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Do Couples Discount Future Consequences Less than Individuals?

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Abstract

This paper examines couple time preferences by reporting the results of an experiment based on the elicitation of nearest equivalent values. Decisions involving delayed outcomes are studied for each of the two partners individually and for the couple. This allows for a direct comparison between couple behavior and individual partners' behavior in choices over time. We use Fishburn and Rubinstein's (1982) discounted utility model and infer measurements of utility and discounting at both the individual and the couple level. While utility is found to be similar for couples and individuals, we observe that, in decision over time, couples discount future amounts of money less than individuals. This result suggests that making joint decisions significantly reduces revealed impatience. Moreover, we show that couple time preferences cannot be considered as a mix of the individual preferences of each of the two partners. Taken together, these findings suggest that determinants of intertemporal decisions made by couples, such as financial decisions, should be considered as distinct from determinants of individual decisions.

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1 Introduction

It is common practice in household surveys to interview one member of the household about the joint preferences or the joint behavior of the household. Such practices are rather intriguing, as a now relatively extensive economic literature warns us against using individual as models for couple behavior and about the potential problems related to the aggregation of individual consumption at the household level (Chiappori, 1988; Lundberg, Pollack and Wales, 1997; Browning and Chiappori, 1998; Cherchye, De Rock and Vermeulen, 2009; Adams et al., 2012). Important decisions such as the consumption of durable goods, savings, housing, retirement and health plans are likely to be very different according to whether they are taken at the individual level or at the household level. Most of these decisions involve choice over time. While research in behavioral economics documents anomalies in intertemporal choice at the individual level (Frederick et al., 2002; Rodhe, 2010), those anomalies are not well documented for couples and households (Adams et al., 2012). Despite the repeated warnings about the practical importance of making a distinction between couples and individuals, current practices are usually defended by pointing to the costs and the difficulties associated with a data collection at family level. In this context, it seems important for researchers to design tests that give a clear understanding of the type of biases induced by such practices.

By allowing a tight control over the decision environment, experimental economics offers an appropriate methodology to design tests of this type. A second advantage of experimental methods is that they offer simple simulation tools to elucidate the implications of risk and intertemporal presentation formats on risk taking and the comprehension of financial decisions (European Council, 2004, Kaufman et al. 2013). Several experimental papers have recently addressed these points. In a nutshell, recent results show that experiments help us to better understand two fundamental components of couples' financial decisions: risk attitudes and discounting. Bateman and Munro (2005) were the first to design an experimental investigation on joint decisions made by real couples. Their experiment focused on decision under risk. They found that individual and collective expressions of value for decision un-

der risk were different. This suggests that the preference functionals might be highly specific when considered at the couple level. Studying cohabiting student pairs, He et al. (2012) found similar results. Bateman and Munro (2005) also found that couples followed a similar pattern of violations of expected utility when compared to the usual results found in the literature on individual decision-making. This finding was confirmed in the experiments performed by Munro and Popov (2009) and Abdellaoui et al. (2012). De Palma et al. (2011) also built an experiment that aimed to investigate the relationship between couples' and individuals' behavior toward risk. The specificity of their experimental design lies in the special attention they paid to the dynamics of the decision process. They found that the balance of power was modified during the bargaining process and that women gained more and more power over the course of the decision-making process as time passed.

Most of the experimental literature on couple decision-making covers risky decisions, and only a few recent studies investigate riskless decisions in social dilemma situations (Cochard et al. 2010) or in intertemporal choice (Carlsson et al. 2012). Time preferences have a special interest for households' financial choices, as it is a necessary complement to risk attitudes for a better understanding of long-term risk taking. For example, Mazzocco (2007) showed that after an income shock singles will smooth consumption over time, but not couples. To our knowledge, only two studies used experimental designs to compare couple and individual time preferences. Carlsson et al. (2012) studied the balance of power in couple decisions using data on 101 married couples in rural China. These authors observed a high degree of impatience, both in the individual and the joint decisions. Their main result showed that joint household decisions were more influenced by the husband's time preferences than by wife's time preferences. Moreover, the balance of power shifts more in favor of the wife in wealthier households, in longer marriages and when the wife is responsible for small investment decisions. Such results are consistent with those provided by existing studies on decision-making under risk (Carlsson et al. 2013; De Palma et al. 2011). The second study by Kono et al. (2011) showed that present-biased people are more patient when they make decisions jointly with their spouses. This study suggests that couples are more patient than individuals.

