same

03   Worse now
04   Don't know

9B.   Would you say that you and your family are better off or worse off financially than you were 4 months ago?

11   Better now
12   Same
13   Worse now
14   Don't know

9C.   Would you say that you and your family are better off or worse off financially than you were 6 months ago?

21   Better now
22   Same
23   Worse now
24   Don't know

9D.   Would you say that you and your family are better off or worse off financially than you were 12 months ago?

31   Better now
32   Same
33   Worse now
34   Don't know

9E.   Would you say that you and your family are better off or worse off financially than you were 18 months ago?

41   Better now
42   Same
43   Worse now
44   Don't know

9F.   Would you say that you and your family are better off or worse off financially than you were 24 months ago?

51   Better now
52   Same
53   Worse now
54   Don't know

10A. Now looking ahead, do you expect any major change in your family situation that will lead to higher expenses or lower expenses during the next 1 month?

01   Higher expenses
02   No change
03   Lower expenses
04   Don't know

10B. Now looking ahead, do you expect any major change in your family situation that will lead to higher expenses or lower expenses during the next 4 months?

11   Higher expenses
12   No change

    13   Lower expenses

    14   Don't know

10C. Now looking ahead, do you expect any major change in your family situation that will lead to higher expenses or lower expenses during the next 6 months?

    21   Higher expenses

    22   No change

    23   Lower expenses

    24   Don't know

10D. Now looking ahead, do you expect any major change in your family situation that will lead to higher expenses or lower expenses during the next 12 months?

    31   Higher expenses

    32   No change

    33   Lower expenses

    34   Don't know

10E. Now looking ahead, do you expect any major change in your family situation that will lead to higher expenses or lower expenses during the next 18 months?

    41   Higher expenses

    42   No change

    43   Lower expenses

    44   Don't know

10F. Now looking ahead, do you expect any major change in your family situation that will lead to higher expenses or lower expenses during the next 24 months?

    51   Higher expenses

    52   No change

    53   Lower expenses

    54   Don't know

11A. Do you expect any major change in your family situation that will lead to higher earnings or lower earnings during the next 1 month?

    01   Higher earnings

    02   No change

    03   Lower earnings

    04   Don't know

11B. Do you expect any major change in your family situation that will lead to higher earnings or lower earnings during the next 4 months?

    11   Higher earnings

    12   No change

    13   Lower earnings

    14   Don't know

11C. Do you expect any major change in your family situation that will lead to higher earnings or lower earnings during the next 6 months?
    21   Higher earnings
    22   No change
    23   Lower earnings
    24   Don't know

11D. Do you expect any major change in your family situation that will lead to higher earnings or lower earnings during the next 12 months?
    31   Higher earnings
    32   No change
    33   Lower earnings
    34   Don't know

11E. Do you expect any major change in your family situation that will lead to higher earnings or lower earnings during the next 18 months?
    41   Higher earnings
    42   No change
    43   Lower earnings
    44   Don't know

11F. Do you expect any major change in your family situation that will lead to higher earnings or lower earnings during the next 24 months?
    51   Higher earnings
    52   No change
    53   Lower earnings
    54   Don't know

12A. On balance, do you think that you and your family will be better off or worse off financially 1 month from now?
    01   Will be better off
    02   Same
    03   Will be worse off
    04   Don't know

12B. On balance, do you think that you and your family will be better off or worse off financially 4 months from now?
    11   Will be better off
    12   Same
    13   Will be worse off
    14   Don't know

12C. On balance, do you think that you and your family will be better off or worse off financially 6 months from now?
    21   Will be better off
    22   Same
    23   Will be worse off
    24   Don't know

12D. On balance, do you think that you and your family will be better off or worse off financially 12 months from now?
- 31   Will be better off
- 32   Same
- 33   Will be worse off
- 34   Don't know

12E. On balance, do you think that you and your family will be better off or worse off financially 18 months from now?
- 41   Will be better off
- 42   Same
- 43   Will be worse off
- 44   Don't know

12F. On balance, do you think that you and your family will be better off or worse off financially 24 months from now?
- 51   Will be better off
- 52   Same
- 53   Will be worse off
- 54   Don't know

13A. Turning to the economic conditions in the country as a whole, would you say that at the present time economic conditions are better or worse than they were 1 month ago?
- 01   Better now
- 02   Same
- 03   Worse now
- 04   Don't know

13B. Turning to the economic conditions in the country as a whole, would you say that at the present time economic conditions are better or worse than they were 4 months ago?
- 11   Better now
- 12   Same
- 13   Worse now
- 14   Don't know

13C. Turning to the economic conditions in the country as a whole, would you say that at the present time economic conditions are better or worse than they were 6 months ago?
- 21   Better now
- 22   Same
- 23   Worse now
- 24   Don't know

13D. Turning to the economic conditions in the country as a whole, would you say that at the present time economic conditions are better or worse than they were 12 months ago?
- 31   Better now
- 32   Same

33   Worse now
34   Don't know

13E. Turning to the economic conditions in the country as a whole, would you say that at the present time economic conditions are better or worse than they were 18 months ago?
41   Better now
42   Same
43   Worse now
44   Don't know

13F. Turning to the economic conditions in the country as a whole, would you say that at the present time economic conditions are better or worse than they were 24 months ago?
51   Better now
52   Same
53   Worse now
54   Don't know

14A. Do you think that there will be more or less unemployment during the next 1 month?
01   More unemployment
02   About the same
03   Less unemployment
04   Don't know

14B. Do you think that there will be more or less unemployment during the next 4 months?
11   More unemployment
12   About the same
13   Less unemployment
14   Don't know

14C. Do you think that there will be more or less unemployment during the next 6 months?
21   More unemployment
22   About the same
23   Less unemployment
24   Don't know

14D. Do you think that there will be more or less unemployment during the next 12 months?
31   More unemployment
32   About the same
33   Less unemployment
34   Don't know

14E. Do you think that there will be more or less unemployment during the next 18 months?
41   More unemployment
42   About the same

43   Less unemployment
44   Don't know
14F. Do you think that there will be more or less unemployment during the next 24 months?
51   More unemployment
52   About the same
53   Less unemployment
54   Don't know
15A. Do you think that interest rates for borrowing money will go up or go down during the next 1 month?
01   Go up
02   Stay the same
03   Go down
04   Don't know
15B. Do you think that interest rates for borrowing money will go up or go down during the next 4 months?
11   Go up
12   Stay the same
13   Go down
14   Don't know
15C. Do you think that interest rates for borrowing money will go up or go down during the next 6 months?
21   Go up
22   Stay the same
23   Go down
24   Don't know
15D. Do you think that interest rates for borrowing money will go up or go down during the next 12 months?
31   Go up
32   Stay the same
33   Go down
34   Don't know
15E. Do you think that interest rates for borrowing money will go up or go down during the next 18 months?
41   Go up
42   Stay the same
43   Go down
44   Don't know
15F. Do you think that interest rates for borrowing money will go up or go down during the next 24 months?
51   Go up
52   Stay the same
53   Go down
54   Don't know

APPENDIX B: Sample Design

This appendix adds detail to the documentation of the sample design presented in the body of the paper.

B.1. *Overall Design*

The sample for the field experiments was designed to generate a representative sample of the adult Danish population.[1] There were six steps in the construction of the sample:

- First, a random sample of 25,000 Danes was drawn from the Danish Civil Registration Office in January 2003. Only Danes born between 1927 and 1983 were included, thereby restricting the age range of the target population to between 19 and 75. For each person in this random sample we had access to their name, address, county, municipality, birth date, and sex. 16 of the records had no name and address and were dropped, and another 12 of the records had no address and were also dropped.
- Second, we dropped 17 municipalities (including one county) from the population, due to them being located in extraordinarily remote locations. The population represented in these locations amounts to less than 2% of the Danish population, and only 493 individuals in our sample from the civil registry.
- Third, we assigned each county either 1 session or 2 sessions, in rough proportionality to the population of the county. In total we assigned 21 sessions. Each session consisted of two subsessions at the same locale and date, one at 5 pm and another at 8 pm, and subjects were allowed to choose which subsession suited them best.
- Fourth, we divided 6 counties into two subgroups because the distance between some municipalities in the county and the location of the session would be too large. A random draw was made between the two subgroups and the location selected, where the weights reflect the relative size of the population in September 2002.
- Fifth, we picked the first 30 or 60 randomly sorted records within each county, depending on the number of sessions allocated to that county. This provided a subsample of 600, which we then contacted by mail.
- Sixth, we sent out 600 invitations to attend a session, offering each person a choice of times for the session. Response rates were low in some counties

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[1]In Harrison, Lau, and Williams (2002) we relied on the sample frames developed by the Danish Social Research Institute (SFI) for their sample, and also used SFI personnel to conduct the field experiments. Given the substantial cost of using such survey firms, we decided to undertake the sampling and experiments ourselves. SFI had a sample of around 5000 participants from which they picked subjects for the previous experiments. Their show up rate among recruited persons was 85%, which we viewed as quite high for the field, but those persons had previously been interviewed several times by the SFI.

and another 64 invitations were sent out. We signed up everyone who gave a positive response, and our final recruited sample was 268. In the end, we had 253 persons actually turn up for the sessions.

