Web Appendix for Brown and Kim

Not Intended for Publication

Additional Appendices: Not for Publication

B Derivations of the optimal portfolio choice

This appendix presents the derivations of the equations used in the section to discuss the financial decision making and asset prices. First, following Campbell(1999), the budget constraint is approximated, after taking logs, as

$$\triangle w_{t+1} = \zeta + r_{w,t+1} + \left(1 - \frac{1}{\theta}\right)(c_t - w_t),$$

where ζ and θ are the parameters of linearizations, and c, w, and r_w are the logarithms of C, W, and R_w respectively.[31] With the trivial identity relation

$$\triangle w_{t+1} = \triangle c_{t+1} + (c_t - w_t) - (c_{t+1} - w_{t+1}), \tag{A.1}$$

we can express $c_t - w_t$ as

$$c_t - w_t = E_t \sum_{j=1}^{\infty} \theta^j (r_{w,t+j} - \triangle c_{t+j}) + \frac{\zeta\theta}{1-\theta}. \tag{A.2}$$

Now, taking logs to the Euler equation of this model with $i = w$ to approximate as

$$E_t \Delta c_{t+1} = \kappa + \left(\frac{1}{1-\rho}\right) E_t r_{w,t+1} + \frac{\alpha(1-\rho)}{2\rho} \sigma_t^h, \tag{A.3}$$

where $\kappa = \frac{\log \delta}{1-\rho}$, and σ_t^h denotes $Var_t\left(\Delta c_{t+1} - \left(\frac{1}{1-\rho}\right) r_{w,t+1}\right)$.[32] Thus, plugging this into (A.2) yields

$$c_t - w_t = \frac{\zeta\theta - \kappa}{1-\theta} - \sum_{j=1}^{\infty} \theta^j \left(\frac{\rho}{1-\rho}\right) E_t (r_{w,t+j}) - \frac{\alpha(1-\rho)}{2\rho} \sum_{j=1}^{\infty} \theta^j \sigma_{t+j}^h \tag{A.4}$$

Then, the optimal portfolio of the risky asset can be rewritten as

$$\phi_t = \frac{x_t + 0.5(\sigma_t^r)^2}{(1-\alpha)(\sigma_t^r)^2} + \frac{\alpha}{(1-\alpha)} \frac{\sum_{j=1}^{\infty} \theta^j cov_t(u_{t+1}, E_{t+1}(r_{w,t+j}))}{\sigma_t^r} \tag{A.5}$$
$$+ \frac{\alpha^2}{2(1-\alpha)} \left(\frac{1-\rho}{\rho}\right)^2 \frac{\sum_{j=1}^{\infty} \theta^j cov_t(u_{t+1}, \sigma_{t+j}^h)}{\sigma_t^r}.$$

To check if this result is robust to different approximation, the budget constraints are revisited. Taking logs, the linearized budget constraint becomes

$$\triangle w_{t+1} = r_{w,t+1} + \log(1 - \exp(c_t - w_t)).$$

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[31] Specifically, $\theta = 1 - \exp(\overline{c - w})$ and $\zeta = \log(\theta) + (1 - \theta)\log(1 - \theta)/\theta$.

[32] The Euler equation is given as $1 = E_t\left\{\delta^{\frac{\alpha}{\rho}} \left(\frac{C_{t+1}}{C_t}\right)^{\frac{\alpha(\rho-1)}{\rho}} (R_{w,t+1})^{\frac{\alpha}{\rho}-1} R_{i,t+1}\right\}$.

1

Now, $\log(1 - \exp(c_t - w_t))$ is approximated with respect to $c_t - w_t$ up to the second order, which results in

$$\log(1 - \exp(c_t - w_t)) \approx \xi + \left(1 - \frac{1}{\theta}\right)(c_t - w_t - (\overline{c - w})) + \frac{1}{2}\left(1 - \frac{1}{\theta}\right)\frac{1}{\theta}(c_t - w_t - (\overline{c - w}))^2,$$

where ξ is the constant for the approximation. Again with (A.1), we have

$$\triangle c_{t+1} + (c_t - w_t) - (c_{t+1} - w_{t+1}) = r_{w,t+1} + \xi + \left(1 - \frac{1}{\theta}\right)(c_t - w_t) + \frac{1}{2}\left(1 - \frac{1}{\theta}\right)\frac{1}{\theta}(c_t - w_t)^2.$$