While both above-mentioned studies use very short time horizons (choices between today, 4 days or in 8 days and choices between today and in 3 days with a three-week front-end delay), we are going to focus on longer time horizons ranging from 1 month to 2 years. In addition, our experimental design is based on the elicitation of nearest equivalent values instead of binary choices. Nearest equivalent value elicitation avoids the usual simplifying assumption of linear utility and allows us to measure both utility and discount functions. Our main results are as follows: (1) couples and individuals do not differ in their evaluation of outcomes; (2) couples discount the future less and are more patient than each of the partners taken alone; (3) couples' patience is not a convex combination of the partners' attitudes and consequently it could not be accurately described by a balance of power between the two partners.

The paper is organized as follows: In Section 2 we formally introduce the discounted utility model and the measurement method and we review the most important findings on intertemporal utility and discounting. The experiment is described in Section 3. The results are presented in Section 4. Section 5 concludes the paper.

2 Theoretical background and elicitation methods

To study couple preferences over time and test for the difference between individuals and couples, we refer to the discounted utility model (Fishburn and Rubinstein, 1982, DU hereafter). The model offers a general behavioral theory for intertemporal choice which can account for most representations of choice over time as well as the most commonly observed time preference patterns. For experimental measures, the model allows for a non-linear evaluation of consequences over time. In what follows, we will first introduce the DU model and then the proposed measurement method.

2.1 The Discounted Utility Model

We consider a decision-maker, who can be either an individual or a couple, who has to make a choice between time prospects. In the present paper, we only use time prospects with at most two distinct outcomes. Therefore we restrict the formal presentation to such prospects. Let $(x, t; y)$ denote a time prospect that yields outcome x at time point t and outcome y at time $t = 0$.¹ Outcomes are amounts of money and higher outcomes at the same date are always preferred. If $x = 0$ or $t = 0$, the time prospect is equivalent to a single outcome available at $t = 0$. We assume that the decision-maker has preferences over the set of time prospects and perceives outcomes relative to 0.

Under the DU model, the decision-maker evaluates each time prospect separately and chooses the prospect that offers the highest value. The DU value of a time prospect is given by:

$$v(y) + \phi(t)v(x) \tag{1}$$

where $v(\cdot)$ is a strictly increasing utility function and satisfying $v(0) = 0$ and $\phi(t)$ a strictly decreasing time weight - or discount factor - attached to delay t , satisfying $\phi(0) = 1$. The economics of intertemporal choice usually assumes constant discounting (Samuelson, 1937: time weights decrease over time at a constant discount rate) or hyperbolic discounting (Ainslie, 1975: time weights decrease over time at a - hyperbolically - decreasing discount rate).

The shape of the discount function is still a matter of controversy. The existence of a constant discount rate stable across delays is usually not confirmed by the data (Benzion et al. 1989; Thaler 1981, Loewenstein and Prelec 1992; O'Donoghue et al. 2002). Most studies found evidence of present-biased, decreasingly impatient, preferences, a result consistent with a hyperbolic discount function. However, some recent studies found that experimental controls for transactions costs and payment risk reduce the present bias and generate individual behaviors compatible with constant discounting (Gine et al. 2011; Andreoni and Sprenger, 2012; Augenblick et al. 2013).

¹In the experiment, $t = 0$ corresponds to the front-end delay.

