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September 26, 2012

Paper # 12-23

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Measuring risk aversion with lists: A new bias

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Forthcoming in *Theory and Decision*, Manuscript Number THEO1357R1

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ABSTRACT

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KEY WORDS: Risk aversion, risk attitudes, experiments, lists, elicitation method, Holt, Laury, Abdellaoui, Driouchi, l'Haridon, independence axiom, probability weighting.

JEL Classification Number: C 91

Measuring risk aversion with lists: A new bias *

1. Introduction

Various experimental procedures aimed at eliciting information on risk attitudes involve a list of pairs of alternative prospects. The present paper investigates the robustness of such procedures with respect to the removal of some pairs from the list.

Specifically, we study the widely used method by Holt and Laury (2002) [HL in what follows] and the new method proposed by Abdellaoui *et al*. (2011) [ADH in what follows], also based on lists of pairs of prospects, and enquire whether the removal of some pairs from their list affects the choices made by experimental subjects.[1] While having many things in common, both methods differ substantively. Following Farquhar (1984) classification, the HL procedure can be described as a *probability equivalence* method, while the ADH procedure can be considered a *certainty equivalence* method.

Both methods for assessing individual risk are subject to several biases discussed in the literature (see Hershey and Schoemaker, 1985). In particular, any probability equivalence method measures risk preferences by means of a probability scale, which may distort the results due to *probability weighting* when subjects have non-expected utility preferences (e. g., Wakker and Deneffe, 1996, Drichoutis and Lusk, 2012, Fehr-Duda and Epper, 2012).[2] In fact, Fehr-Duda *et al.*, (2010) show that the probability weighting function itself may vary with the amounts at stake.

On the other hand, if a certainty equivalence method is used, a *certainty effect* (Hershey *et al*., 1982, McCord and Neufville, 1986) may bias the risk assessment towards more risk aversion whenever subjects have non-expected utility preferences. Both the HL and ADH procedures, in addition, may suffer from the disadvantages of multiple-price lists (Andersen *et al*., 2006): multiple-price lists create a frame that may bias the experimental subjects towards the middle of the list.

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* We acknowledge financial support from the Spanish *Ministerio de Educación y Ciencia* under research project SAJ2005-03891/ECON. We have benefited from an excellent referee report, and we are indebted to our colleagues Michael Greenacre and Albert Satorra for help in the statistical analyses.

[1] According to Drichoutis and Lusk (2012), Holt and Laury (2002) is the third most highly cited paper published by the *American Economic Review* and their work has been cited more than 1,500 times according to Google scholar.

[2] Bruhin *et al*. (2010) estimate that "roughly 80% of the subjects [in three different experimental data sets] exhibit significant deviations from linear probability weighting."

It has already been noted that, in the HL procedure, the order in which the treatments are implemented may confound the results (Harrison *et al*., 2005; see also Holt and Laury, 2005). Andersen *et al*. (2006) modify the standard HL list and "break its symmetry" by constructing two skewed lists, which they call *skewHI* and *skewLO*. They observe that while *skewHI* yields the same estimated coefficients of relative risk aversion, as does *skewLO* when it breaks the symmetry of the standard HL list, *skewLO* reduces the estimated coefficient for two variations of the HL method. Dave *et al*. (2010) consider the advantages and disadvantages of differing degrees of difficulty depending on the characteristics of the subjects. Lévy-Garboua *et al.* (2012) test the effects of simultaneous vs. sequential decisions, as well as of order, on the frequency of inconsistent behaviors. Beauchamp *et al.* (2012) find that manipulating the intermediate sure payoff in a list robustly changes measured risk preferences. Other framing effects are reported in Isaac and James (2000).

In this paper we observe a new bias that we uncover by removing some pairs at the beginning and/or the end of the lists presented to the experimental subjects. We first consider the HL procedure: we find that the removal of better, end-of-list, pairs reduces the frequency of risk-averse choices relative to the whole list. The observed dependence, within subjects, of the risk attitude in a particular pair of prospects on the list where the pair is embedded *violates the independence axiom*. It follows that the expected utility hypothesis is violated, and hence Holt and Laury's (2002) numerical estimation of the degree of risk aversion based on von Neumann-Morgenstern (vNM) utility functions is invalid. At the more fundamental level, we also find that subjects may switch between risk aversion and attraction in a particular pair depending on the list in which the pair is embedded: different subjects may switch in different directions, therefore *failing to preserve any individual rankings by risk aversion*.

Since decisions depend on how the different prospects are embedded in a list, we call this confound an *embedding bias*. This confound is quite distinct from the ones reported in the abovementioned literature. We, in particular, find that the way the list is ordered plays no role, and find no evidence of middle-of-the-list effects.

The embedding bias, together with other findings in the literature with the same flavor, may suggest a more general idea that the inclusion of better prospects in a list of choices favors risk aversion. But it cannot be a universal principle. We conduct similar robustness checks on the ADH procedure and find no evidence of such a bias: the frequency of risk-averse choices for a given pair of the list is statistically invariant with respect to the deletion of other items.[3]

Our results on the embedding bias are cast in terms of the frequency of risk-averse choices, and hence they are model independent: they do not explicitly or implicitly rest on assumptions often postulated in quantifying risk aversion (such as expected utility, or, equivalently, the independence axiom, or particular hypotheses on non-expected utility), not to mention specific functional forms for utility, value or probability weighting functions.

2. The Holt & Laury method

2.1. Purpose

Holt and Laury state (2002, p. 1645) that they "present subjects with a menu of choices that permits measurement of the degree of risk aversion, and also estimation of its functional form." In order to measure the degree of risk aversion, they first match (Table 3, p. 1649) the subjects' choices to risk aversion intervals based on the CRRA (*constant relative risk aversion*) vNM utility function $x^{1-r}/(1-r)$ (the variable *x* is the *ex post* amount of money, and the parameter *r* is the coefficient of relative risk aversion). The last pages of the paper report maximum-likelihood estimates of the parameters *r* and α of the vNM function $(1-\exp(-\alpha x^{1-r})/\alpha$, first proposed by Saha (1993).

2.2. Description of the Holt and Laury method

Subjects in HL (2002) face a list of *ten* pairs of binary lotteries, which we can number from one to ten as in Table 1 below, each pair involving a "safe" lottery (*S*) and a "risky" one (*R*). The terms "safe" and "risky," used by HL (2002), must be understood in a loose sense and relative to each other: in a given pair, lottery *R* gives a larger good payoff, but a lower bad payoff, than *S*.[4] The two lotteries in a pair entail the same probabilities for the good and bad payoffs, and their expected

[3] Also, our own method (Bosch-Domènech and Silvestre, 1999, 2006*a*, *b*, *c*, 2010) for eliciting risk attitudes does not display a statistically significant embedding effect. Our method shares two features with ADH: one of the options in each pair is a certain amount of money, and the probabilities of the other option, a nondegenerate lottery, are fixed. One difference between our method and ADH's one is that we change the quantities of both the certain option and the nondegenerate lottery in each pair and keep actuarial fairness between them, while in the ADH method only the quantities of the certain option vary.

[4] The lotteries were labeled *A* and *B*, instead of *S* and *R*, for the experimental subjects.

values are different, i. e., *R* is not a mean-preserving spread of *S*. Consequently, HL (2002) does not test for “strong” risk aversion which, except under special assumptions, is a more restrictive condition than (weak) risk aversion, see, e. g., Wakker (2010, pp. 75-76).

All *S* lotteries offer the same payoffs, namely $2 and $1.60, but with varying probabilities. An *S* lottery with a high lottery-pair number first-order stochastically dominates any *S* lottery with a lower number, since it gives the larger payoff ($2) with higher probability. The list of *R* lotteries displays exactly the same feature. Hence, a lottery pair with a higher number offers an unambiguously better prospect than one with a lower number.

Of course, first-order stochastic dominance implies higher expected value. The last three columns in Table 1 (not shown to the experimental subjects) indicate the expected dollar values of the safe lottery in the pair (denoted EV^S) and that of the risky lottery (denoted EV^R), as well as the difference between the two. A risk-neutral individual would select the compound choice *SSSS*/*RRRRRR*. Thus, a subject who selects *SSSSS/RRRRR* displays risk aversion.

2.3. Our experimental design: Changing list length in Holt and Laury

Design. We designed five treatments, numbered 1 to 5, and carried them out in six sessions, labeled *A* to *F*. Our Treatment 1 is the control treatment, where subjects face the complete list of Table 1, with euro payoffs obtained by multiplying by three the dollar amounts of Table 1. These payoffs were maintained in all treatments.

In treatments 2 to 5 we ran the experiment with lists of *seven* (lottery) pairs where some of the better pairs and/or some of the worse pairs of Table 1 (three in total) have been eliminated.

Specifically, in Treatment 2, each subject faced the seven-pair list obtained by deleting the first three rows of Table 1. In Treatment 3, each subject faced the seven-pair list obtained by deleting rows 1, 2 and 10 of Table 1. In Treatment 4, each subject faced the seven-pair list obtained by deleting rows 1, 9 and 10 of Table 1. Finally, in Treatment 5 each subject faced the seven-pair list described in Table 2 and obtained by deleting the last three rows from Table 1. We were particularly interested in the decisions for pairs 4 to 7, which are present in all five treatments.

Lottery Pair #	Safe Lottery (*S*)				Risky Lottery (*R*)						
	Prob.	Payoff	Prob.	Payoff	Prob.	Payoff	Prob.	Payoff	EV^S	EV^R	Difference
1	0.1	$2	0.9	$1.60	0.1	$3.85	0.9	$0.10	$1.64	$0.48	$1.17
2	0.2	$2	0.8	$1.60	0.2	$3.85	0.8	$0.10	$1.68	$0.85	$0.83
3	0.3	$2	0.7	$1.60	0.3	$3.85	0.7	$0.10	$1.72	$1.23	$0.49
4	0.4	$2	0.6	$1.60	0.4	$3.85	0.6	$0.10	$1.76	$1.60	$0.16
5	0.5	$2	0.5	$1.60	0.5	$3.85	0.5	$0.10	$1.80	$1.98	−$0.17
6	0.6	$2	0.4	$1.60	0.6	$3.85	0.4	$0.10	$1.84	$2.35	−$0.51
7	0.7	$2	0.3	$1.60	0.7	$3.85	0.3	$0.10	$1.88	$2.73	−$0.84
8	0.8	$2	0.2	$1.60	0.8	$3.85	0.2	$0.10	$1.92	$3.10	−$1.18
9	0.9	$2	0.1	$1.60	0.9	$3.85	0.1	$0.10	$1.96	$3.48	−$1.52
10	1	$2	0	$1.60	1	$3.85	0	$0.10	$2.00	$3.85	−$1.85

Table 1. Design of the Holt and Laury (2002) experiments (adapted from Harrison *et al*., 2005).

Lottery Pair #	Safe Lottery (*S*)				Risky Lottery (*R*)						
	Prob.	Payoff	Prob.	Payoff	Prob.	Payoff	Prob.	Payoff	EV^S	EV^R	Difference
1	0.1	$2	0.9	$1.60	0.1	$3.85	0.9	$0.10	$1.64	$0.48	$1.17
2	0.2	$2	0.8	$1.60	0.2	$3.85	0.8	$0.10	$1.68	$0.85	$0.83
3	0.3	$2	0.7	$1.60	0.3	$3.85	0.7	$0.10	$1.72	$1.23	$0.49
4	0.4	$2	0.6	$1.60	0.4	$3.85	0.6	$0.10	$1.76	$1.60	$0.16
5	0.5	$2	0.5	$1.60	0.5	$3.85	0.5	$0.10	$1.80	$1.98	−$0.17
6	0.6	$2	0.4	$1.60	0.6	$3.85	0.4	$0.10	$1.84	$2.35	−$0.51
7	0.7	$2	0.3	$1.60	0.7	$3.85	0.3	$0.10	$1.88	$2.73	−$0.84
~~**8**~~	~~0.8~~	~~$2~~	~~0.2~~	~~$1.60~~	~~0.8~~	~~$3.85~~	~~0.2~~	~~$0.10~~	~~$1.92~~	~~$3.10~~	~~−$1.18~~
~~**9**~~	~~0.9~~	~~$2~~	~~0.1~~	~~$1.60~~	~~0.9~~	~~$3.85~~	~~0.1~~	~~$0.10~~	~~$1.96~~	~~$3.48~~	~~−$1.52~~
~~**10**~~	~~1~~	~~$2~~	~~0~~	~~$1.60~~	~~1~~	~~$3.85~~	~~0~~	~~$0.10~~	~~$2.00~~	~~$3.85~~	~~−$1.85~~

Table 2. The deletion of the last three rows of Table 1.