We explain below how we use this information to generate sample weights for the statistical analysis.

B.2. *List of Danish Municipalities and County Codes*

Each of the 275 municipalities and 15 counties in the sample has a code, listed below. The 17 municipalities that were dropped due to logistical problems were 401, 403, 405, 407, 409, 443, 475, 481, 487, 493, 501, 523, 535, 563, 741, 675, and 825. The 6 counties allocated two sessions were 1, 15, 20, 42, 70, and 80. The 6 counties divided into two subgroups were 30, 35, 50, 60, 65, and 76.

Name	County Code	Municipality Code	Subgroup
København	1	101	
Frederiksberg	1	147	
Københavns Amt	15		
Ballerup	15	151	
Brøndby	15	153	
Dragør	15	155	
Gentofte	15	157	
Gladsaxe	15	159	
Glostrup	15	161	
Herlev	15	163	
Albertslund	15	165	
Hvidovre	15	167	
Høje Taastrup	15	169	
Ledøje-Smørum	15	171	
Lyngby-Taarbæk	15	173	
Rødovre	15	175	
Søllerød	15	181	
Ishøj	15	183	
Tårnby	15	185	
Vallensbæk	15	187	
Værløse	15	189	
Frederiksborg Amt	20		
Allerød	20	201	
Birkerød	20	205	
Farum	20	207	
Fredensborg-Humlebæk	20	208	
Frederikssund	20	209	
Frederiksværk	20	211	
Græsted-Gilleleje	20	213	

(Continues)

Continued

Name	County Code	Municipality Code	Subgroup
Helsinge	20	215	
Helsingør	20	217	
Hillerød	20	219	
Hundested	20	221	
Hørsholm	20	223	
Jægerspris	20	225	
Karlebo	20	227	
Skibby	20	229	
Skævinge	20	231	
Slangerup	20	233	
Stenløse	20	235	
Ølstykke	20	237	
Roskilde Amt	25		
Bramsnæs	25	251	
Greve	25	253	
Gundsø	25	255	
Hvalsø	25	257	
Køge	25	259	
Lejre	25	261	
Ramsø	25	263	
Roskilde	25	265	
Skovbo	25	267	
Solrød	25	269	
Vallø	25	271	
Vestsjællands Amt	30		
Bjergsted	30	301	2
Dianalund	30	303	1
Dragsholm	30	305	2
Fuglebjerg	30	307	1
Gørlev	30	309	1
Hashøj	30	311	1
Haslev	30	313	1
Holbæk	30	315	2
Hvidebæk	30	317	1
Høng	30	319	1
Jernløse	30	321	2
Kalundborg	30	323	1
Korsør	30	325	1
Nykøbing-Rørvig	30	327	2
Ringsted	30	329	1
Skælskør	30	331	1
Slagelse	30	333	1
Sorø	30	335	1
Stenlille	30	337	1
Svinninge	30	339	2
Tornved	30	341	2

(Continues)

Continued

Name	County Code	Municipality Code	Subgroup
Trundholm	30	343	2
Tølløse	30	345	2
Storstrøms Amt	35		
Fakse	35	351	3
Fladså	35	353	3
Holeby	35	355	4
Holmegaard	35	357	3
Højreby	35	359	4
Langebæk	35	361	3
Maribo	35	363	4
Møn	35	365	3
Nakskov	35	367	4
Nykøbing-Falster	35	369	4
Nysted	35	371	4
Næstved	35	373	3
Nørre Alslev	35	375	4
Præstø	35	377	3
Ravnsborg	35	379	4
Rudbjerg	35	381	4
Rødby	35	383	4
Rønnede	35	385	3
Sakskøbing	35	387	4
Stevns	35	389	3
Stubbekøbing	35	391	4
Suså	35	393	3
Sydfalster	35	395	4
Vordingborg	35	397	3
Bornholms Amt	40		
Allinge-Gudhjem	40	401	
Hasle	40	403	
Nexø	40	405	
Rønne	40	407	
Aakirkeby	40	409	
(Uden For Kommuner)		411	
Fyns Amt	42		
Assens	42	421	
Bogense	42	423	
Broby	42	425	
Egebjerg	42	427	
Ejby	42	429	
Faaborg	42	431	
Glamsbjerg	42	433	
Gudme	42	435	
Haarby	42	437	
Kerteminde	42	439	
Langeskov	42	441	
Marstal	42	443	

(Continues)

Continued

Name	County Code	Municipality Code	Subgroup
Middelfart	42	445	
Munkebo	42	447	
Nyborg	42	449	
Nørre Aaby	42	451	
Odense	42	461	
Otterup	42	471	
Ringe	42	473	
Rudkøbing	42	475	
Ryslinge	42	477	
Svendborg	42	479	
Sydlangeland	42	481	
Søndersø	42	483	
Tommerup	42	485	
Tranekær	42	487	
Ullerslev	42	489	
Vissenbjerg	42	491	
Ærøskøbing	42	493	
Ørbæk	42	495	
Årslev	42	497	
Aarup	42	499	
Sønderjyllands Amt	50		
Augustenborg	50	501	6
Bov	50	503	6
Bredebro	50	505	6
Broager	50	507	6
Christiansfeld	50	509	5
Gram	50	511	5
Gråsten	50	513	6
Haderslev	50	515	5
Højer	50	517	6
Lundtoft	50	519	6
Løgumkloster	50	521	6
Nordborg	50	523	6
Nørre Rangstrup	50	525	5
Rødding	50	527	5
Rødekro	50	529	6
Skærbæk	50	531	5
Sundeved	50	533	6
Sydals	50	535	6
Sønderborg	50	537	6
Tinglev	50	539	6
Tønder	50	541	6
Vojens	50	543	5
Aabenraa	50	545	6
Ribe Amt	55		
Billund	55	551	
Blåbjerg	55	553	

Continued

Name	County Code	Municipality Code	Subgroup
Blåvandshuk	55	555	
Bramming	55	557	
Brørup	55	559	
Esbjerg	55	561	
Fanø	55	563	
Grindsted	55	565	
Helle	55	567	
Holsted	55	569	
Ribe	55	571	
Varde	55	573	
Vejen	55	575	
Ølgod	55	577	
Vejle Amt	60		
Brædstrup	60	601	8
Børkop	60	603	7
Egtved	60	605	7
Fredericia	60	607	7
Gedved	60	609	8
Give	60	611	7
Hedensted	60	613	8
Horsens	60	615	8
Jelling	60	617	7
Juelsminde	60	619	8
Kolding	60	621	7
Lunderskov	60	623	7
Nørre Snede	60	625	8
Tørring-Uldum	60	627	8
Vamdrup	60	629	7
Vejle	60	631	7
Ringkøbing Amt	65		
Aulum-Haderup	65	651	9
Brande	65	653	9
Egvad	65	655	9
Herning	65	657	9
Holmsland	65	659	9
Holstebro	65	661	10
Ikast	65	663	9
Lemvig	65	665	10
Ringkøbing	65	667	9
Skjern	65	669	9
Struer	65	671	10
Thyborøn-Harboøre	65	673	10
Thyholm	65	675	10
Trehøje	65	677	9
Ulfborg-Vemb	65	679	10
Videbæk	65	681	9
Vinderup	65	683	10

Continued

Name	County Code	Municipality Code	Subgroup
Åskov	65	685	9
Århus Amt	70		
Ebeltoft	70	701	
Galten	70	703	
Gjern	70	705	
Grenaa	70	707	
Hadsten	70	709	
Hammel	70	711	
Hinnerup	70	713	
Hørning	70	715	
Langå	70	717	
Mariager	70	719	
Midtdjurs	70	721	
Nørhald	70	723	
Nørre Djurs	70	725	
Odder	70	727	
Purhus	70	729	
Randers	70	731	
Rosenholm	70	733	
Rougsø	70	735	
Ry	70	737	
Rønde	70	739	
Samsø	70	741	
Silkeborg	70	743	
Skanderborg	70	745	
Sønderhald	70	747	
Them	70	749	
Århus	70	751	
Viborg Amt	76		
Bjerringbro	76	761	11
Fjends	76	763	11
Hanstholm	76	765	12
Hvorslev	76	767	11
Karup	76	769	11
Kjellerup	76	771	11
Morsø	76	773	12
Møldrup	76	775	11
Sallingsund	76	777	11
Skive	76	779	11
Spøttrup	76	781	11
Sundsøre	76	783	11
Sydthy	76	785	12
Thisted	76	787	12
Tjele	76	789	11
Viborg	76	791	11
Aalestrup	76	793	11

Continued

Name	County Code	Municipality Code	Subgroup
Nordjyllands Amt	80		
Arden	80	801	
Brovst	80	803	
Brønderslev	80	805	
Dronninglund	80	807	
Farsø	80	809	
Fjerritslev	80	811	
Frederikshavn	80	813	
Hadsund	80	815	
Hals	80	817	
Hirtshals	80	819	
Hjørring	80	821	
Hobro	80	823	
Læsø	80	825	
Løgstør	80	827	
Løkken-Vrå	80	829	
Nibe	80	831	
Nørager	80	833	
Pandrup	80	835	
Sejlflod	80	837	
Sindal	80	839	
Skagen	80	841	
Skørping	80	843	
Støvring	80	845	
Sæby	80	847	
Aabybro	80	849	
Aalborg	80	851	
Aars	80	861	

B.3. *Map of Denmark*

B.4. *Recruitment Procedures*

We sent out 600 invitations to attend a session in the first recruitment wave, offering each person a choice of two times for the session. The first 30 or 60 randomly sorted records were picked within each county, depending on the number of sessions allocated to that county. Response rates were low in some counties and another 45 and 19 invitations were sent out in the second and third wave, respectively. A total of 664 invitations were sent out.