2.2 Elicitation method

Our elicitation method is based on Abdellaoui et al. (2013a) and consists of two stages. In the first stage, utility is elicited and, in the second stage, time weights are elicited. We start by selecting a fixed delay t^* and a series of k pairs of outcomes $\{(x_i, y_i) : i = 1, \dots, k\}$ that are kept fixed throughout the elicitation of the utility function. Next, we elicit k nearest equivalent values s_1, \dots, s_k available at date t that the decision-maker considers equivalent to the series of time prospects $(x_i, t^*; y_i)$, $i = 1, \dots, k$. The advantage of keeping the delay t^* fixed is that only one additional parameter, $\tau = \phi(t^*)$, has to be estimated besides the parameter of the utility function. Assuming a parametric form for utility $v(\cdot)$, Eq. (1) allows us to estimate the time weight τ and the utility parameter through nonlinear least squares $\|s - \hat{s}\|^2$ with:

$$\hat{s}_i = v^{-1} [\tau' \cdot v(x_i) + v(y_i)] \quad (2)$$

$i = 1, \dots, k$. Once utility has been determined in the first stage, time weights can be elicited in the second stage using nearest equivalent values. To do so, we select an outcome x^* and a series of m delays $\{t_j : j = 1, \dots, m\}$, that are kept fixed throughout the elicitation process. Then m nearest equivalent values s'_1, \dots, s'_m equivalent to a series of time prospects $(x^*, t_j; 0)$, $j = 1, \dots, m$ are elicited. According to the DU model, the discount factors associated with a given time horizon t_j can be computed as:

$$\phi(t_j) = \frac{v(s'_j)}{v(x^*)} \quad (3)$$

$j = 1, \dots, m$.

We determined the annual discount rates d_{t_j} from the elicited time weight $\phi(t_j) = 1/(1 + d_{t_j})^{t_j}$.

3 Experiment

3.1 Subjects

The subjects in our study were people living in the city of Paris, France. 130 subjects took part in the experiment (65 couples). Couples were recruited through advertisements made in a number of public places in Paris: schools, associations, day-care centers and social events. A preliminary phone contact allowed us to see if the responders' profile corresponded to our selection criteria and to make an appointment. A couple was selected to participate in the study only if each of the partners was over the age of 25 and the couple had lived together for at least one year. The minimum age requirement was used in order to exclude from the study young student couples that were not yet financially independent from their parents from the study. Moreover, one year of life in common was required to make sure that the two partners had already had the opportunity to take financial decisions together. We used a mobile lab and all couples were interviewed at home.

Each couple was paid €50 for its participation. In addition, we implemented a between subject random-lottery incentive scheme. Before starting the experiment, participants (individuals and/or couples) were informed that, at the end of the experimental session, they could be selected to play one of their choices for real and could win up to €1200 depending on their choices. When a payment had to be made at the front-end delay, the experimenter made an appointment for the payment procedure. For delayed payments longer than one week, participants were asked to self-address an envelope for the payment and were given an administrative receipt so that they were assured that the future payment would indeed be made.

The experiment was conducted in the form of computer-based individual interviews. A dedicated software had been developed for the purpose of the experiment. Subjects were told that there were no right nor wrong answers, and were allowed to take a break at any time during the experimental session. The responses were systematically entered into the computer by the interviewer so that the subjects could focus on the choice questions. We always carried out the individual interviews before

the couple interview. This design was meant to minimize the potential impact of couples' answers on individuals' answers (see Carlsson et al. 2012, and Bateman and Munro, 2005, for similar procedures). For individual interviews, the gender order (female/male or male/female) was random. During the individual session, respondents were separated in different rooms. The structure of the individual and joint session was the same. In the joint session, couples were allowed to freely communicate and no time constraint was imposed to the decision-making process. The potential gains were proposed to the couple without any predetermined sharing rule. The whole experiment² lasted on average one hour and a half, including 5 to 10 minutes for task explanation and practice questions. Together with gender, we also collected information on age, number of children and the length of the relationship. One couple was discarded from the experiment because the husband did not understand the tasks. This left 128 subjects (64 couples) for the analysis.

3.2 Stimuli

Eleven nearest equivalent value questions were used to elicit the discounted utility model. The time prospects for which we determined the nearest equivalent values are displayed in Table 1. The measurements were not chained and therefore not vulnerable to error propagation. Six nearest equivalent value questions (Table 1, $i = 1, \dots, 6$) were used to determine utility in intertemporal decisions. The time horizon t^* used to elicit utility was equal to one year. Five nearest equivalent value questions (Table 1, $i = 5, \dots, 11$) were used for the elicitation of discount factors. We elicited discount factors for $t = 1$ month, 3 months, 6 months, 1 year and 2 years, using $x^* = \text{€}1200$. A one-week front-end delay was used to avoid immediate temptation.³ The order in which the six prospects used to elicit utility were presented was randomized. However, we learned from the pilot sessions that

²The experiment included, in addition to decisions over time, several questions concerning decisions under risk that are not reported in the present paper.