Because of concern for the possible influence of the order in which the treatments are performed, we scrambled them and repeated one as a “return to baseline.” For instance, Treatment 1 preceded Treatment 5 three times while followed it four times. In each session, we ran four different treatments in the following orders.

Session *A*, with 28 subjects, implemented treatments 5, 3, 2, 1, 5;

Session *B*, with 24 subjects, treatments 2, 4, 5, 1, 2;

Session *C* with 21 subjects, treatments 1, 5, 3, 2, 1;

Session *D*, with 24 subjects, treatments 3, 5, 2, 1, 3;

Session *E*, with 22 subjects, treatments 4, 1, 2, 3, 4;

and Session *F*, with 26 subjects, treatments 1, 4, 2, 5, 4.

Subjects. The subjects (totaling 145) were undergraduate students from *Universitat Pompeu Fabra* who volunteered.

Procedure. All the sessions were run manually. After the instructions were read and all questions answered, each subject in a session received ten pages (or seven, depending on the treatment) stapled together, each page containing one of the ten (or seven) lottery pairs corresponding to the first treatment in the session. As indicated above, the two lotteries in each pair, safe and risky, were called *A* and *B* in the experiment. Once the subjects had chosen either *A* or *B* in each page of the first treatment, the set of pages was collected and the next set of pages in the session was provided. The session finished when all five sets of stapled pages in the session had been completed by the subjects.

Earnings. Subjects were told that in order to compute their earnings at the end of the session, each of them individually would randomly select two of the five sets by drawing two numbers from an urn containing five numbers. Next, one pair in each of the two selected sets would be randomly chosen again by the subject herself (i. e., himself or herself) by drawing, for each of the two sets, one number from an urn containing as many numbers as pairs in the set (7 or 10). Finally, by means of a 10-sided die, the lotteries of the two selected pairs would be realized sequentially, and the subject would be paid according to her choices of *A* or *B* in each lottery pair. The sessions lasted about 45 minutes, but the individual payment procedure took an additional 30 minutes for some subjects.

2.4. Including better (end-of-list) pairs favors risk aversion

Tables A1 to A6 in Appendix A present the raw experimental data for sessions *A* to *F*. We can visualize the overall outcomes in Table 3, which displays the rate of safe choices per pair and treatment aggregated over Sessions *A* to *F*. [5]

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[5] As is common when applying the HL method, we disregard the compound choices of the few subjects who switch to *S* after having already chosen *R* in a pair, i. e., of the form (…*RS*…). These compound choices can be shown to be inconsistent in the sense of being first-order stochastically dominated by the compound choice obtained by replacing the *RS* pair by *SR*.

Formally, and ignoring for the moment the last two columns, the entry in Table 3 for Pair *j* (*j* = 1, …, 10) and Treatment *i* (*i* = 1, …, 5) gives the aggregate rate of safe choices, defined as the quotient:

$$\frac{\text{Number of } S \text{ choices in Pair } j \text{ and Treatment } i \text{ aggregated over Sessions } A\text{-}F}{\text{Number of choices } (S \text{ and } R) \text{ in Pair } j \text{ and Treatment } i \text{ aggregated over Sessions } A\text{-}F}.$$

We have marked in boldface the pairs common to all five treatments, namely pairs 4 to 7. Figure 1 plots the frequency of safe choices for treatments 1, 2 and 5. Recall that Treatment 1, our control, covers the ten pairs of Table 1 and Treatment 2 deletes the first three pairs, whereas Treatment 5 deletes the last three, as shown in Table 2.

By comparing the first two columns of Table 3 (Treatment 2 vs. control), we observe that the deletion of the first three (worse) pairs slightly increases the rate of safe choices. Treatment 5, which deletes the three last (best) pairs, shows a marked decrease in the rate of safe choices. See Figure 1, where the gap between the graphs for treatments 1 and 2 is dwarfed by the one between treatments 1 and 5. It appears that, as good pairs (bottom of list) are replaced by bad ones (top of list), risk aversion becomes less frequent.

These observations are confirmed by a Wald-type test for the equality of the rates of safe choices for pairs 4, 5, 6 and 7, where the switching occurs, in treatments 1, 2 and 5.[6] For treatments 1 and 2, the *p*-value of the Wald test equals 0.641, not rejecting equality at the 5% level. For treatments 1 and 5, the corresponding *p*-value is 0.001, rejecting equality. And for treatments 2 and 5, the *p*-value is 0.000, again rejecting equality.

Next, we focus on the individual decisions by each participant as she may confront treatments 1, 2 or 5 in the same session, testing whether any observed differences could be due to chance. To that effect, we use the McNemar test and obtain significant *p*-values (0.007 for pair 6, and 0.001 for pair 7) when comparing treatments 1 and 5, even after applying the Bonferroni

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[6] The formula for the test statistic is $T = \left\| \frac{1}{\sqrt{x \cdot (1-x)/(n_i + n_j)}} (x_i - x_j) \right\|^2$, where $\|\cdot\|$ denotes the Euclidean norm, $x = \frac{1}{n_i + n_j}(n_i x_i + n_j x_j)$, x_k is the 4-dimensional vector of rates, and n_k is the sample size, in Treatment k, $k = i, j$.

correction. On the other hand, the *p*-values were not significant when comparing treatments 1 and 2. In summary, within-subjects analysis confirms the observation that when participants decide on a particular pair, a higher frequency of risk-averse behavior is observed when that pair is embedded in a set that includes good (end-of-list) pairs.

In addition, Section 4.1 below presents the results of Fischer's exact tests, showing that the observed differences for pairs 6 and 7 between our control Treatment 1 and Treatment 5, as well as the differences between control and Treatment 4 for pair 7, are statistically significant. Note that treatments 4 and 5 delete the largest numbers of good (end-of-list) pairs.

As we repeatedly noted, good pairs appear at the end of the list. Is the observed effect of deleting good pairs due to their goodness or to their position at the end of the list? We address the issue in the following section.

	Treatment 1 (Control)	Treatment 2	Treatment 3	Treatment 4	Treatment 5	Average Treat's 2-5	Max Rat Diff. Treat's 2-5
							-
Pair 1	0.99	-	-	-	0.99	-	-
Pair 2	0.99	-	-	0.99	0.98	-	-
Pair 3	0.99	-	0.96	1.00	0.98	-	
Pair 4	**0.97**	**0.99**	**0.94**	**0.99**	**0.97**	0.97	0.05
Pair 5	**0.89**	**0.91**	**0.86**	**0.87**	**0.80**	0.86	0.14
Pair 6	**0.71**	**0.76**	**0.69**	**0.63**	**0.58**	0.66	0.28
Pair 7	**0.34**	**0.36**	**0.30**	**0.19**	**0.18**	0.26	1.00
Pair 8	0.11	0.11	0.05	0.06	-	-	-
Pair 9	0.03	0.01	0.01	-	-	-	-
Pair 10	0.00	0.01	-	-	-	-	-
Number of observations	144	120	94	72	122		

Table 3. Rate of safe choices (*S*) per pair and treatment, Holt and Laury method (in bold the pairs common to all treatments).

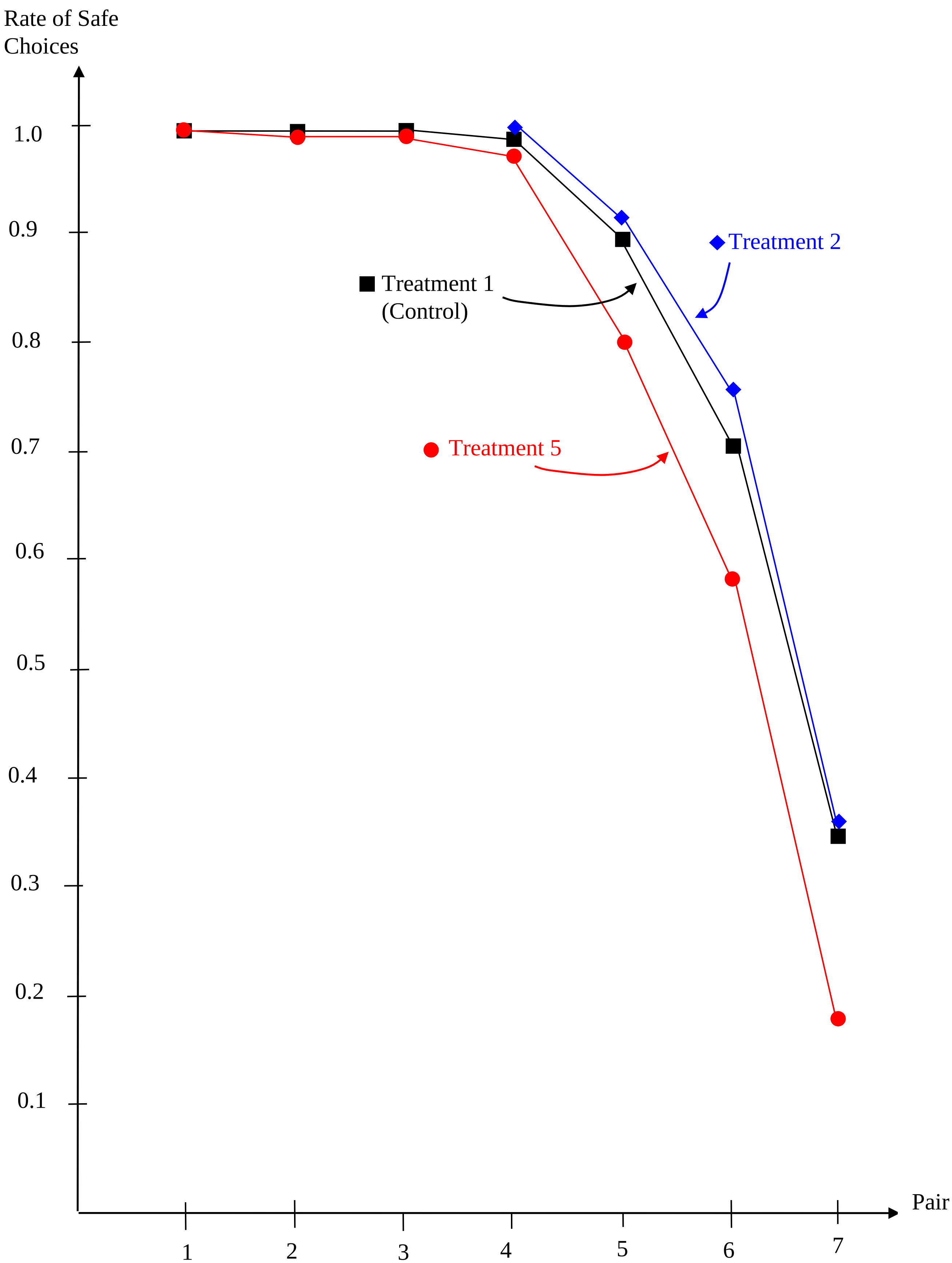

Figure 1. The rate of safe choices (*S*) in treatments 1, 2 and 5 for pairs 1 to 7, Holt and Laury method.

2.5. The irrelevance of the position in the list: Inverting the order of the pairs

The tendency, in some of the shorter lists, to switch earlier from the safe to the risky option brings to mind the phenomenon discussed in Andersen *et al*. (2006) that, in multiple-price lists, subjects could be inclined to pick a response in the middle of the list, independent of true valuations. An inspection of the results in Table 3 shows that such an attraction for the middle does not appear in our experiment: the middle pair in a list of seven is the fourth one, and the fraction of subjects who choose the safe lottery there goes from 0.36 in Treatment 2 to 0.97 in Treatment 5.

But, as indicated above, the increase in risk aversion as good pairs are removed could conceivably be due to an “end-of-list” effect, since the good pairs are located at the end. One simple way of exploring the issue consists in running the experiment with the order of the pairs inverted, i. e., giving the subjects a list that begins with the *better* pairs and ends with the *worse* pairs. If, in the inverted treatments, we observe again that risk aversion is less frequent when removing the better pairs, now located at the beginning of the list, then we will be more confident that it is not the distance to the end of the list that drives the effect.

Accordingly, we have run sessions *A* to *F* with the inverted order of pairs. Except for the inversion of the order, the design, procedure and earnings in this experiment are identical to the design, procedure and earnings in the previous one. Again, our subjects were undergraduate students at *Universitat Pompeu Fabra* who volunteered (totaling 139). The aggregate results are shown in Table 4. One observation is clear from the table, namely that the previously observed effect survives the inversion of the order of lotteries. Moreover, as before, it is more noticeable in pairs 6 and 7. Therefore, we must conclude that the position of the pairs in the list is not what drives the observed bias.