The first wave of invitations were sent out four weeks before the first session was scheduled, and we asked people to reply within one week. The second and third waves of invitations were sent out two and three weeks after the first wave, respectively.

NUMBER OF INVITATIONS ACROSS COUNTIES

County	Wave 1	Wave 2	Wave 3	Total
1	60			60
15	60			60
20	60	12		72
25	30	6		36
30	30	7	1	38
35	30	20		50
42	60			60
50	30		8	38
55	30		10	40
60	30			30
65	30			30
70	60			60
76	30			30
80	60			60
Total	600	45	19	664

We signed up everyone who gave a positive response, and our final recruited sample was 268. The response rate was 42.5 percent for the first wave, 20 percent for the second wave, and 22.1 percent for the third wave.

NUMBER OF RECRUITED PERSONS ACROSS COUNTIES

County	Wave 1	Wave 2	Wave 3	Total
1	31			31
15	28			28
20	25	1		26
25	12			12
30	11	1	1	13
35	6	7		13
42	25			25
50	12			12
55	10		3	13
60	15			15
65	13			13
70	25			25
76	16			16
80	26			26
Total	255	9	4	268

Attendance at the experimental sessions was extraordinarily high. A total of 253 persons participated in the experiments. Four persons turned up for their session, but were not able to participate in the experiments. The first person suffered from dementia and could not remember the instructions; the second person was a 76-year-old woman who was not able to control the mouse and eventually gave up; the third person had just won the world championship in sailing and was too busy with interviews to stay for two hours; and the fourth person was sent home because too many people showed up (one person came unexpected, and we had only ten laptops available at that session). Four persons showed up unexpected and participated in the experiments.

Certain events might have plausibly triggered some of the no-shows: for example, 3 men did not turn up on June 11, 2003, but that was the night that the Danish national soccer team played a qualifying game for the European championships against Luxembourg that had been unscheduled when we picked session dates.

NUMBER OF PEOPLE ATTENDING ACROSS COUNTIES

County	Wave 1	Wave 2	Wave 3	Total
1	30			30
15	26			26
20	23	1		24
25	12			12
30	9		1	10
35	6	7		13
42	23			23
50	12			12
55	10		4	14
60	15			15
65	12			12
70	22			22
76	15			15
80	25			25
Total	240	8	5	253

We assigned each county either 1 session or 2 sessions, in rough proportionality to the population of the county. We assigned initially 20 sessions. Each session consisted of two subsessions at the same locale and date, one at 5 pm and another at 8 pm, and subjects were allowed to choose which subsession suited them best. Some late sessions had only one or two subjects signed up, and we contacted these subjects by phone and asked them to participate in the early session. One additional session was held on June 24 because midsummer eve on June 23 was unscheduled when we picked the session dates. Subjects scheduled for the June 23 session were contacted by phone and could choose which date suited them best.

The letter of invitation included an answer form and a prepaid envelope, and they were asked to answer within one week. The same day we received the answer form, a reply letter was sent confirming their participation in the meeting at the given location, date, and time. Every recruited subject was reminded by mail or phone within one week before the meeting. Both procedures were used for the first three sessions, and attendance was almost 100 percent at these sessions. We reminded subjects by mail for the remaining sessions because this procedure is more convenient.

Subjects were provided with three treatments in the risk aversion task. The symmetric treatment offered ten initial probabilities of 0.1, 0.2, 0.3, . . . , 0.9, and 1. In one case the menu was skewed to lower elicited RA and offered six initial probabilities of 0.1, 0.2, 0.3, 0.5, 0.7, and 1. In another case the menu was skewed to increase elicited RA and offered six initial probabilities of 0.3, 0.5, 0.7, 0.8, 0.9, and 1. The same RA treatment was provided to each subject in the same subsession. Subject #37 was accidently assigned the *SkewLO* treatment instead of the *SkewHI* treatment in the late session #15.

TREATMENTS ACROSS SESSIONS

Session	Date	Time	County	Recruitment	Attendance	Reminder	Interviewer	RA
1	3/6	17:00	1	16	16	mail	0	High
1	3/6	20:00	1	9	8	phone	1	Sym
2	2/6	17:00	1	6	6	phone	0	Sym
3	10/6	17:00	15	10	9	mail	1	Sym
3	10/6	20:00	15	3	3	mail	1	High
4	16/6	17:00	15	10	10	mail	1	Low
4	16/6	20:00	15	4	4	mail	1	Sym
5	23/6	17:00	20	5	5	phone	1	High
6	4/6	17:00	20	7	6	phone	1	Sym
6	4/6	20:00	20	6	6	phone	1	Low
7	4/6	17:00	25	8	8	mail	0	Sym
7	4/6	20:00	25	4	4	mail	0	Low
9	11/6	17:00	30	4	3	mail	1	Sym
9	11/6	20:00	30	9	7	mail	1	Low
10	12/6	17:00	35	5	5	mail	1	Sym
10	12/6	20:00	35	8	8	mail	1	High
12	17/6	17:00	42	10	7	mail	1	High
12	17/6	20:00	42	9	10	mail	1	Sym
13	23/6	17:00	42	7	6	phone	0	Low
15	10/6	17:00	50	9	8	mail	0	Sym
15	10/6	20:00	50	3	4	mail	0	High
16	18/6	17:00	55	8	9	mail	1	Low
16	18/6	20:00	55	5	5	mail	1	Sym
17	11/6	17:00	60	8	8	mail	0	Sym
17	11/6	20:00	60	7	7	mail	0	Low
20	19/6	17:00	65	10	9	mail	1	High
20	19/6	20:00	65	3	3	mail	1	Sym
21	12/6	17:00	70	6	5	mail	0	Sym
22	19/6	17:00	70	11	10	mail	0	High
22	19/6	20:00	70	8	7	mail	0	Sym
23	18/6	17:00	76	10	10	mail	0	Low
23	18/6	20:00	76	6	5	mail	0	Sym
25	17/6	17:00	80	6	6	mail	0	High
25	17/6	20:00	80	3	2	mail	0	Sym
26	16/6	17:00	80	10	10	mail	0	Low
26	16/6	20:00	80	7	7	mail	0	Sym
35	24/6	17:00	20	8	7	phone	1	Sym

B.5. *Letters of Invitation and Correspondence*

These documents are translations from the original Danish, available on request. They were sent out under the letterhead of the Ministry of Business and Economic Affairs.

Economic decisions

Dear _____

In daily life you make a number of decisions on how to spend your money. Some decisions concern the future. Should you consume now, or should you save the money and consume later? Should you buy or rent a home? Should you work or get additional education? To find out how Danes respond to these questions, the Ministry of Economic and Business Affairs will carry out a survey. The survey is financed by the Social Research Council and is conducted by researchers from the ministry's research unit and from the United States. This is the second analysis of this kind in Denmark.

You are chosen to participate
200 persons participate from all over the country. We have found the names by random choice from the Central Office of Civil Registration. The survey implies that a small number of people will get together and answer the questions. We would therefore like to invite you to participate in one of these meetings that will take place:

5:00 pm or 8:00 pm, _____ day, ___/___ 2003 at: _____
_____

We will ask you to mark your preferred time for the meeting in the attached answer form.

You can win a significant amount
To cover travel costs, you will receive 500 kroner at the end of the meeting. Moreover, each participant will have a 10 percent chance of receiving an amount between 50 and 4500 kroner in the first part of the survey, and this amount will also be paid at the end of the meeting. In the second part of the survey, each participant will have a 10 percent chance of receiving at least 3000 kroner. A random choice will decide who wins the money in both parts of the survey. All amounts are subject to personal income taxation and will be recorded at the tax authorities.

It is important that you answer. . .
But it is voluntary to participate. Your answers will be strictly confidential, and the results will be published in a way that no single person can be identified.

The meeting will last at most 2 hours. We ask you to return the attached answer form within a week. Please find attached a stamped envelope.

If you have any questions or would like to know more about the survey, please call Steffen Andersen at 35 46 63 21 or the interview leader, see below. If you have problems with travel expenses, please contact the interview leader and travel arrangements will be made.

With best regards,

Thank you for your help

Morten I. Lau   _____
Interview leader   Interview leader
Tel.: 35 46 62 54

Economic decisions

I, _____, hereby confirm that I would like to participate in the meeting _____day, the ___/___ 2003 at: _____
                                                _____

17:00 hours _____
20:00 hours _____

Please mark your preferred time for the meeting.

I acknowledge that my travel costs are covered by 500 kroner, and all amounts paid at the meeting are subject to personal income taxation. In case we need to contact you, please provide your phone number below.

Thank you for confirming your participation in the meeting.