³Without a front-end delay, participants' behavior might be subject to a strong present bias. The present bias ties fixed costs to any future, as opposed to present, costless monetary rewards and, therefore, reduces the accuracy of discount rate estimates and artificially favors quasi-hyperbolic discounting.

the subjects found it easier to deal with an increasing order in delay (from $t = 1$ month to $t = 2$ years) than with a randomized order. The order in which the five prospects used to elicit discount factors were presented was deterministic and always came after the questions used to determine utility.

	Utility						Discount factors				
	1	2	3	4	5	6	7	8	9	10	11
x_i	800	1200	400	600	800	1000	1200	1200	1200	1200	1200
t_i	1y.	1y.	1y.	1y.	1y.	1y.	1m.	3m.	6m.	1y.	2y.
y_i	0	0	200	200	200	200	0	0	0	0	0

Table 1: Time prospects used to elicit the discounted utility model

All indifferences were elicited through a three-step iterative choice list procedure. In the first step, subjects had the choice between a fixed time prospect and a variable amount of money to be received in one week’s time. The latter was framed as linearly equally-spaced outcomes between the minimum and the maximum amounts given in the fixed prospects. The second and third steps refined the choice at the point where subjects had switched in the previous list. Both sides of the switching point served as a bound for the next choice list. We divided the range into 11 categories for each of the steps. To ensure consistency, incentive compatibility and to control for response error, we added a fourth step to the choice list procedure (see Abdellaoui et al. 2011 for a similar procedure). This fourth step corresponded to the entire choice list that would have been generated by refining every possible switching point from the first list. Following monotonicity, the computer pre-filled the list based on the answers given during the previous steps. The list was then presented to the subject for validation. The software allowed backtracking if participants did not wish to validate their previous series of choices.

4 Results

In this section, we report the results of the elicitation of the DU model for men, women and couples. The median nearest equivalent values are reported in Table 5 in the Appendix. Table 5 shows that 99% of the choices were consistent with impatience. In what follows, we first present results regarding utility and discounting, then we provide evidence on the balance of power within the couple.

4.1 Utility

In order to elicit utility over time, we used a power parametric specification $v(x) = x^\beta$. This parametric form provides a direct interpretation of the elicited parameter, $1/\beta$ being the elasticity of intertemporal substitution. Another advantage of the power specification is that it is not sensitive to the selected unit of time (Baucells and Sarin, 2007). Table 2 reports the results of utility over time for women, men and couples. The distribution of individual utility parameter is given in the Appendix.

	Power (β)		
	Women	Men	Couples
Median	1.03	1.05	1.04
IQR	1.00-1.11	1.00-1.16	1.01-1.09
$\#(\alpha \leq 1)$	8	14	11
$\#(\alpha > 1)$	56	50	53

Table 2: Median estimates for utility over time

IQR: interquartile range.

For women, men and couples, utility was convex, with the power coefficients differing significantly from 1 ($t(63)=4.87$ for women, $t(63)=6.20$ for men, $t(63)=4.99$ for couples). We found significantly more convex utility functions than concave utility functions (binomial, $p<0.01$).

Evidence about correlations between couples' and individuals' utility parameters is mixed. We found a positive and significant correlation between couples' utility

parameters and women’s utility parameters ($\rho = 0.27$, significant at $p=0.03$), and almost no correlation between men’s and couples’ utility parameters ($\rho = 0.09$, not significant at $p=0.50$).

4.2 Discounting

The second - and major - component of temporal attitudes in the DU model is discounting. Table 3 reports median time weights along with the corresponding interquartile ranges and annual discount rates. A Friedman test strongly rejected the equality of discount rates across delays ($p < 0.001$ for both women, men and couples). Table 3 shows that for both individuals and couples, annual discount rates were first increasing and then decreasing over time. This suggests that participants exhibited increasing impatience between the present and a three-month delay and then decreasing impatience between a three-months delay and a two-year delay.⁴ While most classical studies support decreasing impatience (Thaler, 1981; Benzion et al. 1989), increasing impatience is not unusual (Gigliotti and Sopher, 2003; Sayman and Onculer, 2009; Attema et al. 2010; Abdellaoui et al. 2013b).