	Treatment 1i (Control)	Treatment 2i	Treatment 3i	Treatment 4i	Treatment 5i	Average Treat's 2i to 5i	Max Rate Diff. Treat's 2i to 5i
Pair 1	0.99	-	-	-	0.99		-
Pair 2	0.98	-	-	0.98	0.99		-
Pair 3	0.98	-	0.97	0.98	0.99		-
Pair 4	**0.98**	**0.96**	**0.97**	**0.98**	**0.93**	0.96	0.05
Pair 5	**0.85**	**0.87**	**0.83**	**0.86**	**0.78**	0.83	0.12
Pair 6	**0.67**	**0.72**	**0.67**	**0.58**	**0.49**	0.61	0.47
Pair 7	**0.31**	**0.36**	**0.34**	**0.23**	**0.16**	0.27	1.25
Pair 8	0.12	0.10	0.05	0.07	-	-	-
Pair 9	0.01	0.02	0.01	-	-	-	-
Pair 10	0.00	0.00	-	-	-	-	-
Number of Observations	171	165	124	108	124		

Table 4. Inverted treatments: Rate of safe choices (*S*) per pair and treatment in the Holt and Laury method (in bold the pairs common to all treatments). To facilitate the comparison with Table 3, we keep the same ordering of the pairs in both tables. However, one should keep in mind that, in the inverted treatments of Table 4, the order of the lotteries was inverted, so that subjects faced listings of pairs beginning with Pair 10, and ending with Pair 1.

3. The Abdellaoui et al. method

3.1. Our experimental design: Changing list length in Abdellaoui *et al*.

Design. We adapt the ADH method by adding one row to their Table 3 in order to facilitate the comparison with the HL procedure. The adapted list appears as our Table 5.[7] In both the HL and ADH procedures, subjects face a list of "safe" and "risky" pairs, but in ADH the safe alternative is a sure payoff that increases along the list, while the risky one is a 50-50 fixed lottery, that we implement by a coin toss.

We designed five treatments, numbered 1 to 5, and carried them out in five sessions, labeled *A* to *E.* As in our experiment on the HL method, our Treatment 1 is the control treatment, where subjects face the complete list of Table 5.

[7] Here too, the column displaying the expected values was not shown to the experimental subjects, and the columns were labeled *A* and *B* instead of *S* and *R*.

Pair	Safe Option (*S*)	Risky Option (*R*)	Expected payoff diff.
1	€5.00	€15 if heads, €5 if tails	-5.00
2	€6.10	€15 if heads, €5 if tails	-3.90
3	€7.20	€15 if heads, €5 if tails	-2.80
4	€8.30	€15 if heads, €5 if tails	-1.70
5	€9.45	€15 if heads, €5 if tails	-0.55
6	€10.55	€15 if heads, €5 if tails	0.55
7	€11.70	€15 if heads, €5 if tails	1.70
8	€12.80	€15 if heads, €5 if tails	2.80
9	€13.90	€15 if heads, €5 if tails	3.90
10	€15.00	€15 if heads, €5 if tails	5.00

Table 5. Our adaptation of the Abdellaoui *et al*. design; payoffs in euros.

In treatments 2 to 5 we ran the experiment with lists of seven pairs where some of the better pairs and/or some of the worse pairs of Table 5 (three in total) have been eliminated.

In Treatment 2, each subject faced the seven-pair list obtained by deleting the first three rows (i. e., pairs) of Table 5. In Treatment 3, each subject faced the seven-pair list obtained by deleting rows 1, 2 and 10 of Table 5. In Treatment 4, each subject faced the seven-pair list obtained by deleting rows 1, 9 and 10 of Table 5. Finally, in Treatment 5 each subject faced the seven-pair list obtained by deleting the last three rows from Table 1. We were particularly interested in the decisions for pairs 4 to 7, which are present in all five treatments.

Again, we scrambled the order of our treatments and repeated one of them as a “return to baseline.” In each session, we ran four different treatments in the following orders.

Session *A*, with 21 subjects, implemented treatments 1, 5, 3, 4, 1;

Session *B*, with 21 subjects, treatments 2, 1, 4, 5, 2;

Session *C* with 20 subjects, treatments 3, 2, 5, 1, 3;

Session *D*, with 21 subjects, treatments 4, 3, 1, 2, 4;

and Session *E*, with 21 subjects, treatments 5, 4, 2, 3, 5.

Subjects. Once more, the participants in the experiments were undergraduate students at *Universitat Pompeu Fabra* (totaling 104), previously registered in a large database for subjects willing to participate in economics experiments.[8]

Procedure. All the sessions were computerized using Z-tree. After the instructions were read and all questions answered, each subject in a session faced a screen with the list corresponding to the first treatment. Each pair in the list contained the two options *S* and *R* that, as indicated, in the experiment were called *A* for the certain quantity in the first column and *B* for the lottery in the second column. Each list had either 7 or 10 pairs of options depending on the treatment. Once the subjects had chosen either *A* or *B* for each pair in a list, the next list for the session appeared on the screen. The session was finished when all five lists in the session had been completed by the subjects.

Earnings. Subjects were told that in order to compute their earnings at the end of the session, each of them individually would randomly pick one of the five lists by drawing a number from an urn containing five numbers. Next, one pair in the list would be randomly picked, again by the subject herself, by drawing one number from an urn containing as many numbers as pairs in the list (7 or 10). Finally, if the subject had chosen Option *A* for the randomly picked pair, she would be paid the corresponding certain amount, otherwise the lottery would be realized with a coin toss and the subject paid accordingly. The sessions lasted about 30 minutes, and the individual payment procedure was faster than in the HL experiment.

3.2. Results

Tables A13 to A17 in Appendix A present the raw experimental data for sessions *A* to *E*. We can visualize the overall outcomes in Table 6, which displays the rate of safe choices per pair and treatment aggregated over sessions *A* to *E*: the format is that of tables 3 and 4 above.[9]

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[8] Based on the Online Recruitment System for Economic Experiments (ORSEE).

[9] Here we disregard the choices of subjects who switch to *R* after having already chosen *S* in a pair, i. e., of the form (…*SR*…). Again, these compound choices can be shown to be inconsistent in the sense of being first-order stochastically dominated by the compound choice obtained by replacing the *SR* pair by *RS.*

	Treatment 1 (Control)	Treatment 2	Treatment 3	Treatment 4	Treatment 5	Average Treat's 2-5	Max Rat Diff. Treat's 2-5
Pair 1	0.00	-	-	-	0.00	-	-
Pair 2	0.00	-	-	0.00	0.00	-	-
Pair 3	0.08	-	0.07	0.06	0.09	-	-
Pair 4	**0.29**	**0.24**	**0.23**	**0.29**	**0.37**	0.28	0.51
Pair 5	**0.73**	**0.66**	**0.71**	**0.75**	**0.72**	0.71	0.14
Pair 6	**0.93**	**0.91**	**0.94**	**0.94**	**0.96**	0.94	0.05
Pair 7	**1.00**	**0.98**	**0.98**	**0.97**	**0.97**	0.98	0.03
Pair 8	1.00	1.00	0.99	1.00	-	-	-
Pair 9	1.00	1.00	1.00	-	-	-	-
Pair 10	1.00	1.00	-	-	-	-	-
Number of observations	83	83	83	84	83		

Table 6. Rate of safe choices (*S*) per pair and treatment for the Abdellaoui *et al*. method (in bold, the pairs common to all treatments).

The inspection of Table 6 shows that the pairs more affected by the deletions are pairs 4 and 5. By comparing the first two columns of Table 6 (Treatment 2 vs. control), we observe that the deletion of the first three (worse) pairs slightly *decreases* the rate of safe choices. Treatment 5, which deletes the three last (best) pairs, shows no consistent pattern of differences from control. In any event, as we will see in Section 4.1 below, Fischer's exact test indicates that the differences are not statistically significant. In all fairness, it should be noted that the number of subjects is lower in our test of the ADH method (104) than in that of the HL method (145), and that statistical significance is easier to obtain with the larger number.

4. Discussion

4.1. Comparing Holt and Laury with Abdellaoui *et al*.

The main lesson of our experiments is that the HL and ADH methods respond quite differently to the deletions of pairs. We have performed Fischer's exact test for both methods, focusing on pairs

6 and 7 in HL, and pairs 4 and 5 in ADH, the pairs that show larger responses to the deletions. The results are displayed in Table 7.

	Holt and Laury method		Abdellaoui *et al*. method	
	Pair 6	Pair 7	Pair 4	Pair 5
Treatment 1 vs. Treatment 2	0.40	0.79	0.43	0.36
Treatment 1 vs. Treatment 3	0.88	0.57	0.27	0.76
Treatment 1 vs. Treatment 4	0.28	**0.039**	1.00	0.75
Treatment 1 vs. Treatment 5	**0.039**	**0.0035**	0.30	1.00

Table 7. Double-tail Fischer's exact test *p*-values. Significant results in bold.

We observe that the differences between treatments and control are not significant for the ADH method. But in the case of the HL method, and confirming our observations in Section 2.4 above, we obtain significant differences for Treatment 4 and Pair 7, and for Treatment 5 and pairs 6 and 7. Recall that in Treatment 4 (resp. 5) we delete the two (resp. three) best pairs.

The inspection of the last two columns of tables 3, 4 and 6 provides an informal confirmation of the asymmetry. Averaging over treatments 2 to 5 yields numbers that are relatively close to control in ADH, whereas they are markedly different for pairs 6 and 7 in the HL method. And the maximal-rate differences for treatments 2 to 5 are typically larger in the HL method than in ADH's, indicating more dispersion.

That the HL method suffers from an embedding bias, while the ADH method does not, cannot be attributed to HL testing for a more restrictive version of risk aversion than ADH, as it could be the case if the "risky" prospects in the HL method were a mean-preserving spread of the "safe" prospects.

Observe also that the HL procedure is more complex than that of ADH, and hence it generates nosier responses. Indeed, the fraction of subjects who display inconsistent behavior in the abovementioned sense of switching back and forth, in a first-order stochastically-dominated way, while small in absolute terms, is larger in the HL method than in ADH's. Despite the added noise, however, we do find a clear, systematic embedding bias in the HL method.

4.2. Violations of the independence axiom

Our result that, in the HL method, the deletion of some specific pairs favors an earlier switch to the riskier option shows that the choice in a given pair is not independent from the list where it is embedded. Hence, a subject displaying such behavior cannot be maximizing preferences that satisfy the independence axiom and, therefore, the expected utility hypothesis (see, e. g., Mas-Colell *et al*., 1995). Consequently, any formalization of this behavior must discard the independence axiom. It follows from our experimental results that the repeated reliance on vNM utility functions by Holt and Laury (2002) and subsequent users of the HL method is not well grounded, despite the awareness previously evidenced by Holt (1986).

In addition to violations of the independence axiom in decisions under uncertainty, the literature presents other instances of the dependence of the value, or category, assigned to a particular item on the set of items in which it is embedded. In the medical literature, Robinson *et al*. (2001) observe how respondents' rankings of descriptions of road injuries depend on the set of descriptions in which there are included. In psychology, Parducci and Weddell (1986) define a "range-frequency effect" where the category assigned to the size of a square (e. g., large, or small) depends both on the number of allowable categories and on the support and the frequency of the distribution of sizes in the list presented to the subject. Stewart *et al*. (2005) ascertain the importance of the intensity difference between a stimulus and the previous one in the sequence. In marketing research, Huber *et al*. (1982) study consumers' choices when confronted with a set of products each of which is favored in a different dimension (size, quality, color, price), and observe that introducing a new product that is dominated in all dimensions by one of the existing products results in the latter product being hugely favored by consumers. This is an instance of how asymmetric dominance may affect choices, as analyzed by Amaldoss *et al*. (2008).

4.3. Increasing risk aversion and generalized expected utility

Machina (1982, 1983) tackled the more common observed violations of the independence axiom by proposing a *generalized expected utility model* characterized by the smoothness of the utility function defined on the space of probability distributions, so that a *local vNM-type utility function* can be defined at each probability distribution. He showed that the most common violations of the independence axiom (the effects named *common consequence, common ratio*, *oversensitivity to changes in small- probability outlying events*, and *utility evaluation*) were implied by an elegant condition, which he called *Hypothesis II*, by which the local vNM-type utility function of a better probability distribution (in the sense of first-order stochastic dominance) is more concave, implying more risk aversion, than the one corresponding to a worse probability distribution.[10] Hence, under Hypothesis II the decision maker displays a higher degree of risk aversion in the neighborhood of a better probability distribution than in the neighborhood of a worse one. Accordingly, Machina's Hypothesis II suggests a justification for our experimental result that, in the HL method, adding better options favors risk aversion.[11]

But we only observe such an increase in risk aversion for the HL method, and not in the ADH method, while in either case we delete the better pairs when we move from Treatment 1 (full-ten pair list) to Treatment 5. One possible explanation is that, while in both methods the deletion of the last three pairs yields a worse set, the worsening is stronger in the HL method than in the ADH method.