Address: _____
Telephone: _____

Economic decisions

Dear _____
Thank you for confirming your participation in the meeting:

17:00/20:00 hours, _____ day, the ___/___ 2003 at: _____
                                                      _____

The meeting will begin with a short introduction of the survey, and we will then ask you to answer a number of questions. We will serve coffee, tea, and cake. The meeting will last at most 2 hours. The 500 kroner to cover your travel

costs and prizes in the first part of the survey will be paid before you leave the meeting.

With best regards,

_____
Morten I. Lau
Interview leader

Economic decisions

Dear _____

We hereby confirm that the meeting will take place:

17:00/20:00 hours, _____ day, the ___/___ 2003 at: _____

_____

The meeting will begin with a short introduction of the survey, and we will then ask you to answer a number of questions. We will serve coffee, tea, and cake. The meeting will last at most 2 hours. The 500 kroner to cover your travel costs and prizes in the first part of the survey will be paid before you leave the meeting.

With best regards,

_____
Morten I. Lau
Interview leader

APPENDIX C: EXPERIMENTER SCRIPT

This appendix reproduces the script followed by the experimenters during the experimental sessions. This script contains the instructions on the subjects' computer screens, as well as additional interviewer directions and explanations that were necessary for the conduct of the sessions.

Welcome announcement

[Give letter of invitation to subjects.]

Thank you for agreeing to participate in this survey. The survey is financed by the Social Science Research Council and concerns the economics of decision making.

Recall from the letter of invitation that you will be paid 500 kroner for your participation to cover travel costs. In order to qualify for this compensation you need to stay the full two hours of this session. Is everyone able to stay for the full two hours? Please make sure your mobile phones are turned off to avoid interruptions during the meeting.

[If somebody is not, take them outside. Give them 100 kroner and send them home.]

You will be given instructions and practice opportunities for the tasks today on the computer screen in front of you.

[Give handouts for Part II to subjects: computer screen examples and practice record sheets.]

Before we start I would like to ask one person to come up here and inspect the two bingo cages that we will use several times during today's session. Please verify that we have here 100 balls numbered from 1 to 100, and here 10 balls numbered 1 to 10. I will now ask you to place these balls into the bingo cages. Please take your seat again.

I will now come around and enter your subject ID numbers on the computers. We will then read through the instructions together. Please wait for me to finish.

WELCOME TO THE EXPERIMENT
THESE ARE YOUR INSTRUCTIONS

This is an experiment in the economics of decision making. Your participation in this experiment is voluntary. However, we think you will find the experiment interesting. You will be paid for your participation *and* you could make a considerable amount of additional money. The instructions are simple and you will benefit from following them carefully. Please take a few minutes to read them through together with me.

In this experiment you may receive some money from us in addition to the guaranteed participation fee. How much you receive will depend partly on chance and partly on the choices you make in series of decision-problems which will be presented to you in a few minutes.

The problems are not designed to test you. What we want to know is what choices you would make in them. The only right answer is what you really would choose. That is why the problems give you the chance of winning real money.

The experiment will proceed in four parts.

Part I consists of some questions about yourself. This information is for our records only. Our study records and the published results of our research will not identify any individual or the choice he or she made in any way. All records will be linked to an anonymous subject ID only.

Part II is a decision problem in which chance may play a part. Your decision problem requires you to make a series of choices between two options. This is described in more detail later.

Part III is a different decision problem in which chance may play a part. We will describe this further after you have completed the second part.

Part IV consists of some additional questions about yourself. Again, this information is for our records only and confidentiality of your responses is assured.

At the end we will ask you to step aside for a moment and then call you back in, one at a time, to pay you in private.

At this time we ask that you answer the questions for Part I. Just click the OK button to go on.

Password 1: 1

Instructions for Part II

We will now continue with Part II of the experiment.

Each person in this room will have a chance to receive an additional large sum of money. If you are selected to receive this sum of money, you will have a choice between two payment options; Option A or Option B. Each person will have a 1-in-10 chance of receiving the money. The selection will be done using a ten-sided die. If the number 0 is drawn you will receive the money at the end of the meeting. If any other number is drawn you will not receive the money.

You will be asked to make a series of choices in a decision problem which may have multiple levels. The table shown on page 1 in the handout is an illustration of what <u>Level 1</u> of the decision problem will look like on your computer screen. This handout contains several other screen images we will mention later.

This screen illustration shows ten decisions listed on the left side, in the column marked **Decision**. Each decision is a paired choice between "Option A" and "Option B." You will be asked to make a choice between these two options in each decision row.

Before you start thinking about your choice, let me explain how your choice affects your earnings. Earnings depend partly on the outcome of a spin of the bingo cage you see in this room. When the bingo cage is spun, a single ball will be randomly picked from all the balls in the bingo cage, and the number on the ball will in part determine your earnings. The bingo cage contains 100 balls which are individually numbered from 1 to 100, so any number between 1 and 100 is equally likely to be chosen.

Please look at decision 1 at the top of the table. Option A pays $100 if the bingo ball is numbered 10 or lower, and it pays $80 if the bingo ball is numbered 11 or higher. This means that there is a 10-in-100 chance of getting $100 and a 90-in-100 chance of getting $80.

Option B yields $170 if the bingo ball is numbered 10 or lower, and it pays $5 if the bingo ball is numbered 11 or higher.

The difference between the two amounts in Option A is smaller than the difference between the two amounts in Option B.

The other decisions are similar, except that as you move down the table the chances of the higher payoff for each option increase. In fact, for decision 10 in the bottom row, the bingo cage will not be needed since each option pays the highest payoff for sure. So your choice in decision 10 is simply between $100 or $170.

For each of the ten decisions, you will be asked to choose Option A or Option B by clicking on the appropriate button. These buttons are shown on the right of the screen illustration. For some decisions you may not care whether you receive Option A or B, in which case you should click the button labeled "I" for "Indifference."

We expect that you will be making one out of four kinds of decisions:
- You may prefer Option A for all decision rows;
- You may be Indifferent between Option A and Option B for all decision rows;
- You may prefer Option B for all decision rows; or
- You may prefer Option A for some decision rows, Option B for some decision rows, and be Indifferent for other decision rows.

Which kind of decision you make is entirely up to you.

If you select Option A for all decision rows, or if you indicate Indifference for any of the decision rows, there will be no further choices to be made by you in this problem before determining your earnings.

If you select Option B for all decisions rows, or if you switch from Option A to Option B at some point, we will give you a Level 2 task before determining your earnings. The Level 2 task involves making choices in the Level 2 table illustrated on page 2 in the handout.

The Level 2 table shows you eleven other decisions listed in a similar way. They are arranged in the same way as the ten decisions in the Level 1 table, but they focus in on the decisions that were made in Level 1.

Assume that someone in Level 1 has selected Option A for rows 1–3 and Option B for rows 4–10. This means that this person prefers Option A when the chances of earning the higher amount are 30-in-100 or less, but prefers Option B when the chances of earning the higher amount are 40-in-100 or more. Level 2 then asks this person to choose between Option A and Option B for chances <u>between</u> 30-in-100 and 40-in-100. Thus, row 1 in Level 2 corresponds to a chance of 30-in-100 for the higher amount, and row 2 to a chance of 31-in-100 for the higher amount, and so on until the last row shows a 40-in-100 chance of earning the higher amount. Thus Level 2 just provides more detail in the range of choices this person indicated in Level 1.

Notice that the chance of winning the higher amount in Level 1 increases by intervals of 10-in-100, or 10 percentage points, as you move from decision row 1 to decision row 2. The same increase in chances applies to each row in Level 1. Notice also that the decisions displayed in Level 2 are determined by the row where you first choose Option B over Option A in Level 1. Level 2 simply takes the interval between the point where you last chose A and first chose B, and divides that interval of 10 percentage points into 11 narrower intervals. Thus the chance of winning the higher amount in Level 2 increases by intervals of 1-in-100, or 1 percentage point, as you move from decision row 1 to decision row 2.

As you can see, you have a minimum of 10 decisions to make. You will have 21 decisions if you make the kind of decision in Level 1 that moves you to Level 2. Nevertheless, we will pay you for only one of these decisions. After you have made all of your choices we will use the bingo cage to select which decision will be used to determine your payment. To decide which decision row will determine your payment, we will spin the bingo cage you see in this room and withdraw one ball. The bingo cage contains 10 balls, numbered individually from 1 to 10. The number on the bingo ball determines the decision row you will play out. Thus if the number is 2, you will play out decision row 2. If the number is 9, you will play out decision 9. Each decision row is therefore equally likely to be chosen.

In the example above, if the number 4 bingo ball is withdrawn, that will take this person to Level 2 since this person switched from A to B on row 4 in Level 1. In such a case, we will need to add a number 11 ball to the bingo cage and spin the cage again to determine which decision in Level 2 is binding.

Once we know which choice is binding, we will spin the bingo cage that contains 100 balls to see if you will receive the higher amount or the lower amount for the choice that you made. Thus if you chose Option A, you would be paid

the appropriate amount in Option A; if you chose Option B, you would be paid the appropriate amount in Option B.