To get a clearer picture of the discounting behavior in our study, we estimated a parametric discount function $\phi(\cdot)$ for men, women and couples. Various parametric forms have been proposed in the literature. Because the most widely-used functions are in the class of hyperbolic functions and only allow for present biased preferences, we preferred to use the Ebert and Prelec (2007) constant-sensitivity discount function. The main advantage of this functional form is that it is very flexible and allows for both decreasing and increasing impatience (Bleichrodt et al. 2009), which

⁴To obtain a more precise test of the shape of annual discount rates, we used a criterion proposed by Abdellaoui et al. (2010). We computed the differences $d_t - d_{t+1}$ for $t = 1$ month, ... 2 years. To account for response error, each participant was classified as decreasingly [increasingly, constantly] impatient if at least three out of four of these differences were positive [negative, constant]. According to this criterion, and consistent with Table 3 results, we found a majority of mixed patterns. Few participants were classified as either increasingly impatient (2 women, 2 men and 4 couples) or decreasingly impatient (8 women, 19 men and 5 couples).

Delay	Women			Men			Couples		
t	Median	IQR	r	Median	IQR	r	Median	IQR	r
1 month	0.995	0.96-1.00	5.64%	0.987	0.90-1.00	15.84%	0.995	0.97-1.00	5.37%
3 months	0.93	0.88-0.99	31.54%	0.91	0.87-0.97	43.13%	0.95	0.910-0.99	19.72%
6 months	0.88	0.81-0.91	28.85%	0.89	0.79-0.95	26.79%	0.90	0.82-0.96	21.18%
1 year	0.82	0.74-0.90	22.19%	0.82	0.68-0.90	22.32%	0.86	0.76-0.91	15.82%
2 years	0.71	0.56-0.82	18.19%	0.76	0.57-0.83	14.80%	0.80	0.68-0.83	11.99%

Table 3: Median values for decision weights
IQR: interquartile range. r: corresponding annual discount rate.

is closer to the patterns of discounting shown in Table 3 . The constant-sensitivity discount function is defined by:

$$\phi(t) = \exp(-(at)^b) \quad (4)$$

where parameter a reflects impatience and parameter b reflects sensitivity to time. If $b = 1$ then the decision-maker has perfect time sensitivity and the model corresponds to exponential discounting. If $b = 0$, the decision-maker is insensitive to time and has an infinite discount rate. Parameter b can be thought as a measure of the distance to exponential discounting.

Figure 1 plots the estimated discount function $\phi(\cdot)$ based on the median parameter values for women, men and couples. The distributions of individual parameters are given in the Appendix. Figure 1 shows that the discounting behavior of couples lies above the boundaries of individuals' discounting. It also clearly shows that couples are more patient than each individual taken alone. Due to the presence of outliers in individual estimates, the usual t-test gives divergent results as compared to a Wilcoxon non-parametric test. While the former found no significant difference in elicited discounting parameters, the latter shows that both women's and couples' impatience (as measured by parameter a) on the one hand, and men's and couple's sensitivity to time (as measured by parameter b) on the other, were significantly different ($p < 0.01$ and $p = 0.03$ respectively).