The analysis presented in Appendix B below points in that direction. In either method, the set of compound choices available under the whole list is "better" than the one under the reduced list in the following sense: each compound choice in the "better" set first-order stochastically dominates (FOSD) at least one compound choice in the "worse" set. In the HL method, many of the compound choices of the "better" set FOSD three, four, five and even six compound choices of the "worse" set, whereas in the ADH method they only FOSD one or two of the "worse" set. It is also the case that, in the HL method, such first-order stochastic domination yields a larger increase in expected money values than in the ADH method.

4.4. Does risk taking increase when removing pairs where the risky option is more popular?

As noted, the ADH method does not show a statistically significant dependence of the frequency of safe choices on the deletions. Yet some deviations from control do occur, particularly in Treatment 2, in which the rate of safe choices is smaller than in control. Now, in Treatment 2, it is the *worse* choice pairs that have been deleted: this goes in the opposite direction to the bias

[10] For the case of three outcomes, Hypothesis II implies that the indifference curves "fan out" in the Marschak-Machina triangle.

[11] By the same token, Machina's Hypothesis II may apply to a similar finding by Bateman *et al*. (2007): in the process of analyzing the preference reversal phenomenon, they find that the certainty equivalent of a given lottery (say, Lottery I or Lottery J in their Table 1) is lower when included in a list of better lotteries (Set 1 *ibid.*) than when included in a set of worse lotteries (Set 2 *ibid*.).

displayed by the HL method, where it is the deletion of the *better* prospects that decreases risk aversion.

Notice, however, that in the HL method most subjects, when confronted with the *better* pairs, choose the risky option, whereas in the ADH method most subjects choose the risky alternative in the *worse* pairs. Perhaps, then, what drives the changes in risk aversion is the deletion of pairs where *most subjects choose the risky alternative*, rather than the deletion of better or worse pairs.

Table 8 offers a comparative summary of the features associated with decreased risk aversion in the HL and ADH methods.

Holt and Laury Method	Removal of good pairs = Removal of pairs where most subjects choose the risky option	→ fewer safe choices = less risk aversion (statistically significant)
Abdellaoui *et al*. Method	Removal of bad pairs = Removal of pairs where most subjects choose the risky option	→ fewer safe choices = less risk aversion (not statistically significant)

Table 8. Comparison of the features associated with decreased risk aversion

We have pondered three explanations for the phenomenon of decreased risk aversion clearly observed in the HL method, namely the deletion of (a) better pairs, (b) end-of-list pairs, and (c) pairs where the risky option is more popular. Our analysis in Section 2.4 above definitely rules (b) out. If we attached any importance to the statistically not significant changes observed in our test of the ADH method, then we would have to rule (a) out, leaving only (c). But at this point, in the absence of further research, it would be reckless to bet on any of these explanations.

Finally, recall that the HL method deals with a list of varying probabilities while the ADH method only makes use of one and the same probability in its list. One could conjecture that an embedding bias may appear whenever a different embedding frame shifts the individual probability weighting functions and, therefore, the degree of observed risk aversion. More so since our own method for eliciting risk preferences (Bosch-Domènech and Silvestre, 1999, 2006*a*, *b*, *c*, 2010) -which like ADH's uses only one and the same probability in its lotteries- appears also to be immune to the embedding bias.

5. Conclusions

The paper tests the robustness of experimental procedures aimed at measuring risk aversion, where subjects face a list of pairs of alternative prospects. More specifically, we examine whether the removal of some items of the list affects the outcomes, focusing on the widely used Holt and Laury (2002) method and on the more recent one by Abdellaoui *et al*. (2011). Either method uses a list of pairs: we conduct experiments where some pairs are removed from the list. We ask: are decisions on a particular pair influenced by the presence or absence of other pairs in the list?

We experimentally discover a systematic bias, that we call *embedding bias*, in the Holt and Laury method: as some specific pairs are removed, risk aversion becomes less frequent and the ranking of individuals by risk aversion is not preserved. No statistically significant bias appears, on the contrary, in our test of the Abdellaoui *et al*. method, which, unlike Holt and Laury's, does not use a list with varying probabilities.

The pairs whose deletion induces the reduction of risk aversion in the Holt and Laury method are the better pairs and, at the same time, the pairs where most subjects choose the risky option, and also the last ones in their list. By repeating our experiment with the order of pairs inverted, we find that the position of the pairs in the list is irrelevant.

But it would be premature to explain the phenomenon in terms of the removal of *good* pairs: even though the results for our test of Abdellaoui *et al*. are not statistically significant, they point away from this explanation. It remains to be seen whether it is the use of a list of different probabilities which makes the Holt and Laury method vulnerable to the embedding bias, a possibility that gains some weight considering that our own method for measuring risk aversion - which like Abdellaoui *et al*. involves only one fixed probability- is also immune to the embedding bias.

In conclusion, our experimental results uncover a new bias that puts into question the robustness of some procedures for measuring individual behavior based on lists of alternative prospects and, in particular, provide a new call for caution when using the Holt and Laury method to estimate individual risk aversion and to rank individuals by their risk aversion. It also suggests that better alternatives may already exist.

APPENDIX A

Treatment 5	Treatment 3	Treatment 2	Treatment 1	Treatment 5
SSSSSS/R000	00SSSSS/RR0	000SSSS/RRR	SSSSSS/RRRR	SSSSS/RR000
SSSSSSS000	00SSSSS/RR0	000SSSS/RRR	SSSSSSS/RRR	SSSSSSS000
SSSSS/RR000	00SSSS/RRR0	000SSSS/RRR	SSSSSSS/RRR	SSSSSS/R000
SSSSSS/R000	00SSSS/RRR0	000SSSS/RRR	SSSSSSS/RRR	SSSSSS/R000
SSSSSSS000	00SSSSSS/R0	000SSSSSS/R	SSSSSSSSS/R	SSS/RR/SS000
SSSSS/RR000	00SSSS/RRR0	000SSSS/RRR	SSSSSSS/RRR	SSSSSS/R000
SSSSSSS000	00SSSSS/RR0	000SSSS/RRR	SSSSSSS/RRR	SSSSS/RR000
SSSSS/RR000	00SSS/RRRR0	000SS/RRRRR	SSSSS/RRRRR	SSSS/RRR000
SSSSSS/R000	00SSSS/RRR0	000SSSSS/RR	SSSSSSS/RRR	SSSSSS/R000
SSSSSS/R000	00SSSS/RRR0	000SSSSS/RR	SSSSSSS/RRR	SSSSSS/R000
SSSSSSS000	00SSSSS/RR0	000SSSSS/RR	SSSS/RRRRRR	S/RRRRRR000
SSSSSS/R000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR	SSSSSS/R000
SSSSSS/R000	00SSSSS/RR0	000SSSS/RRR	SSSSSSSS/RR	SSSSSSS000
SSSSS/RR000	00SSSS/RRR0	000S/R/SS/RRR	SSSSSSSS/RR	SSSSS/RR000
SSSS/RRR000	00SS/RRRRR0	000S/RRRRRR	SSSSS/RRRRR	SSSS/RRR000
SSSS/RRR000	00SS/RRRRR0	000S/RRRRRR	SSSSS/RRRRR	SSSSS/RR000
SSSSS/R/S000	00S/RR/SS/RR0	000SSS/RRR/S	SSSSSS/R/S/RR	S/RR/SSSS000
SSSSSS/R000	00SSSSSS/R0	000SSSS/RRR	SSSSSS/RRRR	SSSSS/RR000
SSSSSS/R000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR	SSSSSS/R000
SSSSSS/R000	00SSSSS/RR0	000SSSS/RRR	SSSSSSSS/RR	SSSSSSS000
SSSS/RRR000	00SS/RRRRR0	000SSS/RRRR	SSSSS/RRRRR	SSSS/RRR000
SSSSSS/R000	00SSS/RRRR0	000SSS/RRRR	SSSSS/RRRRR	SSSSSS/R000
SSSSSS/R000	00SSSS/RRR0	000SSSS/RRR	SSSSSS/RRRR	SSSSSSS000
SSSSS/RR000	00SSSS/RRR0	000SS/RRRRR	SSSSS/RRRRR	SSSSS/RR000
SSSSS/RR000	00SSS/RRRR0	000SS/RRRRR	SSSS/RRRRRR	SSSSS/RR000
SSSS/RRR000	00SS/RRRRR0	000S/RRRRRR	SSSS/RRRRRR	SSSSSSS000
SSS/RRRR000	00SSS/RRRR0	000S/RRRRRR	SSSSS/RRRRR	SSSSSSS000
SSSSS/RR000	00SSSSS/RR0	000SSS/RRRR	SSSSSS/RRRR	SSSSSS/R000

Table A1. Choices of subjects (28) in Session *A* for the Holt and Laury method (recall that zeroes mark the deletion of pairs).

Treatment 2	Treatment 4	Treatment 5	Treatment 1	Treatment 2
000SSS/RRRR	0SSSS/RRR00	SSSSS/RR000	SSSS/RRRRRR	000SS/RRRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSS/RRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSS/RRRR
000SSS/RRRR	0SSSS/RRR00	SSSSS/RR000	SSSSS/RRRRR	000SSS/RRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSS/RRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSS/RRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSS/RRRR
000SSS/RRRR	0SSSS/RRR00	SSSSS/RR000	SSSSSS/RRRR	000SSS/RRRR
000SSS/RRRR	0SSSSS/RR00	SSSSS/RR000	SSSSSS/RRRR	000SSS/RRRR
000SSSSS/RR	0SSSSS/RR00	SSSSSS/R000	SSSSSSS/RRR	000SSSSS/RR
000SS/RRRRR	0SSSS/RRR00	SSS/RRRR000	SSSS/RRRRRR	000S/RRRRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSS/RRRRR	000SSS/RRRR
000S/RRRRRR	0SSS/RRRR00	SSSS/RRR000	SSSSSS/RRRR	000S/RRRRRR
000SS/RRRRR	0SSSS/RRR00	SSSSS/RR000	SSSSS/RRRRR	000SS/RRRRR
000SS/RRRRR	0SSS/RRRR00	SSSSS/RR000	SSSSS/RRRRR	000SSS/RRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSS/RRRR
000SS/R/S/RRR	0SSSS/RRR00	SS/R/S/RRR000	SSSSS/RRRRR	000SSS/RRRR
000SSS/RRR/S	0SSS/RRR/S00	SSS/RRR/S000	SSSSSSSSSS	000RRR/SSSS
000SSSS/RRR	0SSSSS/RR00	SSSSSS/R000	SSSSSSS/RRR	000SSSS/RRR
000SSSS/RRR	0SSSSS/RR00	SSSSSSS000	SSSSSSS/RRR	000SSSS/RRR
000S/RRRRRR	0SSS/RR/S/R00	SS/R/S/RRR000	SSS/RRR/S/RRR	000SSS/RRRR
000SSSS/RRR	0SSSSS/RR00	SSSSSS/R000	SSSSSSS/RRR	000SSSS/RRR
000SS/RRRRR	0SSSS/RRR00	SSSSSS/R000	SSSSS/RRRRR	000SS/RRRRR
000SS/RRRRR	0SSSS/RRR00	SSSSS/RR000	SSSSSS/RRRR	000SS/RRRRR

Table A2. Choices of subjects (24) in Session *B* for the Holt and Laury method.

Treatment 1	Treatment 5	Treatment 3	Treatment 2	Treatment 1
SSSSSSS/RRR	SSSSS/RR000	00SSSSS/RR0	000SSSS/RRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSSSS/R000	00SSSSS/RR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSSS/RR000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSSS/RRR	SSSSSSS000	00SSSSS/RR0	000SSSS/RRR	SSSSSSS/RRR
SSSSSS/RRRR	SSSSSSS000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSSSS/R000	00SSS/RRRR0	000SS/RRRRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSSSS/R000	00SSSS/RRR0	000SSSSS/RR	SSSSSSSS/RR
SSSSSSS/RRR	SSSSSS/R000	00SSSSS/RR0	000SSSS/RRR	SSSSSSS/RRR
SSSSSS/RRRR	SSSSS/RR000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSSSS/R000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSS/RRRRR	SSSSS/RR000	00SSSS/RRR0	000SSS/RRRR	SSSSS/RRRRR
SSSSSSSS/RR	SSSSSS/R000	00SSSSS/RR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSSSS/R000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSSS/RRR	SSSSSS/R000	00SSSS/RRR0	000SSSS/RRR	SSSSSSS/RRR
SSSSSS/RRRR	SSSSSS/R000	00SSSS/RRR0	000SSSS/RRR	SSSSSSS/RRR
SSSSS/RRRRR	SSSSS/RR000	00SSSS/RRR0	000SSSS/RRR	SSSSSS/RRRR
SSSSSSS/RRR	SSSSS/RR000	00SSSS/RRR0	000SSSS/RRR	SSSSSSS/RRR
SS/R/SS/RRRRR	SSSS/RRR000	00SSS/RRRR0	000SSSS/RRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSS/RRR000	00SSS/RRRR0	000SS/RRRRR	SSSSSS/RRRR
SSSSSSS/RRR	SSSSSS/R000	00SSSS/RRR0	000SSS/RRRR	SSSSSSS/RRR
SSSS/RRRRRR	SSSSSSS000	00SSSS/RRR0	000SSSS/RRR	SSSSSSS/RRR

Table A3. Choices of subjects (21) in Session *C* for the Holt and Laury method.