$$
\begin{aligned}
(c_{t+1} - w_{t+1}) &= -\hat{\xi} + \frac{1}{\theta}\left(2 - \frac{1}{\theta}\right)(c_t - w_t) - \frac{1}{2}\left(1 - \frac{1}{\theta}\right)\frac{1}{\theta}(c_t - w_t)^2 + \triangle c_{t+1} - r_{w,t+1} \\
&= -\tilde{\xi} - \frac{1}{2\theta}\left(1 - \frac{1}{\theta}\right)\left[\begin{array}{c}(c_t - w_t)^2 \\ -2\left(\frac{1-2\theta}{1-\theta}\right)(c_t - w_t) + (\frac{1-2\theta}{1-\theta})^2\end{array}\right] + \triangle c_{t+1} - r_{w,t+1} \\
&= -\tilde{\xi} - \frac{1}{2\theta}\left(1 - \frac{1}{\theta}\right)\left(c_t - w_t - \frac{1-2\theta}{1-\theta}\right)^2 + \triangle c_{t+1} - r_{w,t+1},
\end{aligned}
$$

where $\hat{\xi}$ and $\tilde{\xi}$ are constants appropriately computed in each equation. By defining $z_t = (c_t - w_t) - (1 - 2\theta)/(1 - \theta)$ and $y_t = \triangle c_t - r_{w,t}$, we have

$$z_{t+1} = -\breve{\xi} - \frac{1}{2\theta}\left(1 - \frac{1}{\theta}\right)z_t^2 + y_{t+1},$$

where $\breve{\xi} = -\tilde{\xi} + (1 - 2\theta)/(1 - \theta)$.

Observe that this is a quadratic difference equation, which is often used in describing chaotic dynamics. Rewrite this as

$$z_t^2 = \frac{2\theta^2}{(1 - \theta)}(y_{t+1} - z_{t+1} - \breve{\xi}),$$

$$z_t = \pm\theta\sqrt{\frac{2(y_{t+1} - z_{t+1} - \breve{\xi})}{(1 - \theta)}}.$$

Notice that the definition of z_t is the logarithm of consumption-wealth ratio minus a function of θ, which is $\theta = 1 - \exp(\overline{c - w})$. Given that the consumption-wealth ratio is significantly below 1, it is reasonable to assume that z_t is negative.

Then, a logarithmic transformation is given to $-z_t$ to yield

$$\log(-z_t) = \log\theta + \frac{1}{2}\log\left[y_{t+1} + \exp\{\log(-z_{t+1})\} - \breve{\xi}\right] - \frac{1}{2}\log(1 - \theta).$$

Linearization makes

$$\log(-z_t) = \xi_1 + \frac{\chi}{2}y_{t+1} - \frac{\chi\bar{z}}{2}\log(-z_{t+1}),$$

where $\chi = 1/(\bar{y} - \bar{z} - \breve{\xi}) > 0$ and $\xi_1 = \left(-\log\chi - \chi\bar{y} + \chi\bar{z}\log(-\bar{z})\right)$.

To further describe this, $\frac{\chi\bar{z}}{2}$ is split into two groups as follows:

Assuming $-1 < \frac{\chi\bar{z}}{2} < 0$,

$$\left(1 + \frac{\chi\bar{z}}{2}L^{-1}\right)\log(-z_t) = \breve{\xi} + \frac{\chi}{2}y_{t+1}, \tag{A.6}$$

2

where L^{-1} is a forward operator. Then,

$$\log(-z_t) = const + \frac{\chi}{2} \sum_{j=1}^{\infty} \left(-\frac{\chi \bar{z}}{2}\right)^j y_{t+j},$$

where $const$ is a constant. Denote $-\frac{\chi \bar{z}}{2}$ by φ which is between 0 and 1 to write down

$$c_t - w_t = const1 - \exp\left[const2. + \frac{\chi}{2} \sum_{j=1}^{\infty} \varphi^j E_t(\triangle c_{t+j} - r_{w,t+j})\right],$$

where $const1$ and $const2$ are constants. With (A.3) in hand, log consumption-wealth ratio is computed as

$$c_t - w_t = const1 - \exp\left[const3 + \frac{\chi}{2} \sum_{j=1}^{\infty} \varphi^j E_t\left(\left(\frac{\rho}{1-\rho}\right) r_{w,t+j} + \frac{\alpha(1-\rho)}{2\rho} \sigma_{t+j}^h\right)\right] \qquad \text{(A.7)}$$