If the number on the bingo ball corresponds to a row for which you have expressed Indifference, we will first let yet another spin of the bingo cage determine which choice of A or B will determine your earnings. In this case a number between 1 and 50 means that A will be chosen, and a number between 51 and 100 will mean that B is chosen. Hence each option has an equal chance of determining your earnings if you expressed Indifference. This will be done before we spin the bingo cage to determine whether you will be paid the high or the low amount.

Password 2: 2

Practice Examples

EXAMPLE 1

To make these procedures very clear to you we are going to go through a few examples. In these examples we will show you how we will spin the bingo cage and how the number on the bingo ball will determine the decision that is binding and then the payment you will receive. You will not be paid for these practice examples, but they will help you understand how the procedures work when you do make decisions for payment.

As you can see on the screen illustration on page 1, we used a decision table that is already filled in. At this time we ask that you fill in answers on your computer that correspond to this illustration. On the computer you will see only the Level 1 table first. The Level 2 table will be shown on a subsequent screen. When you have finished filling in Level 1, but before you click the submit button at the bottom on the screen, please raise your hand and we will come and verify that you have done it correctly.

PLEASE WAIT UNTIL THE EXPERIMENTER ANNOUNCES THAT THE PRACTICE IS CONTINUING.

Since the illustration is for a case where somebody has selected A for some decision rows and then switched to B in decision row 4, the next screen shows you Level 2. In this illustration Option A was selected in Level 1 when the chance for high earnings was 30-in-100 and Option B was selected when the chance was 40-in-100. So Level 2 corresponds to chances between these two values.

Please fill in answers on your computer that correspond to the illustration of the Level 2 table for Example 1 in your handout. When you have finished filling in the table, but before you click the submit button at the bottom on the screen, please raise your hand and we will come and verify that you have done it correctly.

PLEASE WAIT UNTIL THE EXPERIMENTER ANNOUNCES THAT THE PRACTICE IS CONTINUING.

We are now going to illustrate a number of different possible outcomes from the spin of the bingo cage. Remember that we are going to spin the cage both to determine which decision row is the binding one, and also to determine what the payment is for that row, conditional on the choice between Option A, Option B, and Indifference that you made.

Password 3: 4

EXPERIMENTER SCRIPT

[SUBJECTS USE PRACTICE RECORD SHEETS, AND EXPERIMENT-ER USES A PAPER POSTER BOARD.]

We will first spin the bingo cage with 10 balls to determine which decision row in Level 1 is the binding one for payment. This is just an illustration so we are not paying for these decisions.

[SPIN CAGE WITH 10 BALLS.]

[FOR BALL NOT EQUAL TO 4]

Look at the table on page 1. The number on the bingo ball is X, and it is NOT the first row for which Option B is selected. The decisions made in Level 2 will therefore not matter for the payments. Since the number on the bingo ball is X, the choice made for decision row X is the binding choice.

For decision row X the choice was [A OR B].

Now we will spin the bingo cage with 100 balls to determine whether you would receive the higher amount or the lower amount.

[SPIN CAGE WITH 100 BALLS.]

The number on the bingo ball is Z. Since you chose [A OR B] in decision X, you would be paid [amount].

[SPIN CAGE WITH 100 BALLS 10 TIMES.]

[FOR BALL EQUAL TO 4]

Since the number on the bingo ball is 4, decision row 4 will determine earnings. However, in this illustration decision row 4 is the first row where Option B is chosen, which takes us to Level 2. We will therefore spin the cage again to select the row in Level 2 that will determine earnings.

Since there are 11 rows, we will add a bingo ball with number "11" to the bingo cage.

[SPIN CAGE WITH 11 BALLS.]

Since the number on the bingo ball is X, the choice made for decision row X in Level 2 is the binding choice.

For decision row X the choice was [A OR B].

Now we will spin the bingo cage with 100 balls to determine whether you would receive the higher amount or the lower amount.

[SPIN CAGE WITH 100 BALLS.]

The number on the bingo ball is Z. Since you chose [A OR B] in decision row X of Level 2, you would be paid [amount].
[SPIN CAGE WITH 100 BALLS 10 TIMES.]
[REPEAT EXERCISE ONE MORE TIME AND COVER BOTH EXAMPLES.]

EXAMPLE 2

We have shown you examples of our procedures for the case where an individual chooses A for some decisions and B for others. We also expect some of you will be indifferent between Option A and Option B for some decisions. How will earnings be determined in that case?

The table for Example 2 on page 4 in your handout illustrates a case where someone is indifferent between Option A and Option B at decision 7 and 8.

Please fill in answers on your computer that correspond to this illustration of the decision table. When you have finished filling in the table, but before you click the submit button at the bottom on the screen, please raise your hand and we will come and verify that you have done it correctly.

Again, if you indicate Indifference for any of the decision rows, there will be no further choices to be made by you in this problem before determining your earnings. And we will again spin the bingo cage to select the decision row which will determine your payment. This works exactly as before, except in the case where the spin of the bingo cage selects a decision for which you have indicated you don't care whether you are paid under Option A or Option B. In that case, we will have to spin the bingo cage again to choose whether you will be paid under Option A or Option B for that decision. To make sure you clearly understand this situation, we will now illustrate those procedures.

Password 4: 8

EXPERIMENTER SCRIPT

[SUBJECTS USE PRACTICE RECORD SHEETS, AND EXPERIMENTER USES A PAPER POSTER BOARD.]

We will first spin the bingo cage with 10 balls to determine which decision row in Level 1 is the binding one for payment. This is just an illustration so we are not paying for these decisions.
[SPIN BINGO CAGE WITH 10 BALLS.]
[FOR BALL NOT EQUAL TO INDIFFERENCE ROW (7 OR 8)]

Look at the table on page 4. Since the number on the bingo ball is X, the choice made for decision row X is the binding choice.

For decision row X the choice was [A OR B].

Now we will spin the bingo cage with 100 balls to determine whether you would receive the higher amount or the lower amount.
[SPIN CAGE WITH 100 BALLS.]

The number on the bingo ball is Z. Since you chose [A OR B] in Decision X, you would be paid [amount].

[FOR BALL EQUAL TO INDIFFERENCE ROW (7 OR 8)]

The number of the ball is [7 or 8]. Since the row selected is one for which you made a choice of Indifference, we will need to perform an extra selection before determining whether payments will be based on the high or the low amounts. This extra selection will determine whether Option A or Option B will decide earnings. We will spin the bingo cage with 100 balls, and a number between 1 and 50 means that A will be chosen, and a number between 51 and 100 will mean that B is chosen.
[SPIN CAGE WITH 100 BALLS.]

For decision row X the choice was [A OR B].

Now we will spin the bingo cage with 100 balls to determine whether you would receive the higher amount or the lower amount.
[SPIN CAGE WITH 100 BALLS.]

The number on the bingo ball is Z. Since the option selected was [A OR B], you would be paid [amount].
[REPEAT EXERCISE ONE MORE TIME AND COVER BOTH EXAMPLES.]

EXAMPLE 3
We will now go through one final example. Please refer to pages 6 and 7 in your handouts for screen images of what choices are to be made in this example.

Password 5: 16

EXPERIMENTER SCRIPT

[SUBJECTS USE PRACTICE RECORD SHEETS, AND EXPERIMENTER USES A PAPER POSTER BOARD.]

We will first spin the bingo cage with 10 balls to determine which decision row in Level 1 is the binding one for payment. This is just an illustration so we are not paying for these decisions.
[SPIN CAGE WITH 10 BALLS.]
[FOR BALL NOT EQUAL TO 6]

Look at the table on page 6. The number on the bingo ball is X, and it is NOT the first row for which Option B is selected. The decisions made in Level 2 will therefore not matter for the payments. Since the number on the bingo ball is X, the choice made for decision row X is the binding choice.

For decision row X the choice was [A OR B].

Now we will spin the bingo cage with 100 balls to determine whether you would receive the higher amount or the lower amount.
[SPIN CAGE WITH 100 BALLS.]

The number on the bingo ball is Z. Since you chose [A OR B] in decision X, you would be paid [amount].

[FOR BALL EQUAL TO 6]

Since the number on the bingo ball is 6, decision row 6 will determine earnings. However, in this illustration decision row 6 is the first row where Option B is chosen, which takes us to Level 2. We will therefore spin the cage again to select the row in Level 2 that will determine earnings.

Since there are 11 rows, we will add a bingo ball that is numbered with an "11" to the bingo cage.

[SPIN THE CAGE WITH 11 BALLS.]

[FOR BALL NOT EQUAL TO INDIFFERENCE ROW (3)]

Look at the table on page 7. Since the number on the bingo ball is X, the choice made for decision row X in Level 2 is the binding choice.

For decision row X the choice was [A OR B].

Now we will spin the bingo cage with 100 balls to determine whether you would receive the higher amount or the lower amount.
[SPIN CAGE WITH 100 BALLS.]

The number on the bingo ball is Z. Since you chose [A OR B] in decision X, you would be paid [amount].

[FOR BALL EQUAL TO INDIFFERENCE ROW (3)]

The number of the ball is 3. Since the row selected is the one for which you made the choice of Indifference, we will need to perform an extra selection before determining whether payments will be based on the high or the low amounts. This extra selection will determine whether Option A or Option B will decide earnings. We will spin the bingo cage with 100 balls, and a number between 1 and 50 means that A will be chosen, and a number between 51 and 100 will mean that B is chosen.
[SPIN CAGE WITH 100 BALLS.]