Treatment 3	Treatment 5	Treatment 2	Treatment 1	Treatment 3
00SSS/RRRR0	SSSS/RRR000	000SSS/RRRR	SSSSS/RRRRR	00SSS/RRRR0
00SSS/RRRR0	SSSS/RRR000	000SS/RRRRR	SSSS/RRRRRR	00SS/RRRRR0
00SSS/RRRR0	SSSSS/RR000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSSSS/RR0	SSSSSSS000	000SSSS/RRR	SSSSSSS/RRR	00SSSSS/RR0
00SS/RRRRR0	SSS/RRRR000	000RRRRRRR	SSS/R/S/RRRRR	00SS/RRRRR0
00SSS/RRRR0	SSSSS/RR000	000SSS/RRRR	SSSS/RRRRRR	00SSS/RRRR0
00SSSS/RRR0	SSSSS/RR000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSS/RRRR0	SSSS/RRR000	000S/RRRRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSS/RRRR0	SSSS/RRR000	000SS/RRRRR	SSSSS/RRRRR	00SSS/RRRR0
00SS/RRRRR0	SSSS/RRR000	000SS/RRRRR	SSSSS/RRRRR	00SS/RRRRR0
00SSSSS/RR0	SSSSSS/R000	000SSSS/RRR	SSSSSSS/RRR	00SSSSS/RR0
00SSSSS/RR0	SSSSSS/R000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSSSS/RR0	RR/S/R/SSS000	000RR/S/R/SSS	RR/S/R/SSSS/RR	00RR/S/R/SSS0
00SS/R/S/RRR0	SSSSSSS000	000SSSSS/RR	SSSSSSS/RRR	00SSSSS/RR0
00SSSSS/RR0	SSSSSS/R000	000SSS/RRRR	SSSSSSS/RRR	00SSSSS/RR0
00SSSSS/RR0	SSSSSSS000	000SSSS/RRR	SSSSSSS/RRR	00SSSSS/RR0
00SS/RRRRR0	SSS/RRRR000	000RRRRRRR	SSSSS/RRRRR	00SSS/RRRR0
00SSSSS/RR0	SSSSSS/R000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSSS/R/S/R0	SSSSS/RR000	000SSS/RRRR	SSSSSSSS/RR	00SSSSS/RR0
00RRRRRRR0	SSSSSS/R000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00RRRRRRR0	SSSS/RRR000	000RRRRRRR	SSSS/RRRRRR	00SS/RRRRR0
00SSSSS/RR0	SSSS/RRR000	000SSSS/RRR	SSSSSSS/RRR	00SSSSS/RR0
00SS/RRRRR0	SSSS/RRR000	000SSS/RRRR	SSSS/RRRRRR	00SSS/RRRR0
00SSSSSSS0	SSSSSSS000	000SSSSSS/R	SSSSSSSSS/R	00SSSSSSS0

Table A4. Choices of subjects (24) in Session *D* for the Holt and Laury method.

Treatment 4	Treatment 1	Treatment 2	Treatment 3	Treatment 4
0SSSSS/RR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSSS/RSR00	SSSSSSS/RRR	000SSSS/RRR	00SSSSS/RR0	0SSSSS/RR00
0SS/RRRRR00	SSS/RRRRRRR	000RRRRRRR	00S/RRRRRR0	0SS/RRRRR00
0SSSSS/RR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSS/RSRR00	SSSSS/RRRRR	000SSSSS/RR	00SSSSS/RR0	0SSSSS/RR00
0SSSSSS/R00	SSSSSSSS/RR	000SSSSS/RR	00SSSSSS/R0	0SSSSSS/R00
0SSSS/RRR00	SSSSSS/RRRR	000SSSS/RRR	00SSSS/RRR0	0SSSS/RRR00
0SSSS/RRR00	SSSS/RRRRRR	000SS/RRRRR	00SSS/RRRR0	0SSSS/RRR00
0SSS/RRRR00	SSSSS/RRRRR	000SSS/RRRR	00SSS/RRRR0	0SSSS/RRR00
0SSSSS/RR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSS/RRR00
0SSSSS/RR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSS/RRRR00	SSSS/RSRRRR	000S/RRRRRR	00RRRRRRR0	0SSS/RRRR00
0SSSSS/RR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSSSS/RR00	SSSSSSS/RRR	000SSSS/RRR	00SSSSS/RR0	0SSSSS/RR00
0RSRRRRR00	SSRSRRSRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSS/RRRR00	SSSSSSS/RRR	000SSS/RRRR	00SSSSS/RR0	0SSSSSS/R00
0SSS/RRRR00	SSSSS/RRRRR	000SS/RRRRR	00SSSSS/RR0	0SSSS/RRR00
0SSSS/RRR00	SSSSS/RRRRR	000SS/RRRRR	00SSS/RRRR0	0SSSSS/RR00
0SSSS/RRR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSSSS/RS00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSSS/R00
0SSSSS/RR00	SSSSSS/RRRR	000SSS/RRRR	00SSSSS/RR0	0SSSSSS/R00
0SSSSS/RR00	SSSSSS/RRRR	000SS/RRRRR	00SSSS/RRR0	0SSSSS/RR00

Table A5. Choices of subjects (22) in Session *E* for the Holt and Laury method.

Treatment 1	Treatment 4	Treatment 2	Treatment 5	Treatment 4
SSSSSSSS/RR	0SSSSSS/R00	000SSSS/RRR	SSSSSSS000	0SSSSSS/R00
SSSSSS/RRRR	0SSS/RRRR00	000SSS/RRRR	SSSS/RRR000	0SSS/RRRR00
SSSSSS/RRRR	0SSSSS/RR00	000SSS/RRRR	SSSSSS/R000	0SSSSS/RR00
SSSSSS/RRRR	0SSSSS/RR00	000SSS/RRRR	SSSSSS/R000	0SSSSS/RR00
SSSSSS/RRRR	0SSSSSS/R00	000SSSS/RRR	SSSSSSS000	0SSSSSS/R00
SSSSSSS/RRR	0SSSSS/RR00	000SS/RRRRR	SSSSSS/R000	0SSSSS/RR00
SSSSS/RRRRR	0SSSSS/RR00	000SSS/RRRR	SSSSSS/R000	0SSSSS/RR00
SSSSSS/RRRR	0SSSS/RRR00	000SS/RRRRR	SSSSSS/R000	0SSSSS/RR00
SSSSSSS/RRR	0SSSSSS/R00	000SSSS/RRR	SSSSSS/R000	0SSSSSS/R00
SSSSS/RRRRR	0SSSS/RRR00	000SS/RRRRR	SSSSS/RR000	0SSSS/RRR00
SSS/RRRRRRR	0SSS/RRRR00	000S/RRRRRR	SSSS/RRR000	0SSS/RRRR00
SSSSSSS/RRR	0SSSSSS/R00	000SSSS/RRR	SSSSSS/R000	0SSSSS/RR00
SSSSSSS/RRR	0SSSSSS/R00	000SSSS/RRR	SSSSSS/R000	0SSSSS/RR00
SSSSSS/RRRR	0SSSSS/RR00	000SSS/RRRR	SSSSSS/R000	0SSSSS/RR00
SSSSSSS/RRR	0SSSSS/RR00	000SSS/RRRR	SSSSSS/R000	0SSSSS/RR00
SSSSSSSS/RR	0SSSSSS/R00	000SSSSS/RR	SSSSSSS000	0SSSSSSS00
SSSSS/RRRRR	0SSSS/RRR00	000SS/RRRRR	SSSSS/RR000	0SSSSS/RR00
SSSSSS/RRRR	0SSSS/RRR00	000SSS/RRRR	SSSSSS/R000	0SSSSS/RR00
SSSSSS/RRRR	0SSSS/RRR00	000SS/RRRRR	SSSSS/RR000	0SSSS/RRR00
SSSSSS/RRRR	0SSSSS/RR00	000SSS/RRRR	SSSSSS/R000	0SSSSS/RR00
SSSSRSSRRR	0SSSSSS/R00	000SSSSS/RR	SSSSSSS000	0SSSSSSS00
SSSSSS/RRRR	0SSSS/RRR00	000SSS/RRRR	SSSSSS/R000	0SSSSS/RR00
SSSSSSSSS/R	0SSSSSSS00	000SSSSSS/R	SSSSSSS000	0SSSSSSS00
SSSSSSSS/RR	0SSSSSS/R00	000SSSSS/RR	SSSSSSS000	0SSSSSSS00
SSSSSSSS/RR	0SSSSSS/R00	000SSSSS/RR	SSSSSSS000	0SSSSSS/R00
SSSSS/RRRRR	0SSSS/RRR00	000SSS/RRRR	SSSSSS/R000	0SSSSSS/R00

Table A6. Choices of subjects (26) in Session *F* for the Holt and Laury method.

Treatment 5	Treatment 3	Treatment 2	Treatment 1	Treatment 5
SSSRSSR000	00SSRRSRS0	000SSS/RRRR	SSSSRSRRRS	SSRSRSR000
SSS/RRRR000	00S/RRRRRR0	000RRRRRRR	SSS/RRRRRRR	SSS/RRRR000
SSSRSRR000	00RRRSRSS0	000SRSRSRS	RRRSSSSRRR	SSSS/RRR000
SSSSS/RR000	00SSS/RRRR0	000SS/RRRRR	SSSSSRRRRR	SSSSS/RR000
SRSSRSS000	00SSSSS/RR0	000SSSS/RRR	SSSSSSSRRR	SSSSSSS000
SSSSS/RR000	00SSSS/RRR0	000SSSS/RRR	SSSSSSSRRR	SSSSSSS000
SSSSSS/R000	00SSSS/RRR0	000SSS/RRRR	SSSSSSRRRR	SSSSSS/R000
SSSSS/RR000	00SSSS/RRR0	000SSS/RRRR	SSSSSSRRRR	SSSSSS/R000
SSSS/RRR000	00SS/RRRRR0	000S/RRRRRR	SSSSRRRRRR	SSSS/RRR000
SSSSS/RR000	00SSSS/RRR0	000SSS/RRRR	SSSSSSRRRR	SSSSSSR000
SSSS/RRR000	00SSS/RRRR0	000SS/RRRRR	SSSSSRRRRR	SSSSS/RR000
SSSSSS/R000	00SSSSS/RR0	000SSSSS/RR	SSSSSSSSRR	SSSSSSS000
SSSSS/RR000	00SSSS/RRR0	000S/RRRRRR	SSSSSRRRRR	SSSSSS/000

Table A7.
Choices of subjects (13) in Session *Ai* (= *A* with order inverted) for the Holt and Laury method.