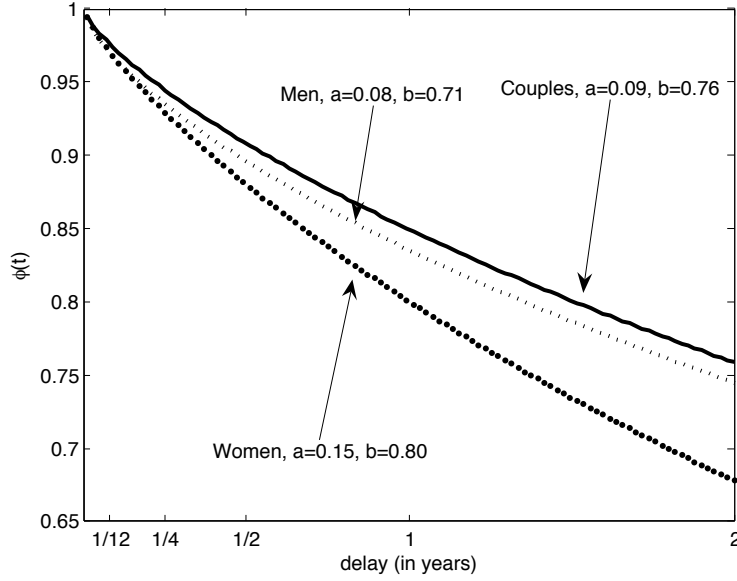


Figure 1: Discounting functions, median parameter values

4.3 Balance of power

To evaluate the balance of power within the couple, we regressed couples' utility parameters on individual's utility parameters, assuming the linear constraint that individual weights sum to one. The linear constraint has two complementary interpretations. First, if the weights lie between 0 and 1, they can be interpreted as the balance of power in the couple. Second, if weights are outside the $[0, 1]$ range, this means that the couples' utility is not well determined by a balance of power between the individuals. A potential drawback of the regression procedure is the potentially ill-defined nature of individual's weights in the decision-making process. Indeed, the regression is compatible with a collective model of the household but also with a dictatorship of one altruistic individual putting some weight on the preference of the other. To that respect, a better estimation of the individual weights could be obtained by including within-couple heterogeneity in individual characteristics. In what follows, we assume that individual weights depend on the partners' age gap, the length of their relationship and the number of children, if any.

Model	1	2
women's weight	0.404	0.537
	(0.143)	(0.132)
Length of the relationship	0.003	0.003
	(0.004)	(0.008)
Children	0.037	0.149
	(0.131)	(0.123)
Children ²	-0.028	-0.132**
	(0.039)	(0.043)
Age gap	0.043	-0.021
	(0.014)	(0.026)
Observations	64	64 × 5
R-squared	0.389	0.532

Table 4: Women's bargaining weights in couple decisions

Standard errors in parentheses (* significant at 5 percent; ** significant at 1 percent). For women's bargaining weights, significance is measured towards equal weighting (one-half). Dependent variables are utility (models 1) and time weights (model 2). Model 2 includes clustering for multiple answers by the same individual.

Table 4 shows the results of the regression of couples' utility parameter on individuals' utility parameters in column 1 (model 1). We found an unequal balance of power within the couples in favor of men, but this balance of power was not significant. Elicited time weights and discount rates allowed us to further investigate the balance of power in intertemporal decisions. A pooled regression for all delays, clustering for multiple responses (model 2 in Table 4), showed that women had a weight of 0.54 and men, a weight of 0.46. Still, we found no evidence for an unequal balance of power. Children (squared value) have a negative effect on the women's balance of power for time weights. Surprisingly, the age gap did not significantly affect partners' bargaining weight.⁵

Moreover, we found that only 52% of couples' time weights lay between individual weights, which is the basic assumption underlying a constrained regression model. Binary comparisons of time attitudes (see Appendix, Table 6) confirm this finding: couples' time weights were always significantly lower than men's time weights and also significantly lower than women's time weights for delays strictly longer than 6 months. While women appeared to be more patient than men for short delays and more impatient for long delays, binary comparisons showed that these difference were not significant. Difference in patience is not the only interpretation of the gender difference in time weights. For example, if subjects do not trust the experiment, they may view future payoffs as risky, and discounting could be confused with lack of trust in the payment procedure. Moreover, if trust differs by gender, as shown by Buchan, Croson and Solnick (2008), it may generate the observed difference in patience between men and women.

5 Discussion and Conclusion

Our paper proposed an analysis of couple decision-making over time. We presented the results of an experiment in which 64 couples were confronted, both individually

⁵Browning's (2000) estimations of life expectancies and age of marriage between spouses suggests that differences in the expected survival horizon would imply substantially different discount rates.

and jointly, with a series of intertemporal choice tasks. Based on the elicitation of nearest equivalent values, we provided estimates for couples' intertemporal utility and couples' discounting. The three main results are the following. First, intertemporal utility was found to be quite similar for individuals and couples. Second, couples were more patient than individuals. Last, couples had a quite large extended notion of the present.