For decision row X in Level 2 the choice was [A OR B].

Now we will spin the bingo cage with 100 balls to determine whether you would receive the higher amount or the lower amount.
[SPIN CAGE WITH 100 BALLS.]

The number on the bingo ball is Z. Since the option selected was [A OR B], you would be paid [amount].
[REPEAT EXERCISE ONE MORE TIME.]

There is one final detail we need to explain. You will be asked to complete <u>four</u> decision problems as explained above. These four decision problems will be exactly the same except that the high and low amounts will differ. Although you will complete four problems, we will not pay you for all four problems. After you have completed the entire set of decision problems we will need to

spin the bingo cage again to determine which of the problems we will use for your payment.

If the bingo ball is numbered 1 to 25, you will be paid for problem 1.

If the bingo ball is numbered 26 to 50, you will be paid for problem 2.

If the bingo ball is numbered 51 to 75, you will be paid for problem 3.

If the bingo ball is numbered 76 to 100, you will be paid for problem 4.

Once we have selected that problem, we will then spin the bingo cages as explained above.

It is important to understand that you will have to finish making your choices for all four problems before we start spinning the bingo cages. In addition, in each of the four decision problems there may be up to three levels of tables rather than just two levels.

Are there any questions?

To further illustrate our procedures, we will now continue with an example where the payments are indicated in chocolate kisses. You will be asked to make choices in one problem. After you have completed your choices we will perform all the draws using the bingo cages to determine your payments.

Each person will have a 1-in-10 chance of receiving the chocolate kisses. The selection will be done using a ten-sided die. If the number 0 is drawn you will receive the chocolate immediately. If any other number is drawn you will not receive the chocolate.

Password 6: test

EXPERIMENTER SCRIPT

[EXPERIMENTER USES RECORD SHEETS AND PAPER POSTER BOARD.]

The next two images that appear on the computer screen show the results of your choices and will help us determine your earnings. All records will be linked to an anonymous ID number only.

We will first spin the bingo cage to determine which decision rows in Level 1 and Level 2 are the binding ones for payment.

[SPIN CAGE WITH 10 BALLS.]

[SPIN CAGE WITH 11 BALLS.]

We will next spin the bingo cage with 100 balls to determine whether Option A or Option B will decide earnings in case you are indifferent. A number between 1 and 50 means that A will be chosen, and a number between 51 and 100 will mean that B is chosen.

[SPIN CAGE WITH 100 BALLS.]

We will then spin the bingo cage with 100 balls to determine whether you will receive the higher amount or the lower amount.

[SPIN CAGE WITH 100 BALLS.]

Finally, we will now come around and roll the ten-sided die to determine who will receive the chocolate kisses. If the number 0 is drawn you will receive the chocolate immediately. If any other number is drawn you will not receive the chocolate.

[ROLL TEN-SIDED DIE FOR EACH PERSON.]

Password 7: test

This is the end of all the practices. We will now proceed with Part II of the experiment. Recall that you will be asked to make choices in 4 problems, like the ones we have been demonstrating. Each of these four decision problems may consist of up to three levels of tables to fill in. After you have completed all 4 problems, we will perform the draws using the bingo cages to determine your payments for this part.

Each person will have a 1-in-10 chance of receiving the money. The selection will be done using a ten-sided die. If the number 0 is drawn you will receive the money at the end of the meeting. If any other number is drawn you will not receive the money. All payments are made in private so other persons will not know your decisions.

Password 8: ra

EXPERIMENTER SCRIPT

[EXPERIMENTER USES RECORD SHEETS AND PAPER POSTER BOARD.]

We will first spin the bingo cage with 100 balls to determine which of the four problems we will use for your payment.

If the bingo ball is numbered 1 to 25, you will be paid for problem 1.

If the bingo ball is numbered 26 to 50, you will be paid for problem 2.

If the bingo ball is numbered 51 to 75, you will be paid for problem 3.

If the bingo ball is numbered 76 to 100, you will be paid for problem 4.

[SPIN CAGE WITH 100 BALLS.]

We will next spin the bingo cage to determine which decision rows in Level 1 and Level 2 are the binding ones for payment.

[SPIN CAGE WITH 10 BALLS.]

[SPIN CAGE WITH 11 BALLS.]

We will next spin the bingo cage with 100 balls to determine whether Option A or Option B will decide earnings in case you are indifferent. A number between 1 and 50 means that A will be chosen, and a number between 51 and 100 will mean that B is chosen.

[SPIN CAGE WITH 100 BALLS.]

We will then spin the bingo cage with 100 balls to determine whether you will receive the higher amount or the lower amount.

[SPIN CAGE WITH 100 BALLS.]

Finally, we will now come around and roll the ten-sided die to determine who will receive the money. If the number 0 is drawn you will receive the money at the end of the meeting. If any other number is drawn you will not receive the money.

[ROLL TEN-SIDED DIE FOR EACH PERSON.]

I will now come around and enter your subject ID numbers on the computers. We will then read through the instructions together. Please wait for me to finish.

[Give handouts for Part III to subjects: computer screen examples.]

Instructions for Part III

We will now begin Part III of the experiment.

Each person in this room will have a chance to receive an additional large sum of money. If you are selected to receive this sum of money, you will have a choice between two payment options: Option A or Option B. Each person will have a 1-in-10 chance of receiving the money. The selection will be done using a ten-sided die. If the number 0 is drawn you will receive the money. If any other number is drawn you will not receive the money.

As in Part II of the experiment, you will be asked to make a series of choices in a decision problem which may have multiple levels. The table shown on page 1 in the handout is an illustration of what Level 1 of the decision problem will look like on your computer screen. This handout contains another screen image that we will mention later.

This screen illustration shows ten decisions listed on the left side, in the column marked **Decision**. Each decision is a paired choice between Option A and Option B. You will be asked to make a choice between these two payment options in each decision row. In this example each of the 10 decision rows will pay **$100** one month from today (Option A) and **$100** + **$X** seven months from today (Option B), where **$X** differs in each decision row.

In the table there are two columns labeled "*Annual Interest Rate*" and "*Annual Effective Interest Rate*." To explain these terms, let us consider the following payoff alternative (decision row 4 in the table):

Option A pays $100.00 one month from today.

Option B pays $110.25 seven months from today.

In this example, if you choose Option B you will earn an annual interest rate of 20.00% on the $100 you choose to receive 7 months from today. Since this is compounded quarterly your annual effective interest rate is 21.55%. (Quarterly compounding is consistent with general banking practices on overdraft accounts.) The annual *effective* interest rate is the rate earned on the initial balance ($100 in this example) plus interest earned on all interest accumulated in the preceding compounding periods.

For each decision row, you will be asked to choose Option A or Option B by clicking on the appropriate button. For some decision you may not care whether you receive Option A or B, in which case you should click the button labeled "I" for "Indifference."

If you select Option A for all decision rows, or if you indicate Indifference for any of the decision rows, there will be no further choices to be made by you in this problem before determining your earnings.

If you select Option B for all decisions rows, or if you switch from Option A to Option B at some point, we will give you a Level 2 task before determining your earnings. The Level 2 task involves making choices in the table illustrated on page 2 in the handout.

The Level 2 table shows you eleven other decisions listed in a similar way. They are arranged in the same way as the ten decisions in the Level 1 table, but they focus in on the decisions that were made in Level 1.

Assume that someone in Level 1 has selected Option A for rows 1–5 and Option B for rows 6–10. This means that this person prefers Option A when the annual interest rate is 25% or less, but prefers Option B when the annual interest rate is 30% or more. Level 2 then asks this person to choose between Option A and Option B for annual interest rates between 25% and 30%. Thus, row 1 in Level 2 corresponds to an annual interest rate of 25%, and row 2 to an annual interest rate of 25.5%, and so on until the last row shows an annual interest rate of 30%. Thus Level 2 just provides more detail in the range of choices this person indicatedin Level 1.

Notice that the annual interest rate in Level 1 increases by intervals of 5 percentage points, as you move from decision row 1 to decision row 2. The same increase in annual interest rates applies to each row in Level 1. Notice also that the decisions displayed in Level 2 are determined by the row where you first choose Option B over Option A in Level 1. Level 2 simply takes the interval between the point where you last chose A and first chose B, and divides that interval of 5 percentage points into 11 narrower intervals.

As you can see, you have a minimum of 10 decisions to make. You will have 21 decisions if you make the kind of decision in Level 1 that moves you to Level 2. Nevertheless, we will pay you for only one of these decisions. After you have made all of your choices we will again use the bingo cage to select which decision will be used to determine your payment. These procedures will work in exactly the same way as in Part II of the experiment.

There is one final detail we need to explain. You will be asked to complete six decision problems as explained above. These six decisions will be exactly the

same except that the payment date for Option B will differ. Although you will complete six problems, we will not pay you for all six problems. After you have completed the entire set of decision problems we will need to spin the bingo cage with six balls numbered from 1 to 6 to determine which of the problems we will use for your payment.

Once we have selected that problem, we will then spin the bingo cages as explained above.