Treatment 2	Treatment 4	Treatment 5	Treatment 1	Treatment 2
000SSS/RRRR	0SSSSS/RR00	SSSS/RRR000	SSSSS/RRRRR	000SSS/RRRR
000SSSSS/RR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSSSS/RR
000RSRSSSR	0RRSRSSS00	RRRSRSS000	RRRRRSSSSS	000RSSSSSSS
000SSS/RRRR	0SSSS/RRR00	SSSSS/RR000	SSSSSS/RRRR	000SSS/RRRR
000SRRSRRR	0SSS/RRRR00	SSSS/RRR000	SSSS/RRRRRR	000S/RRRRRR
000SSS/RRRR	0SSS/RRRR00	SSS/RRRR000	SSSS/RRRRRR	000S/RRRRRR
000SS/RRRRR	0SSSS/RRR00	SSSSS/RR000	SSSSS/RRRRR	000SS/RRRRR
000SSS/RRRR	0SSSSS/RR00	SSSSS/RR000	SSSSS/RRRRR	000SS/RRRRR
000SSSS/RRR	0SSSSSS/R00	SSSSSS/R000	SSSSSSS/RRR	000SSSSS/RR
000RRRRRRR	0SSRRSRS00	SSS/RRR000	SSRRRRSRSS	000RRRRRSR
000SSSS/RRR	0SSSSSSS00	SSSSSSS000	SSSSSSS/RRR	000SSSS/RRR
000SSSS/RRR	0SSSSS/RR00	SSSS/RRR000	SSSSSSS/RRR	000SSS/RRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSS/RRRR
000SSSS/RRR	0SSSSS/RR00	SSSSSS/R000	SSSSRSRRRR	000SSSS/RRR
000SSSSS/RR	0SSSSSSS00	SSSSSS/R000	SSSSSSSSS/R	000SSSSSS/R
000SSSSS/RR	0SSSSSS/R00	SSSSSS/R000	SSSSSSS/RRR	000SSS/RRRR
000SS/RRRRR	0SSSS/RRR00	SSSSS/RR000	SSSSS/RRRRR	000SS/RRRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSS/RRRR
000SSSSSS/R	0SSSSSSS00	SSSSSSS000	SSSSSSSSS/R	000SSSSSS/R
000SRSRRRR	0SSS/RRRR00	SSS/RRRR000	SSRRRRSRSS	000SSSRRSR
000SSSS/RRR	0SSSS/RRR00	SSSSS/RR000	SSSSS/RRRRR	000SS/RRRRR
000SSS/RRRR	0SSSS/RRR00	SSSSS/RR000	SSSSS/RRRRR	000SS/RRRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSSS/RRR	000SSSS/RRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSSS/RRR	000SSSS/RRR
000SSS/RRRR	0SSSSS/RR00	SSSSS/RR000	SSSSSS/RRRR	000SSS/RRRR
000SSS/RRRR	0SSSSS/RR00	SSSSSS/R000	SSSSSS/RRRR	000SSS/RRRR

Table A8.

Choices of subjects (26) in Session *Bi* (= *B* with order inverted) for the Holt and Laury method.

Treatment 1	Treatment 5	Treatment 3	Treatment 2	Treatment 1
S/RRRRRRRRR	SSSS/RRR000	00SSS/RRRR0	000S/RRRRRR	SSSSS/RRRRR
SSSSS/RRRRR	SSSS/RRR000	00SSSS/RRR0	000SSS/RRRR	SSSSS/RRRRR
SSSSSS/RRRR	SSSS/RRR000	00SSS/RRRR0	000SS/RRRRR	SSSSS/RRRRR
SSSSSSS/RRR	SSSSSS/R000	00SSSS/RRR0	000SSSS/RRR	SSSSSS/RRRR
SSSSSSSS/RR	SSSSSSS000	00SSSSSS/R0	000SSSSS/RR	SSSSSSSS/RR
SSSSSS/RRRR	SSSSSS/R000	00SSSSS/RR0	000SSSS/RRR	SSSSSS/RRRR
SSSSSSS/RRR	SSSSSS/R000	00SSSSS/RR0	000SSSS/RRR	SSSSSS/RRRR
SSSSSSSS/RR	SSSSSSS000	00SSSSS/RR0	000SSSSS/RR	SSSSSSSS/RR
SSSSSSS/RRR	SSSSS/RR000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSSSS/R000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSSSS/R000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSS/RRRR	SSSSS/RR000	00SSS/RRRR0	000SS/RRRRR	SSSSSSS/RRR
SSSSSS/RRRR	SSSSSS/R000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSSS/RRR	SSSSSSS000	00SSSSS/RR0	000SSSS/RRR	SSSSSSS/RRR
SSSSSSSS/RR	SSSSSSS000	00SSSSSS/R0	000SSSSS/RR	SSSSSSSS/RR
RRRRRRRRRR	SSSSS/RR000	00SSS/RRRR0	000SSS/RRRR	SSSSS/RRRRR
SSSSS/RRRRR	SSSSSS/R000	00SSSS/RRR0	000SSSS/RRR	SSSSSS/RRRR
SS/R/S/RRRRRR	SSSSS/RR000	00SSS/RRRR0	000RRRRRRR	SSSSS/RRRRR
SSSSS/RRRRR	SSSSS/RR000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSSS/RRR	SSSSSSS000	00SSSSS/RR0	000SSS/RRRR	SSSSSSS/RRR
SSSS/RRRRRR	SSSS/RRR000	00SS/RRRRR0	000S/RRRRRR	SSSS/RRRRRR
SSSSSSS/RRR	SSSSS/RR000	00SSSS/RRR0	000SS/RRRRR	SSSSSS/RRRR
SSSSSSSS/RR	SSSSSS/R000	00SSSSS/RR0	000SS/RRRR	SSSSSS/RRRR
SSSSSSSS/RR	SSSSSSS000	00SSSSS/RR0	000SSSS/RRR	SSSSSSSS/RR
SSSSSS/RRRR	SSSSSS/R000	00SSSSSS/R0	000SSS/RRRR	SSSSSS/RRRR
SSSSS/RRRR/S	SSSS/RRR000	00SS/RRRRR0	000S/RRRRRR	SSSS/RRRRRR
SSSSSSSS/RR	SSSSSS/R000	00SSSSS/RR0	000SSSS/RRR	SSSSSSSS/RR
SSSS/RRRRRR	SSSS/RRR000	00SS/RRRRR0	000S/RRRRRR	SSSS/RRRRRR
SSSS/RRRRRR	SSSSS/RR000	00SSSS/RRR0	000SSS/RRRR	SSSSSS/RRRR
SSSSSSS/RRR	SSSSSSS000	00SSSSS/RR0	000SSSS/RRR	SSSSSSS/RRR
SSSS/RRRRRR	SSSS/RRR000	00SS/RRRRR0	000S/RRRRRR	SSSS/RRRRRR
SSSSS/RRRRR	SSSSS/RR000	00SSS/RRRR0	000SS/RRRRR	SSSSS/RRRRR
SSSSSSSS/RR	SSSSSS/RR000	00SSSSSSS0	000SSSSS/RR	SSSSSSSS/RR
SSSSS/RRRRR	SSSSS/RR000	00SSSSS/RR0	000SSSS/RRR	SSSSSSS/RRR
SSSSS/RRRRR	SSSSSS/R000	00SSSSS/RR0	000SSSS/RRR	SSSSSSS/RRR

Table A9.
Choices of subjects (35) in Session *Ci* (= *C* with order inverted) for the Holt and Laury method.

Treatment 3	Treatment 5	Treatment 2	Treatment 1	Treatment 3
00SSSS/RRR0	SSSS/RRR000	000SS/RRRRR	SSSSS/RRRRR	00SSS/RRRR0
00SSS/RRRR0	SSSSS/RR000	000SSS/RRRR	SSSSS/RRRRR	00SSS/RRRR0
00SSSS/RRR0	SSSS/R/S/R000	000SS/RRRRR	SSS/RRRRRRR	00 SSS/RRRR0
00SSS/R/SS/R0	SSSSSS/R000	000SSSS/RRR	SSSSSS/RRRR	00SSSS/RRR0
00SSS/RRRR0	SSSSS/RR000	000SS/RRRRR	SSSS/RRRRRR	00SS/RRRRR0
00SS/R/S/RRR0	SSSS/R/S/R000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSSS/RRR0	SSSSS/RR000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSSS/RRR0	SSSSSS/R000	000SSSS/RRR	SSSSSSS/RRR	00SSSS/RRR0
00RRRRRRR0	SSSSSSS000	000SS/RRRRR	SSSS/RRRRRR	00SS/RRRRR0
00SSSS/RRR0	SSSSSS/R000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSSSS/RR0	SSSSSS/R000	000SSSS/RRR	SSSSSSS/RRR	00SSSSS/RR0
00SSSS/RRR0	SSSSS/RR000	000 SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00RRRRRRR0	SSSS/RRR000	000S/RRRRRR	SSSS/RRRRRR	00SS/RRRRR0
00SSSS/RRR0	SSSSSS/R000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSSS/RRR0	SSSSSS/R000	000SSS/RRRR	SSSSSSS/RRR	00SSSSS/RR0
00SS/RRRRR0	SSSS/RRR000	000S/RRRRRR	SSSS/RRRRRR	00SS/RRRRR0
00SSSS/RRR0	SSSSS/RR000	000SSS/RRRR	SSSSSS/RRRR	00SSSS/RRR0
00SSS/RRRR0	SSS/R/S/RR000	000S/RRRRRR	SSSS/RRRRRR	00SS/RRRRR0
00SSSSS/RR0	SSSSSSS000	000SSSS/RRR	SSSSSSS/RRR	00SSSSS/RR0
00SSSSS/RR0	SSSSSS/R000	000SSSS/RRR	SSSSSS/RRRR	00SSSSS/RR0
00SSSS/RRR0	SSSSSS/R000	000SSSS/RRR	SSSSSS/RRRR	00SSSSS/RR0
00SSSSS/RR0	R/SSS/RR/S000	000SS/R/S/RR/S	SSSSSS/RRRR	00SSSSS/RR0
00SSSSS/RR0	SSS/RRRR000	000S/RRRRRR	SSSS/RRRRRR	00SS/RRRRR0
00SSSS/RRR0	SSSSS/RR000	000SSSS/RRR	SSSSSS/RRRR	00SS/RRRRR

Table A10.

Choices of subjects (24) in Session *Di* (= *D* with order inverted) for the Holt and Laury method.

Treatment 4	Treatment 1	Treatment 2	Treatment 3	Treatment 4
0SSSSS/RR00	SSSSSS/RRRR	000SSSS/RRR	00SSSSS/RR0	0SSSSSS/R00
0SSSS/RRR00	SSSSSSSS/RR	000SSSSS/RR	00SSSSSS/R0	0SSSSSSS00
0SSSSSSS00	SSSSSSSS/RR	000SSSSS/RR	00SSSSSS/R0	0SSSSSS/R00
0SSSSS/RR00	SSSSSS/RRRR	000SSSS/RRR	00SSSSS/RR0	0SSSSS/RR00
0SSSS/RRR00	SSSSS/RRRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSSS/RRR00	SSSSSS/RRRR	000SSSS/RRR	00SSSSS/RR0	0SSSSSS/R00
0SSS/RRRR00	SSSSS/RRRRR	000S/RRRRRR	00SSS/RRRR0	0SSSS/RRR00
0SS/RR/SS/R00	R/S/R/SSS/R/S/RR	000R/SS/R/SS/R	00S/R/S/R/S/RR0	0S/R/S/R/S/R/S00
0SSSSSS/R00	SSSSSS/RRRR	000SSSS/RRR	00SSSSS/RR0	0SSSSSS/R00
0SSSSS/RR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSSS/RRR00	SSSSS/RRRRR	000SS/RRRRR	00SSS/RRRR0	0SSSS/RRR00
0SSSS/RRR00	SSSSS/RRRRR	000SSS/RRRR	00SS/RRRRR0	0SSSS/RRR00
0SSSS/RRR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSSS/RRR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSSS/RRR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00
0SSSSS/RR00	SSSSSSS/RRR	000SSSS/RRR	00SSSSS/RR0	0SSSSSS/R00
0SSSSS/RR00	SSSSSSS/RRR	000SSSS/RRR	00SSSSS/RR0	0SSSSS/RR00
0SSSSSS/R00	SSSSSSS/RRR	000SSSS/RRR	00SSSSS/RR0	0SSSSSS/R00
0SSS/RRRR00	SSSSSS/RRRR	000SSS/RRRR	00SSS/RRRR0	0SSSS/RRR00
0SSSS/RRR00	SSSSS/RRRRR	000RRRRRRR	00SSS/RRRR0	0SSS/RRRR00
0RRRRRRR00	RRRRRRRRRR	000RRRRRRR	00RRRRRRR0	0RRRRRRR00
0SSSSS/RR00	SSSSS/RRRRR	000SS/RRRRR	00SSS/RRRR0	0SSSS/RRR00
0SSSS/RRR00	SSSSS/RRRRR	000SSS/RRRR	00SS/RRRRR0	0SSS/RRRR00
0S/R/A/RRR/A00	SSSS/R/S/RR/S/R	000SSS/R/S/RR	00SS/RRR/SS0	0SS/RR/S/RR00
0SSSSS/RR00	SSSSSS/RRRR	000R/SS/RRRR	00SS/RRRRR0	0SSSS/RRR00
0SSSSSSS00	SSSSSS/RRRR	000SSSS/RRR	00SSSSS/RR0	0SSSSSS/R00
0SSSSS/RR00	SSSSSS/RRRR	000SSSS/RRR	00SSSSS/RR0	0SSSSSS/R00
0SSSSS/RR00	SSSSSS/RRRR	000SSS/RRRR	00SSSS/RRR0	0SSSSS/RR00

Table A11.
Choices of subjects (28) in Session *Ei* (= *E* with order inverted) for the Holt and Laury method.