Regarding intertemporal utility, no significant difference was observed between the elicited utility parameters for men, women and couples. This suggests that, at aggregated level, couples and individuals have similar attitudes towards intertemporal consequences. We did not find strong evidence in favor of a nonlinear utility. The observed (slight) convexity was not enough pronounced to be statistically significant. Recent experimental literature found linear utility (Abdellaoui et al. 2009, Abdellaoui et al. 2013a) or concave utility (Andreoni and Sprenger, 2012). Overall, our data are consistent with the use of a linear utility function for couples and for individual decision-maker when decisions are modeled over time, at least for moderate amounts of money.

Regarding discounting, we found evidence that couples were more patient than individuals. For all delays, the elicited discount rates were lower for joint decisions (made by couples) than for individual decisions. This result suggests that the making of joint decisions reduces impatience. Our observations are consistent with the Milch et al. (2009) finding that participants discount more when they act as individual decision-makers than in group decision context. The observed difference between couple time preferences and individual time preferences suggests that it is important to distinguish between these two groups of decision-makers in the context of financial decisions.

We also show that couple time preferences do not lie within the boundaries of individual time preferences. This result calls into question the ability of a standard collective model of the household to fully explain couple time preferences. Our study shows that because a couple is not just a mix of the two partners, couple time preferences cannot be accurately explained on the basis of individual time preferences alone. Therefore, to obtain accurate information about household behavior over

delayed rewards, one should use models that do not rely on relative influence only. This also suggests an important fact for practitioners: to get accurate information about couple intertemporal preferences it is important to interview both partners together and to obtain unanimous answers.

Regarding discounting shape, we found increasing and then decreasing annual discount rates over time, not only for women and men, but also for couples. Individuals exhibited increasing impatience between the present and a three-month delay and then decreasing impatience between three-month and two-year delays. Couples exhibited increasing impatience between the present and a six-month delay and then decreasing impatience between six-month and two-year delays. Takeuchi (2011) found similar results: two-thirds of the subjects in his experiment exhibited increasing impatience for short delays. A possible explanation is that people have an extended notion of the present which encompasses short delays. According to this view, a three-month delay corresponds for our respondents to a reasonable delay where patience comes at no cost. For economic models designed to represent saving decisions in the short run, our study points to the importance of using adequate discount functions that capture moderately increasing impatience, especially for couple decision-making.

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Appendix

Prospect index i	ZDS	Women		Men		Couple	
		Median	IQR	Median	IQR	Median	IQR
1	800	700	600-720	700	584-720	700	645-730
2	1200	1001	900-1080	1016	800-1100	1010	939-1100
3	600	500	450-555	500	400-560	520	490-550
4	800	682	599-740	689	551-740	701	635-740
5	1000	840	800-920	850	715-920	880	800-915
6	1200	1000	900-1100	1000	800-1100	1000	910-1100
7	1200	1195	1156-1200	1188	1100-1199	1195	1177-1200
8	1200	1128	1080-1189	1100	1065-1162	1151	1100-1188
9	1200	1064	1001-1100	1080	980-1145	1100	1001-1151
10	1200	1001	900-1080	1001	822-1090	1050	955-1100
11	1200	900	716-1001	937	735-1001	960	840-1001

Table 5: Nearest equivalent values for utility and time weights

ZDS: zero-discounting sum; IQR: interquartile range.

	Women vs. Men	Women vs. Couples	Men vs. Couples
Delay	t(63)	t(63)	t(63)
1 month	1.11 ^{ns}	-0.99 ^{ns}	-3.48**
3 months	0.69 ^{ns}	-1.40 ^{ns}	-3.91**
6 months	-0.06 ^{ns}	-1.77*	-2.29*
1 year	0.05 ^{ns}	-1.76*	-2.24*
2 years	-0.84 ^{ns}	-2.81**	-1.87*

Table 6: Binary Comparisons of Time Weights

t(63): Student's t, one-tailed paired test.