It is important to understand that you will have to finish making your choices for all six problems before we start spinning the bingo cages. In addition, for each of the six decision problems there may be up to three levels of tables rather than just two levels.

HOW WILL YOU BE PAID?

You will receive a certificate which is redeemable under the conditions dictated by your chosen payment option under the selected payoff alternative. This certificate is issued by the Ministry of Economic and Business Affairs and guarantees that the money is automatically transported from the Ministry's bank account in Sydbank to your personal bank account. You can send the certificate to Sydbank in a prepaid envelope, and the bank will handle the administration of the money transports. Please note that all payments are subject to personal income tax, and information on all payments to participants will be given to the tax authorities by the Ministry of Economic and Business Affairs.

We will now proceed with Part III of the experiment. Recall that you will be asked to make choices in six problems, like the one we have demonstrated. In each of the six problems you may have up to three levels of tables to fill in. After you have completed all six problems, we will perform the draws using the bingo cages to determine your payments for this part.

Each person will have a 1-in-10 chance of receiving the money. The selection will be done using a ten-sided die. If the number 0 is drawn you will receive the money at the agreed date. If any other number is drawn you will not receive the money. All payments are made in private so other persons will not know your decisions.

Password 9: 32

Password 10: idr

EXPERIMENTER SCRIPT

[EXPERIMENTER USES RECORD SHEETS AND PAPER POSTER BOARD.]

We will first spin the bingo cage with six balls to determine which of the six problems we will use for your payment.

[SPIN CAGE WITH 6 BALLS.]

We will next spin the bingo cage to determine which decision rows in Level 1, Level 2, and Level 3 are the binding ones for payment.

[SPIN CAGE WITH 10 BALLS.]
[SPIN CAGE WITH 11 BALLS.]
[SPIN CAGE WITH 11 BALLS.]

We will next spin the bingo cage with 100 balls to determine whether Option A or Option B will decide earnings in case you are indifferent. A number between 1 and 50 means that A will be chosen, and a number between 51 and 100 will mean that B is chosen.

[SPIN CAGE WITH 100 BALLS.]

Finally, we will now come around and roll the ten-sided die to determine who will receive the money. If the number 0 is drawn you will receive the money at the agreed date. If any other number is drawn you will not receive the money.

[ROLL TEN-SIDED DIE FOR EACH PERSON.]

Password 10: idr

At this time we ask that you answer the questions for Part IV. This information is for our records only and confidentiality of your responses is assured. Just click the OK button to go on.

This is the end of the survey. When everyone has answered the questions, we will ask you to step aside for a moment and then call you back in, one at a time, to pay you in private.

Thank you for participating in the survey.

APPENDIX D: Data and Statistical Analysis

The statistical modeling is implemented using version 10.0 of *Stata*. All data files and *Stata* command files are contained in the archive RiskAndTime.zip.

The main program is called RiskAndTime.do, and it undertakes all analyses and generates all figures. The program calls the *Stata* program Data.do to read in the raw data, and then Setup.do to set the data up in the format needed for the statistical analysis. It then reads in the maximum likelihood functions, which are contained in files called MLfunctions.do and MLfunctionsR.do. The analysis is contained in the programs Analysis.do and AnalysisR.do. Some options can be changed using "globals" within the program, but the default settings correspond to those used in the paper.

The likelihood functions are implemented using the powerful -ml- command in *Stata*, which allows the analyst to write out their own likelihood functions. Complete documentation of the syntax used is contained in Harrison (2006).

The computation of the estimates using maximum simulated likelihood, from Section 3.B of the paper, can be time-consuming. We have access to *Stata/MP* for up to four parallel processors, and obviously that speeds up calculations. The program is set up to use up to four processors if you have them, but will run on less if you have less available. In any event, expect to let the maximum simulated likelihood calculations run overnight.

The calculation of background consumption ω is based on detailed data on annual household consumption expenditures collected by Statistics Denmark for the period 2002, 2003, and 2004. The spreadsheet "Eliciting Risk and Time Preferences—Annual Danish Household Consumption.xls" in our data archive contains these data. It shows how we allocated detailed items to discretionary expenditure categories appropriate for this purpose, and that these items sum to 118 DKK. We note that item 9921, expenditures on Prostitution, is exactly zero, which may help explain why Danes are among the happiest people in the world (using the conventional survey measures of "happiness").

APPENDIX E: THEORETICAL NOTES

Equation (1) in Section 2.A specifies an indifference condition defining the discount rate for an exponential discounting specification. That condition allows for background consumption ω, but does not include the assumptions about the manner in which delayed experimental income is spread over several days ($\lambda > 1$) and integrated into baseline consumption, proposed in Sections 2.C and 2.D. In these notes we write out the full model underlying this condition when we allow for background consumption ω *and* spreading of delayed experimental income over λ days, and show that (1) is a special case in which $\lambda = 1$.

Subjects are given a choice between receiving an amount M_t at date t and an amount $M_{t+\tau}$ at date $t + \tau$. Time is discrete, starting in period 0 and going up to period T. We will refer to M_t as the sooner option (S) and to $M_{t+\tau}$ as the later option (L), with $t > 0$ due to the front end delay. Let ω be background consumption which is available in each time period and let $\lambda > 1$ be the time period over which the subject spends the income from the experiment. For simplicity we assume that the subject does not earn interest on delayed consumption during the time period λ where he spends the money. For example, if the subject decides to spend the income over 7 days we assume that he withdraws the entire amount of money from the bank on the first day and spends the cash during this time period. However, one would have to explicitly consider interest rate payments during the period of consumption if larger amounts are at stake and consumption therefore is smoothed over a longer period of time, say a month or longer.

If the subject chooses option S then the subject gets utility from that money plus background consumption ω from period t through $t + \lambda - 1$, and gets utility only from background consumption ω for all other time periods. Conversely, if the subject chooses L, then the subject gets utility from background consumption ω and the money during the period from $t + \tau$ to $t + \tau + \lambda - 1$, and gets utility only from background consumption for all other time periods, including t. Figures E.1 and E.2 illustrate the consumption path if the subject chooses the sooner option S or the later option L; the two figures differ only in terms of the relationship between λ and τ. The "trick" here is to use the sign function to correctly add or remove periods, whether λ is larger or smaller than τ.

Consider first the discounted utility from option S or option L when the subject receives the augmented income flow from the experimental payout. This is the "hump" in each option in Figure E.1. If the subject chooses option S, then the following discounted utility stream is received from the background consumption ω and the money M_t spread over λ periods starting from period t:

$$S'' = \sum_{i=t}^{t+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] U\left(\omega + \frac{M_t}{\lambda} \right).$$
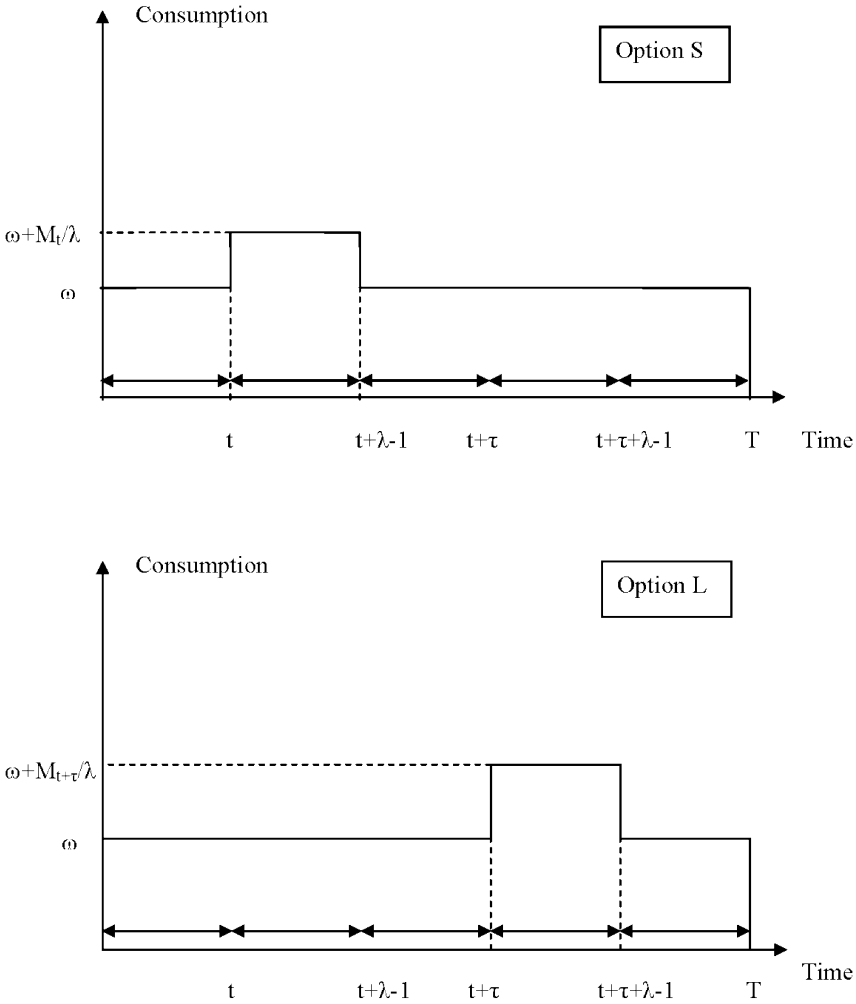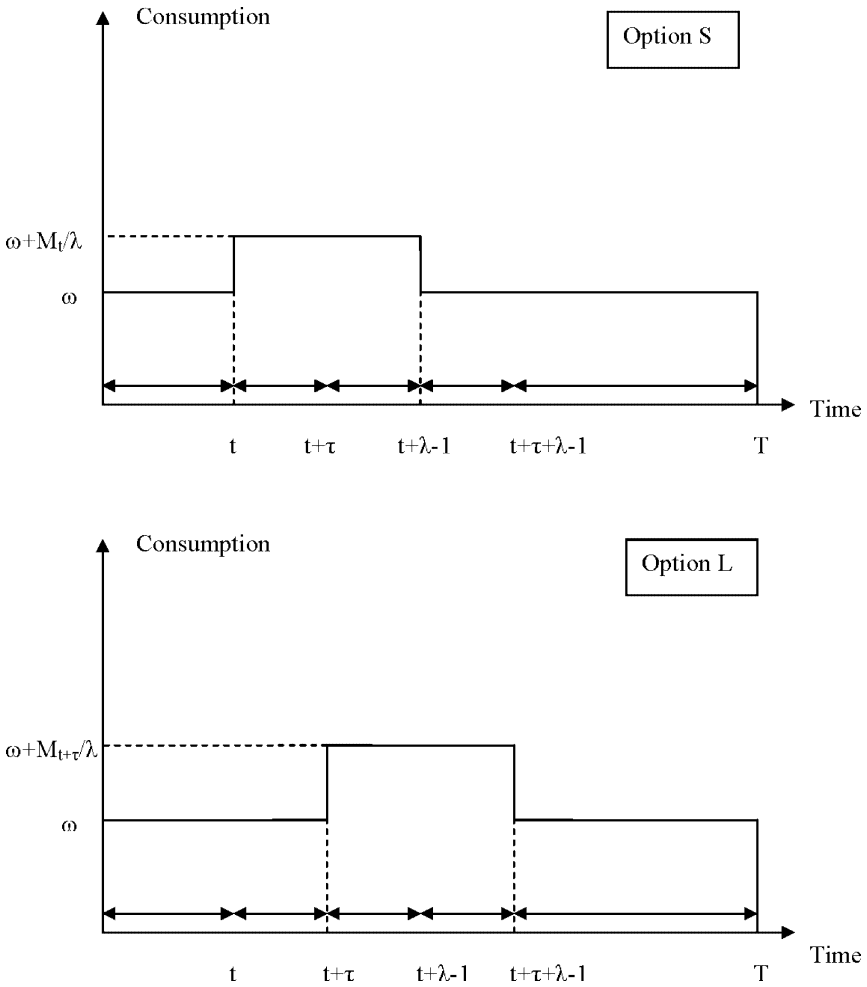
FIGURE E.1.—Illustration of consumption paths with $\lambda < \tau$.

This is the sum of the discounted utilities over the λ consumption periods, discounted back to time period 0 when the choice is made. On the other hand, if the subject chooses option L, then the following discounted utility stream is received from the background consumption ω and the money $M_{t+\tau}$ spread over λ periods starting from period $t + \tau$:

$$L'' = \sum_{i=t+\tau}^{t+\tau+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] U \left(\omega + \frac{M_{t+\tau}}{\lambda} \right).$$

FIGURE E.2.—Illustration of consumption paths with $\lambda > \tau$.

Independent of the choice of option S or option L, in all other time periods than the payment period the subject will receive the discounted utility stream of the background consumption ω only. When the subject chooses option S the discounted utility stream for the time period between 1 and $t - 1$ is

$$S' = \sum_{i=1}^{t-1} \left[\frac{1}{(1+\delta)^i} \right] U(\omega).$$

Similarly, from period $t + \lambda$ onward,

$$S''' = \sum_{i=t+\lambda}^{T} \left[\frac{1}{(1+\delta)^i} \right] U(\omega).$$

Similarly, when the subject chooses option L the discounted utility stream for the time period between 1 and $t + \tau - 1$ would be

$$L' = \sum_{i=1}^{t+\tau-1} \left[\frac{1}{(1+\delta)^i} \right] U(\omega).$$

Similarly, from period $t + \tau + \lambda$ onward,

$$L''' = \sum_{i=t+\tau+\lambda}^{T} \left[\frac{1}{(1+\delta)^i} \right] U(\omega).$$

Thus when choosing S, the subject receives total discounted utility from this choice of $S' + S'' + S'''$, and when choosing L he receives $L' + L'' + L'''$. The subject is indifferent between the sooner and later amounts of money if and only if $S' + S'' + S''' = L' + L'' + L'''$. The expression can be simplified further by rearranging to $S'' + (S''' - L''') = (L' - S') + L''$:

$$\sum_{i=t}^{t+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] U\left(\omega + \frac{M_t}{\lambda} \right) + \sum_{i=t+\lambda}^{t+\tau+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] U(\omega)$$

$$= \sum_{i=t+\tau}^{t+\tau+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] U\left(\omega + \frac{M_{t+\tau}}{\lambda} \right) + \sum_{i=t}^{t+\tau-1} \left[\frac{1}{(1+\delta)^i} \right] U(\omega).$$

Now rewrite the second term as

$$\sum_{i=t+\lambda}^{t+\tau+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] U(\omega)$$

$$= \left(\text{sign}(\tau - \lambda) \sum_{i=t+\tau}^{t+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] + \frac{1}{(1+\delta)^\tau} \sum_{i=t}^{t+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] \right) U(\omega)$$

and the fourth term as

$$\sum_{i=t}^{t+\tau-1} \left[\frac{1}{(1+\delta)^i} \right] U(\omega)$$

$$= \left(\text{sign}(\tau - \lambda) \sum_{i=t+\tau}^{t+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] + \sum_{i=t}^{t+\lambda-1} \left[\frac{1}{(1+\delta)^i} \right] \right) U(\omega).$$

Notice that λ *could* be bigger than τ. We are either making the summation period "larger" ("smaller") if τ is smaller (larger) than λ, but we are both adding and subtracting the same periods to each equation. The sign functions drop out and we can simplify the equation to

$$\sum_{i=t}^{t+\lambda-1}\left[\frac{1}{(1+\delta)^i}\right]U\left(\omega+\frac{M_t}{\lambda}\right)+\left(\frac{1}{(1+\delta)^\tau}\right)\sum_{i=t}^{t+\lambda-1}\left[\frac{1}{(1+\delta)^i}\right]U(\omega)$$

$$=\left(\frac{1}{(1+\delta)^\tau}\right)\sum_{i=t}^{t+\lambda-1}\left[\frac{1}{(1+\delta)^i}\right]U\left(\omega+\frac{M_{t+\tau}}{\lambda}\right)$$

$$+\sum_{i=t}^{t+\lambda-1}\left[\frac{1}{(1+\delta)^i}\right]U(\omega).$$

Dividing by the common term, the indifference relation can be written as

$$U\left(\omega+\frac{M_t}{\lambda}\right)+\left[\frac{1}{(1+\delta)^\tau}\right]U(\omega)$$

$$=U(\omega)+\left[\frac{1}{(1+\delta)^\tau}\right]U\left(\omega+\frac{M_{t+\tau}}{\lambda}\right).$$

One property of the specification, referred to in Section 2.B of the paper, is that the discount rate is positive for $r \neq 1$.

To see this, let M_1 and M_2 be income in period 1 and 2, respectively. The subject is indifferent between the two amounts if and only if

$$(\omega+M_1)^{(1-r)}+(1/(1+\delta))\omega^{(1-r)}$$
$$=\omega^{(1-r)}+(1/(1+\delta))(\omega+M_2)^{(1-r)}$$

and a few steps of algebra give

$$\psi=1/(1+\delta)=\left((\omega+M_1)^{(1-r)}-\omega^{(1-r)}\right)\big/\left((\omega+M_2)^{(1-r)}-\omega^{(1-r)}\right).$$

Since $M_1 < M_2$ it is clear that the discount factor $\psi < 1$ for $r \neq 1$. In the special case where $r = 1$, the CRRA specification is replaced by a log-normal utility function. In this case the discount factor is determined by

$$\psi=1/(1+\delta)=(\ln(\omega+M_1)-\ln(\omega))/(\ln(\omega+M_2)-\ln(\omega))$$

and $\psi < 1$ for $M_1 < M_2$.

Dept. of Economics and Centre for Economic and Business Research, Copenhagen Business School, Copenhagen, Denmark; sa.eco@cbs.dk,

Dept. of Economics, College of Business Administration, University of Central Florida, Orlando, FL 32816, U.S.A. and Durham Business School, Durham University, Durham, U.K.; gharrison@research.bus.ucf.edu,

Dept. of Economics and Finance, Durham Business School, Durham University, Durham, U.K.; m.i.lau@durham.ac.uk,

and

Dept. of Economics, College of Business Administration, University of Central Florida, Orlando, FL 32816, U.S.A.; erutstrom@bus.ucf.edu.

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