Now, it is possible to compute the optimal portfolio weight for the risky asset as

$$\phi_t = \frac{x_t + 0.5(\sigma_t^r)^2}{(1-\alpha)(\sigma_t^r)^2}$$

$$+ \frac{\alpha}{(1-\alpha)} \frac{(1-\rho)}{\rho} \frac{cov_t\left(u_{t+1}, \exp\left[\begin{array}{c} const3. \\ +\frac{\chi}{2}\sum_{j=1}^{\infty} \varphi^j E_{t+j}\left(\begin{array}{c}\left(\frac{\rho}{1-\rho}\right) r_{w,t+j+1} \\ +\frac{\alpha(1-\rho)}{2\rho}\sigma_{t+j+1}^h\end{array}\right)\right]\right)}{(\sigma_t^r)^2}$$

$$= \frac{x_t + 0.5(\sigma_t^r)^2}{(1-\alpha)(\sigma_t^r)^2}$$

$$+ \frac{\alpha}{(1-\alpha)} \frac{\frac{\chi}{2}\sum_{j=1}^{\infty} \varphi^j E_t\left(e^{\left(\left(\frac{\rho}{1-\rho}\right)E_{t+j}(r_{w,t+j+1}) + \frac{\alpha(1-\rho)}{2\rho}\sigma_{t+j+1}^h\right)}\right) cov_t\left(u_{t+1}, r_{w,t+j+1}\right)}{\sigma_t^r}$$

$$+ \frac{\alpha^2}{2(1-\alpha)} \left(\frac{1-\rho}{\rho}\right)^2 \frac{\sum_{j=1}^{\infty} \varphi^j E_t\left(e^{\left(\left(\frac{\rho}{1-\rho}\right)E_{t+j}(r_{w,t+j+1}) + \frac{\alpha(1-\rho)}{2\rho}\sigma_{t+j+1}^h\right)}\right) cov_t(u_{t+1}, \sigma_{t+j}^h)}{\sigma_t^r},$$

where $const3$ is a constant.

C Additional tables and figures

Figure A.1 provides scatterplots of correlations similar to Figure 9 except that parameter values are replaced by the first switch points in the risk-, time-, and intertemporal-substitution-, preference elicitation tasks.

Table A.1 provides regression analysis of switch points in first ten questions of risk-preference, time-preference, intertemporal-substitution-preference elicitation task, and early choice in uncertainty-resolution-preference elicitation task on demographic characteristics and psychological survey responses. Recall, subjects that returned for their second experimental session completed surveys on their demographic characteristics as well as psychological tests on impulsivity and sensation seeking. The regression is on each switch point in the first three tasks and the choice of uncertainty resolution in the last task on a subject's individual characteristics of gender, age, race, family income, major, height, and state where raised as well

dependent variable:	Risk-preference elicitation task, first switch point	Time-preference elicitation task, first switch point	Intertemporal-substitutability-preference elicitation task, first switch point	Uncertainty-resolution-preference elicitation task, early resolution chosen
male	-0.849** (0.341)	0.602 (0.383)	0.261 (1.798)	-1.355** (0.569)
age at birthday this year	-0.032 (0.121)	-0.121 (0.135)	0.921 (0.624)	-0.079 (0.192)
white	0.272 (0.372)	-0.299 (0.417)	-1.283 (1.986)	0.139 (0.564)
family income level	-0.036 (0.051)	-0.055 (0.057)	0.297 (0.263)	-0.069 (0.081)
economics major	0.522 (0.523)	1.471** (0.586)	-3.206 (2.622)	0.442 (0.836)
inches above/below average height	0.066 (0.057)	-0.035 (0.064)	0.050 (0.307)	0.118 (0.091)
raised in Texas	-0.570 (0.378)	0.738* (0.423)	-2.768 (2.075)	0.231 (0.577)
Total Barratt impulsivity score	-0.040** (0.016)	0.023 (0.017)	-0.132 (0.082)	-0.001 (0.024)
Total Zuckerman sensation-seeking score	0.018 (0.018)	0.002 (0.020)	0.036 (0.093)	-0.013 (0.027)
constant	10.142*** (2.911)	3.527 (3.488)	-0.444 (15.053)	3.238 (4.537)
Type of regression?	tobit	tobit	tobit	logit
Lower bound of dependent variable	1	1	1	0
Upper bound of dependent variable	11	11	11	1
observations	91	91	91	91
Log likelihood	-158.147	-168.519	-192.840	-57.024
Pseudo R^2	0.049	0.045	0.024	0.066

*   Significant at the 10% level
**   Significant at the 5% level
***   Significant at the 1% level