Treatment 1	Treatment 4	Treatment 2	Treatment 5	Treatment 4
SSSSSS/RRRR	0SSSSS/RR00	000SSSS/RRR	SSSSSSS000	0SSSSSS/R00
SSSSS/RRRRR	0SSS/RRRR00	000SSS/RRRR	SSSSS/RR000	0SSSSS/RR00
SSSSS/RRRRR	0SSSS/RRR00	000SSS/RRRR	SSSS/RRR000	0SSSS/RRR00
SSSSSS/RRRR	0SSSSS/RR00	000SSS/RRRR	SSSSSS/R000	0SSSSS/RR00
SSSSSS/RRRR	0SSSS/RRR00	000SS/RRRRR	SSSSS/RR000	0SSSS/RRR000
SSSS/RRRRRR	0SSS/RRRR00	000SS/RRRRR	SSSSSS/R000	0SSSS/RRR00
SSSSSSS/RRR	0SSSSSS/R00	000SSSS/RRR	SSSSSSS000	0SSSSSS/R00
SSSSSSS/RRR	0SSSSSS/R00	000SSSS/RRR	SSSSSSS000	0SSSSSS/R00
SSSSSS/RRRR	0SSSS/RRR00	000SS/RRRRR	SSSSS/RR000	0SSSS/RRR00
SSSSSSSS/RR	0SSSSS/RR00	000SSSS/RRR	SSSSSS/R000	0SSSSS/RR00
SSSSSS/RRRR	0SSSS/RRR00	000SSS/RRRR	SSSS/RRR000	0SSSS/RRR00
SSSS/RRRRRR	0SSS/RRRR00	000SSS/RRRR	SSSSS/RR000	0SSSSS/RR00
SSSSSS/RRRR	0SS/RR/SSS00	000SS/RRRRR	SSSSSSS000	0SSSSS/RR00

Table A12.
Choices of subjects (13) in Session *Fi* (= *F* with order inverted) for the Holt and Laury method.

Treatment 1	Treatment 5	Treatment 3	Treatment 4	Treatment 1
RR/S/RR/SSSSS	RRRR/SSS000	00RRR/SSSS0	0RR/SSSSS00	RRR/SSSSSSS
RRRR/SSSSSS	RRRR/SSS000	00RR/SSSSS0	0RRR/SSSS00	RRRR/SSSSSS
RRR/SSSSSSS	RRR/SSSS000	00R/SSSSSS0	0RR/SSSSS00	RRR/SSSSSSS
RRR/SSSSSSS	RRR/SSSS000	00RR/SSSSS0	0RR/SSSSS00	RRR/SSSSSSS
S/RRRR/SSSSS	RRRRR/SS000	00RRR/SSSS0	0RRRR/SSS00	RRRRR/SSSSS
RRR/SSSSSSS	RRR/SSSS000	00RR/SSSSS0	0RR/SSSSS00	RRRR/SSSSSS
RRRR/SSSSSS	RRRR/SSS000	00RR/SSSSS0	0RRR/SSSS00	RRRR/SSSSSS
RRRRR/SSSSS	RRRRR/SS000	00RR/SSSSS0	0RRRR/SSS00	RRRRR/SSSSS
RR/SSSSSSSS	RR/SSSSS000	00SSSSSSS0	0R/SSSSSS00	RR/SSSSSSSS
RRRR/SSSSSS	RRRR/SSS000	00RR/SSSSS0	0RRR/SSSS00	RRRR/SSSSSS
RRRR/SSSSSS	RRRR/SSS000	00RR/SSSSS0	0RRR/SSSS00	RRRR/SSSSSS
RRRR/SSSSSS	RRRR/SSS000	00RR/SSSSS0	0RRR/SSSS00	RRRR/SSSSSS
RRRR/SSSSSS	RRRR/SSS000	00RR/SSSSS0	0RRR/SSSS00	RRRR/SSSSSS
RRRRR/SSSSS	RRRR/SSS000	00RRR/SSSS0	0RRRR/SSS00	RRRRR/SSSSS
RRRR/SSSSSS	RRRR/SSS000	00RR/SSSSS0	0RRR/SSSS00	RRRR/SSSSSS
RRRRR/SSSSS	RRRRR/SS000	00RRR/SSSS0	0RRRR/SSS00	RRRRR/SSSSS
RRRRRR/SSSS	RRRRRR/S000	00RRRRR/SS0	0RRRRRR/S00	RRRRRR/SSSS
RRR/SSSSSSS	RRR/SSSS000	00RR/SSSSS0	0RR/SSSSS00	RRR/SSSSSSS
RRR/SSSSSSS	RRRR/SSS000	00RR/SSSSS0	0RR/SSSSS00	RRR/SSSSSSS
RRRRR/SSSSS	RRRRR/SS000	00RRR/SSSS0	0RRRR/SSS00	RRRRR/SSSSS
RRRR/SSSSSS	RRRR/SSS000	00RRR/SSSS0	0RRRR/SSS00	RRRRR/SSSSS

Table A13.
Choices of subjects (21) in Session *A* for the Abdellaoui *et al*. method.

Treatment 2	Treatment 1	Treatment 4	Treatment 5	Treatment 2
000SSSSSSS	RR/SSSSSSS	0RR/SSSSS00	RRR/SSSS000	000SSSSSSS
000RR/SSSSS	RRRRR/SSSSS	0RRRR/SSS00	RRRRR/SS000	000RR/SSSSS
000RR/SSSSS	RRRR/SSSSSS	0RRR/SSSS00	RRRR/SSS000	000R/SSSSSS
000RR/SSSSS	RRRRR/SSSSS	0RRRR/SSS00	RRRRR/SS000	000RR/SSSSS
000RR/SSSSS	RRRRRR/SSSS	0RRRRRR/S00	RRRRRRR/000	000RRRR/SSS
000RR/SSSSS	RRRR/SSSSSS	0RRR/SSSS00	RRRR/SSS000	000R/SSSSSS
000R/SSSSSS	RRRR/SSSSSS	0RRR/SSSS00	RRR/SSSS000	000R/SSSSSS
000R/SSSSSS	RRRR/SSSSSS	0RRR/SSSS00	RRR/SSSS000	000SSSSSSS
000SSSSSSS	RR/SSSSSSSS	0R/SSSSSS00	RR/SSSSS000	000SSSSSSS
000RR/SSSSS	RRRRR/SSSSS	0RRRR/SSS00	RRRRR/SS000	000RR/SSSSS
000RR/SSSSS	RRRRR/SSSSS	0RRR/SSSS00	RRRRR/SS000	000RR/SSSSS
000RR/SSSSS	RRRR/SSSSSS	0RRR/SSSS00	RRRR/SSS000	000R/SSSSSS
000RR/SSSSS	RRRRR/SSSSS	0RRRR/SSS00	RRRRR/SS000	000RR/SSSSS
000R/SSSSSS	RRRR/SSSSSS	0RRR/SSSS00	RRRR/SSS000	000R/SSSSSS
000R/SSSSSS	RRR/SSSSSSS	0RRR/SSSS00	RRR/SSSS000	000R/SSSSSS
000SSSSSSS	RRR/SSSSSSS	0RR/SSSSS00	RRR/SSSS000	000SSSSSSS
000RRR/SSSS	RRRRR/SSSSS	0RRRR/SSS00	RRRRR/SS000	000RR/SSSSS
000RRR/SSSS	RRRRRR/SSSS	0RRRRRR/S00	RRRRRRR0(	000RRRR/SSS
000SS/RRRRR	SSSSS/RRRRR	0RRR/SSSS00	RRRRR/SS000	000R/SSSSSS
000RR/SSSSS	RRR/SSSSSSS	0RR/SSSSS00	RRR/SSSS000	000SSSSSSS
000SSSSSSS	RR/SSSSSSSS	0R/SSSSSS00	RR/SSSSS000	000SSSSSSS

Table A14. Choices of subjects (21) in Session *B* for the Abdellaoui *et al*. method.

Treatment 3	Treatment 2	Treatment 5	Treatment 1	Treatment 3
00R/SSSSSS0	000R/SSSSSS	RRR/SSSS000	RRR/SSSSSSS	00RR/SSSSS0
00RRR/SSSS0	000SSSSSSS	RRRRR/SS000	RRRR/SSSSSS	00RR/SSSSS0
00RR/SSSSS0	000R/SSSSSS	RRR/SSSS000	RRR/SSSSSSS	00RR/SSSSS0
00RR/SSSSS0	000SSSSSSS	RRR/SSSS000	RRR/SSSSSSS	00R/SSSSSS0
00R/SSSSSS0	000R/SSSSSS	RR/SSSSS000	RR/SSSSSSSS	00SSSSSSS0
00RR/SSSSS0	000RR/SSSSS	RRRR/SSS000	RRRR/SSSSSS	00RR/SSSSS0
00SSSSSSS0	000SSSSSSS	RRR/SSSS000	RRR/SSSSSSS	00R/SSSSSS0
000RRRRRR/S	000RRR/SSSS	RRRRRRR000	RRRRRR/SSSS	00RRRR/SSS0
00SSSSSSS0	000SSSSSSS	RR/SSSSS000	RR/SSSSSSSS	00SSSSSSS0
00RR/SSSSS0	000R/SSSSSS	RRRR/SSS000	RRRR/SSSSSS	00RR/SSSSS0
00RRR/SSSS0	000R/SSSSSS	RRR/SSSS000	RRRR/SSSSSS	00R/SSSSSS0
00RRR/SSSS0	000RR/SSSSS	RRRRR/SS000	RRRRR/SSSSS	00RRR/SSSS0
00RR/SSSSS0	000R/SSSSSS	RRRR/SSS000	RRRR/SSSSSS	00RR/SSSSS0
00RRR/SSSS0	000RR/SSSSS	RRRR/SSS000	RRRR/SSSSSS	00RR/SSSSS0
00RR/SSSSS0	000SSSSSSS	RRR/SSSS000	RRR/SSSSSSS	00R/SSSSSS0
00RR/SSSSS0	000R/SSSSSS	RRR/SSSS000	RRRR/SSSSSS	00RRR/SSSS0
00RRR/SSSS0	000RR/SSSSS	RRRR/SSS000	RRRRR/SSSSS	00RRRR/SSS0
00R/SSSSSS0	000R/SSSSSS	RRRR/SSS000	RRRR/SSSSSS	00RR/SSSSS0
00RRR/SSSS0	000R/SSSSSS	RRRR/SSS000	RRRR/SSSSSS	00RR/SSSSS0
00RR/SSSSS0	000R/SSSSSS	RRRR/SSS000	RRRR/SSSSSS	00RR/SSSSS0

Table A15. Choices of subjects (20) in Session *C* for the Abdellaoui *et al*. method.

Treatment 4	Treatment 3	Treatment 1	Treatment 2	Treatment 4
0RRR/SSSS00	00RR/SSSSS0	RRRR/SSSSSS	000R/SSSSSS	0RRR/SSSS00
0RR/SSSSS00	00RR/SSSSS0	RRRR/SSSSSS	000R/SSSSSS	0RR/SSSSS00
0RR/SSSSS00	00RR/SSSSS0	RRRR/SSSSSS	000SSSSSSS	0RRR/SSSS00
0RRR/SSSS00	00RRR/SSSS0	RRRR/SSSSSS	000R/SSSSSS	0RRR/SSSS00
0RRR/SSSS00	00RR/SSSSS0	RRRR/SSSSSS	000R/SSSSSS	0RRR/SSSS00
0RR/SSSSS00	00R/SSSSSS0	RR/SSSSSSSS	000SSSSSSS	0R/SSSSSS00
0RRR/SSSS00	00RR/SSSSS0	RRRR/SSSSSS	000SSSSSSS	0RRR/SSSS00
0RRRR/SSS00	00RRR/SSSS0	RRRRR/SSSSS	000R/SSSSSS	0RRRR/SSS00
0RRR/SSSS00	00RRR/SSSS0	RRRRR/SSSSS	000RR/SSSSS	0RRRRR/SS00
0RR/SSSSS00	00RR/SSSSS0	RRR/SSSSSSS	000R/SSSSSS	0RR/SSSSS00
0RRRR/SSS00	00RRRR/SSS0	RRRRRR/SSSS	000RRR/SSSS	0RRRR/SSS00
0RR/SSSSS00	00RR/SSSSS0	RRR/SSSSSSS	000R/SSSSSS	0RR/SSSSS00
0RRR/SSSS00	00RR/SSSSS0	RRRR/SSSSSS	000R/SSSSSS	0RRR/SSSS00
0RRR/SSSS00	00RR/SSSSS0	RRRR/SSSSSS	000R/SSSSSS	0RRR/SSSS00
0RRR/SSSS00	00RR/SSSSS0	RRRR/SSSSSS	000R/SSSSSS	0RRR/SSSS00
0RRR/SSSS00	00R/SSSSSS0	RRRR/SSSSSS	000R/SSSSSS	0RRR/SSSS00
0RRR/SSSS00	00RR/SSSSS0	RRRR/SSSSSS	000R/SSSSSS	0RRR/SSSS00
0R/SSSSSS00	00RRR/SSSS0	RRR/SSSSSSS	000R/SSSSSS	0RRR/SSSS00
0RRR/SSSS00	00RRR/SSSS0	RRRRRR/SSSS	000RRR/SSSS	0RRRRR/SS00
0RRR/SSSS00	00RR/SSSSS0	RRRR/SSSSSS	000R/SSSSSS	0RR/SSSSS00
0RRR/SSSS00	00R/SSSSSS0	RRR/SSSSSSS	000SSSSSSS	0RR/SSSSS00

Table A16. Choices of subjects (21) in Session *D* for the Abdellaoui *et al*. method.