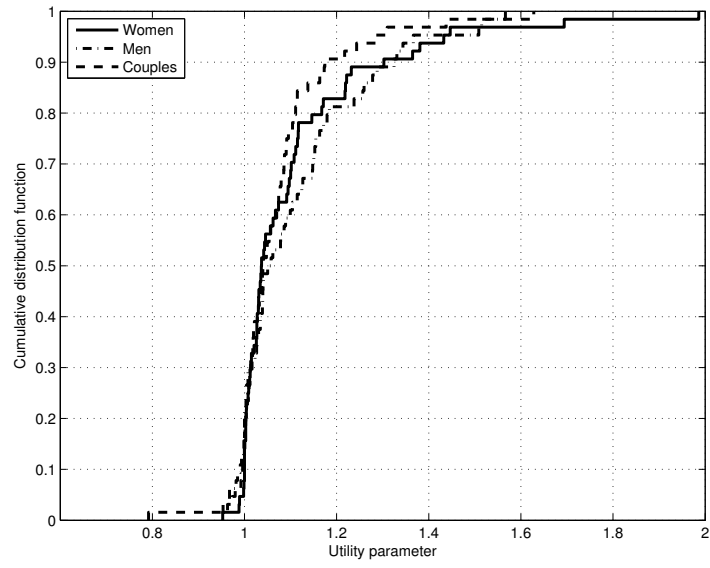


Figure 2: Individual utility parameters: cumulative distribution functions

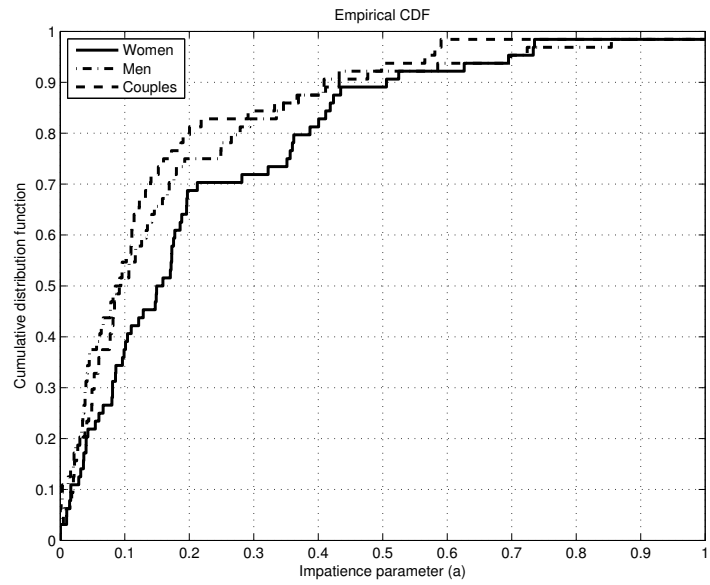


Figure 3: Individual impatience parameters: cumulative distribution functions

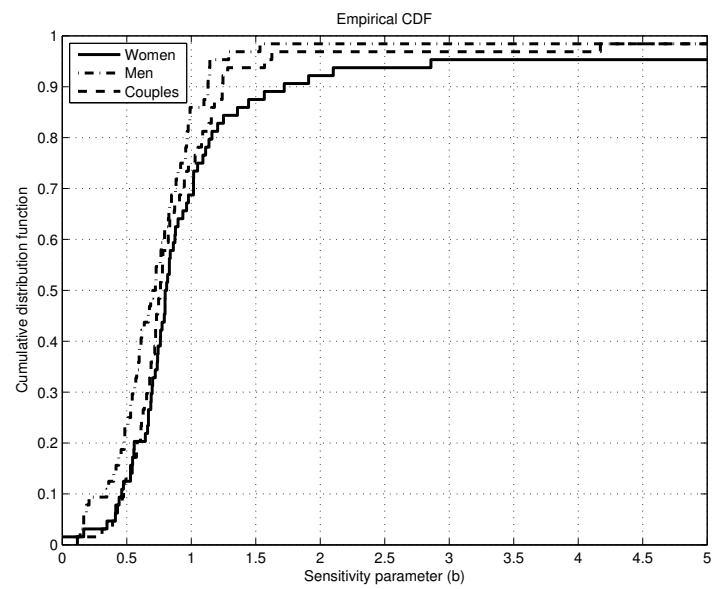


Figure 4: Individual sensitivity parameters: cumulative distribution functions