Table A.1: Regression of switch points in first ten questions of risk-preference, time-preference, intertemporal-substitution-preference elicitation tasks, and choice of early resolution in the uncertainty-resolution-preference elicitation task on demographic characteristics and psychological survey responses. A tobit regression with lower bound 1 and upper bound 11 is used for the first 3 regressions. A logit regression is used in the fourth regression. There is little correlation between demographics and survey scores and subject response.
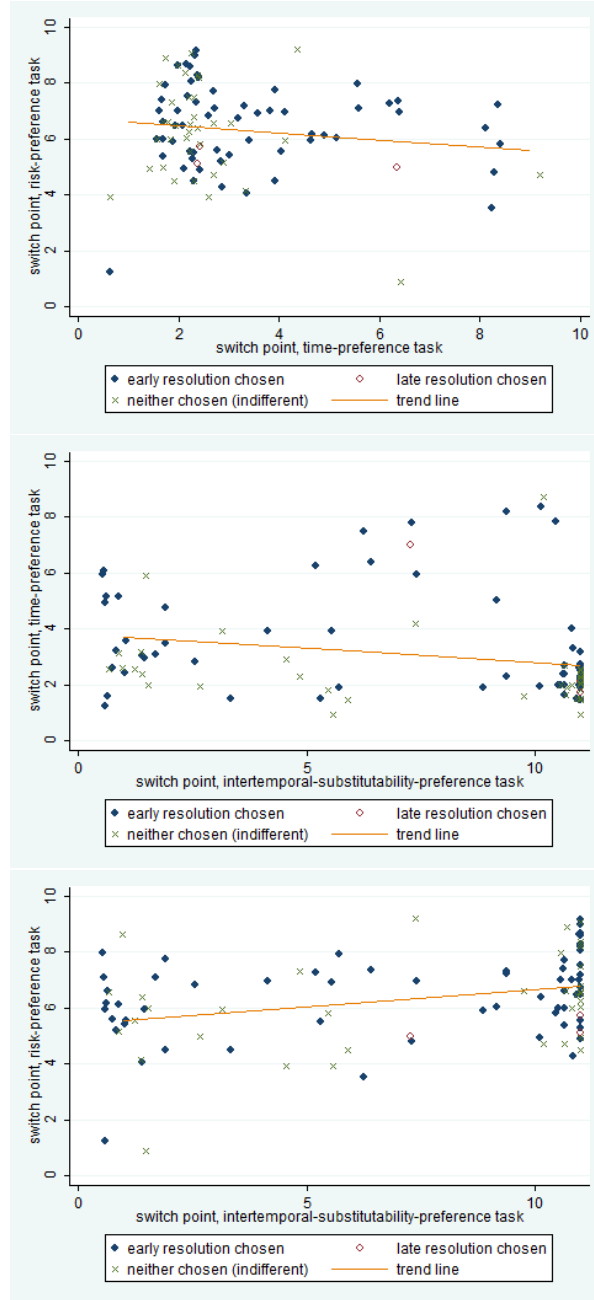
Figure A.1: Scatterplots of first switch points of risk-preference, time-preference, and intertemporal-substitution-preference elicitation tasks. Choice in uncertainty-resolution task is also indicated. (a, top): scatterplot of first switch point in risk-preference elicitation task and time-preference elicitation task ($r = -0.1561$). (b, middle): scatterplot of first switch point in time-preference elicitation task and intertemporal-substitution-preference elicitation task ($r = -0.2406$). (c, bottom): scatterplot of first switch point in risk-preference elicitation task and intertemporal-substitution-preference elicitation task ($r = 0.3479$).

type (restriction)	proportion of type (π_c)	time-preference parameter (β)	risk-preference parameter (α)	intertemporal-substitution-preference parameter (ρ)
1 ($\rho=\alpha$)	0.266 (0.092)	0.942 (0.220)	1.005 (0.309)	1.005 -
2 ($\alpha>\rho$)	0.089 (0.067)	0.394 (0.203)	1.230 (0.145)	1.230 (0.127)
3 ($\alpha<\rho$)	0.645 (0.083)	0.758 (0.076)	0.216 (0.071)	2.107 (15.149)