Treatment 5	Treatment 4	Treatment 2	Treatment 3	Treatment 5
RRR/SSSS000	0RR/SSSSS00	000SSSSSSS	00R/SSSSSS0	RRR/SSSS000
RRRR/SSS000	0RRR/SSSS00	000R/SSSSSS	00RR/SSSSS0	RRRR/SSS000
RRRR/S/R/S00	0R/S/R/SSS/R00	000SS/R/S/R/SS	00S/RRR/SS/R0	RR/SS/R/S/R/000
RRRRR/SS000	0RRRR/SSS00	000RR/SSSSS	00RRR/SSSS0	RRRRR/SS000
RRR/SSSS000	0RRR/SSSS00	000R/SSSSSS	00RR/SSSSS0	RRRR/SSS000
RR/SSSSS000	0R/SSSSSS00	000SSSSSSS	00SSSSSSS0	RR/SSSSS000
RRR/SSSS000	0RRR/SSSS00	00R/SSSSSS	00RR/SSSSS0	RRRR/SSS000
RRRR/SSS000	0RRR/SSSS00	000SSSSSSS	00R/SSSSSS0	RRRR/SSS000
RRRR/SSS000	0RRRRR/SS00	000RRR/SSSS	00RRRR/SSS0	RRRRR/SS000
RRR/SS/RR000	0RRR/SSSS00	000RRR/SSSS	00RR/SSSSS0	RRRRR/SS000
RRR/SSSS000	0RRRR/SSS00	000R/SSSSSS	00RR/SSSSS0	RRRRR/SS000
RR/SSSSS000	0RR/SSSSS00	000SSSSSSS	00SSSSSSS0	RRR/SSSS000
RRR/SSSS000	0RR/SSSSS00	000SSSSSSS	00R/SSSSSS0	RRR/SSSS000
RR/SSSSS000	0RR/SSSSS00	000SSSSSSS	00R/SSSSSS0	RRR/SSSS000
RRRRR/SS000	0RRRR/SSS00	000RR/SSSSS	00RRR/SSSS0	RRRRR/SS000
RRRR/SSS000	0RRR/SSSS00	000R/SSSSSS	00RR/SSSSS0	RRRR/SSS000
RRR/SSSS000	0RR/SSSSS00	000R/SSSSSS	00R/SSSSSS0	RRR/SSSS000
RRRRR/SS000	0RRRR/SSS00	000RR/SSSSS	00RRR/SSSS0	RRRRR/SS000
RRRRR/SS000	0RRRR/SSS00	000RR/SSSSS	00RRR/SSSS0	RRRRR/SS000
RRRR/SSS000	0RRR/SSSS00	000R/SSSSSS	00RR/SSSSS0	RRRR/SSS000
RRRR/SSS000	0RRR/SSSS00	000R/SSSSSS	00RRR/SSSS0	RRRR/SSS000

Table A17. Choices of subjects (21) in Session *E* for the Abdellaoui *et al*. method.

APPENDIX B

Let the decision maker face the complete list of ten pairs in the HL method. Disregarding compound choices that switch back and forth, and are therefore first-order stochastically dominated, there are eleven possible compound choices, listed in the first column of Table B1, with their expected values listed in the last column. Assuming that one of the ten lottery pairs is randomly picked, the cumulative distribution functions (CDF's) corresponding to each of the compound choices are given by columns 2 to 5 of Table B1.[12]

Compound Choice	**€0.30**	**€4.80**	**€6.00**	**€11.55**	**Expected Money Value (€)**
SSSSSSSSSS	0	0.45	1.00	1.00	5.46
SSSSSSSSS/R	0	0.45	0.90	1.00	6.01
SSSSSSSS/RR	0.01	0.45	0.81	1.00	6.47
SSSSSSS/RRR	0.03	0.45	0.73	1.00	6.82
SSSSSS/RRRR	0.06	0.45	0.66	1.00	7.08
SSSSS/RRRRR	0.10	0.45	0.60	1.00	7.23
SSSS/RRRRRR	0.15	0.45	0.55	1.00	7.28
SSS/RRRRRRR	0.21	0.45	0.51	1.00	7.23
SS/RRRRRRRR	0.28	0.45	0.48	1.00	7.09
S/RRRRRRRRR	0.36	0.45	0.46	1.00	6.84
RRRRRRRRRR	0.45	0.45	0.45	1.00	6.49

Table B1. CDF's for the eleven choices of the full ten-pair list in HL.

On the other hand, if the last three pairs are deleted, eight compound choices are available, as follows. (Recall that zeroes in the compound choice column mark the deletion of pairs.)

[12] We adopt the consequentialist axiom, see Mas-Colell *et al.* (1995).

Compound Choice	**€0.30**	**€4.80**	**€6.00**	**€11.55**	**Expected Money Value (€)**
SSSSSSS/000	0.00	0.60	1.00	1.00	5.28
*SSSSSS/R/*000	0.04	0.60	0.90	1.00	5.64
*SSSSS/RR/*000	0.10	0.60	0.81	1.00	5.86
*SSSS/RRR/*000	0.17	0.60	0.74	1.00	5.94
*SSS/RRRR/*000	0.26	0.60	0.69	1.00	5.87
*SS/RRRRR/*000	0.36	0.60	0.64	1.00	5.66
*S/RRRRRR/*000	0.47	0.60	0.61	1.00	5.30
*RRRRRRR/*000	0.60	0.60	0.60	1.00	4.80

Table B2. CDF's for the eight choices of the seven-pair list after the deletion of the last three pairs in HL.

It can be easily checked that each of the eleven compound choices in the ten-pair list (Table B1) first-order stochastically dominates (FOSD) one, two, three, four, five or six of the compound choice in the seven pair (eight choices) list of Table B2, as follows.

SSSSSSSSSS FOSD *SSSSSSS/*000;

SSSSSSSSS/R FOSD *SSSSSS/R/*000 and *SSSSSSS*/000;

SSSSSSSS/RR FOSD *SSSSS/RR/*000 and *SSSSSS/R/*000;

SSSSSSS/RRR FOSD *SSSS/RRR/*000, *SSSSS/RR/*000 and *SSSSSS/R/*000;

SSSSSS/RRRR FOSD *SSS/RRRR/*000, *SSSS/RRR/*000 and *SSSSS/RR/*000;

SSSSS/RRRRR FOSD *RRRRRRR/*000, *S/RRRRRR/*000, *SS/RRRRR/*000, *SSS/RRRR/*000, *SSSS/RRR/*000 and *SSSSS/RR/*000;

SSSS/RRRRRR FOSD *RRRRRRR/*000, *S/RRRRRR/*000, *SS/RRRRR/*000, *SSS/RRRR/*000 and *SSSS/RRR/*000;

SSS/RRRRRRR FOSD *RRRRRRR/*000, *S/RRRRRR/*000, *SS/RRRRR/*000 and *SSS/RRRR/*000;

SS/RRRRRRRR FOSD *RRRRRRR/*000, *S/RRRRRR/*000 and *SS/RRRRR/*000;

S/RRRRRRRRR FOSD *RRRRRRR/*000, *S/RRRRRR/*000 and *SS/RRRRR/*000;

RRRRRRRRRR FOSD *RRRRRRR/*000 and *S/RRRRRR/*000.

The corresponding CDF's and expected money values for the full ten-pair list of the ADH method are as follows

Compound Choice	**€5**	**€6.10**	**€7.20**	**€8.30**	**€9.45**	**€10.55**	**€11.70**	**€12.80**	**€13.90**	**€15**	**Expected Money Value (€)**
~~*RRRRRRRRRR*~~	~~0.50~~	~~0.50~~	~~0.50~~	~~0.50~~	~~0.50~~	~~0.50~~	~~0.50~~	~~0.50~~	~~0.50~~	~~1.00~~	~~10~~
RRRRRRRRR/S	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	1.00	10.50
RRRRRRRR/SS	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.50	1.00	10.89
RRRRRRR/SSS	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.45	0.55	1.00	11.17
RRRRRR/SSSS	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.50	0.60	1.00	11.34
RRRRR/SSSSS	0.25	0.25	0.25	0.25	0.25	0.35	0.45	0.55	0.65	1.001.0	11.40
RRRR/SSSSSS	0.20	0.20	0.20	0.20	0.30	0.40	0.50	0.60	0.70	1.00	11.34
RRR/SSSSSSS	0.15	0.15	0.15	0.25	0.35	0.45	0.55	0.65	0.75	1.00	11.17
RR/SSSSSSSS	0.10	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	1.00	11.89
R/SSSSSSSSS	0.05	0.15	0.25	0.35	0.45	0.55	0.65	0.75	0.85	1.00	10.50
~~*SSSSSSSSSS*~~	~~0.10~~	~~0.20~~	~~0.30~~	~~0.40~~	~~0.50~~	~~0.60~~	~~0.70~~	~~0.80~~	~~0.90~~	~~1.00~~	~~10~~

Table B3. CDF's for the compound choices of the full ten-pair list in the ADH method.

Note that, in Table B3, the compound choice *RRRRRRRRRR* is first-order stochastically dominated (by *RRRRRRRRR/S*) and so is *SSSSSSSSSS* (by *R/SSSSSSSSS* and by *RR/SSSSSSSS*); accordingly, they are disregarded.

Again, if the last three pairs are deleted, eight compound choices are available, as follows.

Compound Choice	**€5**	**€6.10**	**€7.20**	**€8.30**	**€9.45**	**€10.55**	**€11.70**	**€12.80**	**€13.90**	**€15**	**Expected Money Value (€)**
*RRRRRRR/*000	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	1.00	10
*RRRRRR/S/*000	0.43	0.43	0.43	0.43	0.43	0.43	0.57	0.57	0.57	1.00	10.24
*RRRRR/SS/*000	0.36	0.36	0.36	0.36	0.36	0.50	0.64	0.64	0.64	1.00	10.32
*RRRR/SSS/*000	0.29	0.29	0.29	0.29	0.43	0.57	0.71	0.71	0.71	1.00	10.24
*RRR/SSSS/*000	0.21	0.21	0.21	0.36	0.50	0.64	0.79	0.79	0.79	1.00	10
*RR/SSSSS/*000	0.14	0.14	0.29	0.43	0.57	0.71	0.86	0.86	0.86	1.00	9.60
*R/SSSSSS/*000	0.07	0.21	0.36	0.50	0.64	0.79	0.93	0.93	0.93	1.00	9.04
~~*SSSSSSS/*000~~	~~0.14~~	~~0.29~~	~~0.43~~	~~0.57~~	~~0.71~~	~~0.86~~	~~1.00~~	~~1.00~~	~~1.00~~	~~1.00~~	~~8.33~~

Table B4. CDF's for the compound choices of the seven-pair list after the deletion of the last three pairs in the ADH method.

In Table B4, the compound choice *SSSSSSS/*000 is first-order stochastically dominated (by *R/SSSSSS/*000 and by *RR/SSSSS/*000), and is disregarded.

Now each of the nine compound choices in Table B3 FOSD one or two of the seven compound choices in Table B2, as follows.

RRRRRRRRR/*S* FOSD *RRRRRRR*/000;

RRRRRRRR/*SS* FOSD *RRRRRR/S*/000 and *RRRRRRR*/000;

RRRRRRR/*SSS* FOSD *RRRRR/SS*/000 and *RRRRRR/S*/000;

RRRRRR/*SSSS* FOSD *RRRRR/SS*/000;

RRRRR/ *SSSSS* FOSD *RRRR/SSS*/000;

RRRR/*SSSSSS* FOSD *RRR/SSSS*/000 and *RRRR/SSS*/000;

RRR/*SSSSSSS* FOSD *RRR/SSSS*/000;

RR/*SSSSSSSS* FOSD *RR/SSSSS*/000;

R/*SSSSSSSSS* FOSD *R/SSSSSS*/000.

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