Table A.2: Finite-mixture-model classification with three types ($C = 3$). Parameters are restricted within each type. Standard errors are estimated by 1000 bootstraps of subject data. Akaike information criterion (AIC), Bayesian information criterion, (BIC), normalized entropy criterion (NEC), and integrated completed likelihood condition (ICL) are 5937.6, 6004.7, 0.003, 5660.3, respectively. The log likelihood of the model is -2958.8.
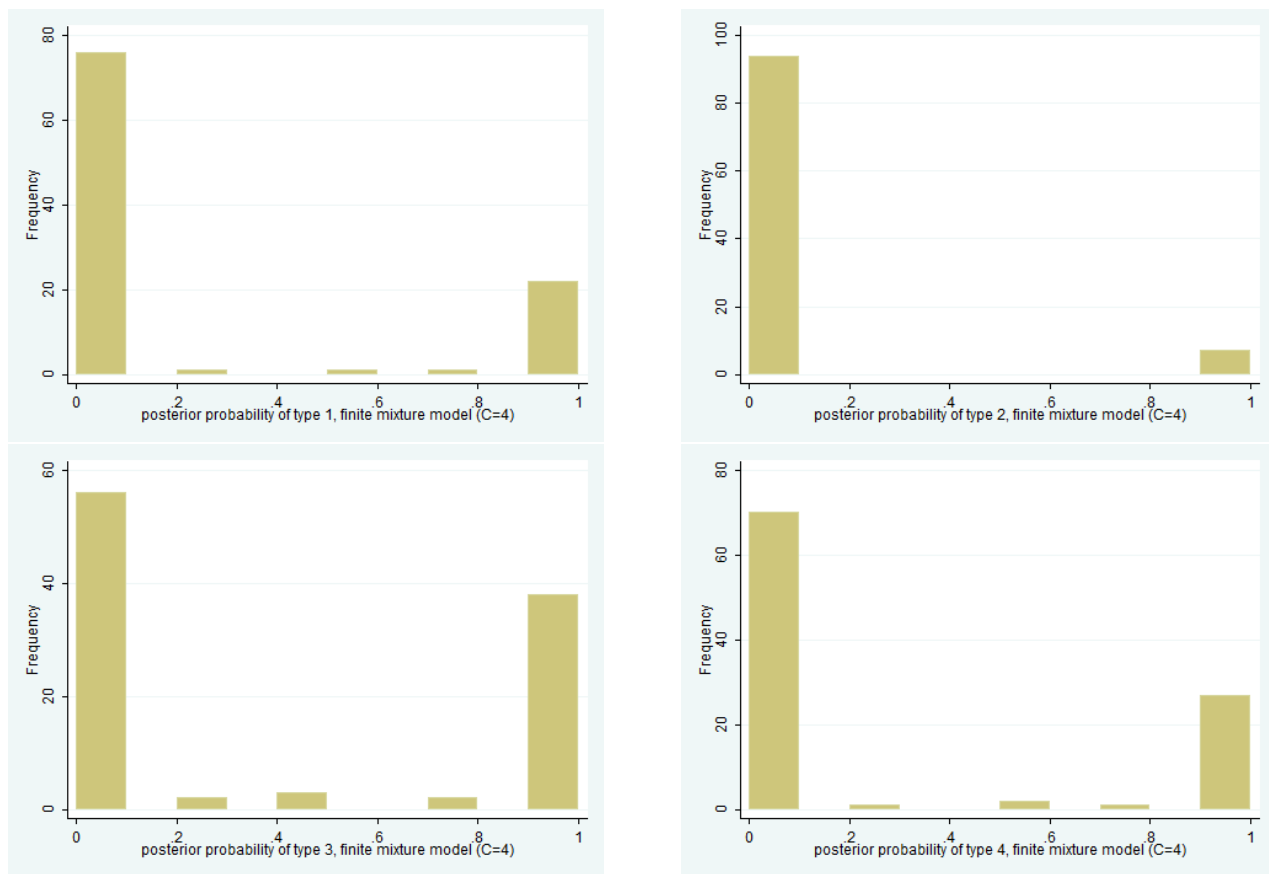

Figure A.2: Histograms of posterior probabilities of types, finite mixture model (C=4). (a, upper left): histogram of posterior probability of subject being type 1 ($\alpha = \rho$). (b, upper right): histogram of posterior probability of subject being type 2 ($\alpha > \rho$). (c, bottom left): histogram of posterior probability of subject being type 3 ($\alpha < \rho$). (d, bottom right): histogram of posterior probability of subject being type 4 ($\alpha < \rho$). See table 4 for parameter estimates and errors of this finite mixture model..

as total scores on the Barratt Impulsivity Test (BIS 11) (Patton et al., 1995) and the Zuckerman Sensation-Seeking Scale (SSS-V) (Zuckerman, 1994). The variable family income level can be an integer, 1–7, for a level of family income where higher numbers mean more income (see our supplemental materials). White, economics major, and raised in Texas are dummy variables (1 if yes, 0 if no). Height is calculated as the difference from 69 inches (5'9") for a man, and 64 inches for a woman (5'4").

There is little correlation among terms in these regressions. Male subjects on average switch one half to one choice earlier than females, indicating less risk-aversion. These gender differences, especially in relation to risk, are consistent with several other experimental studies (see Eckel and Grossman, 2008 and Croson and Gneezy, 2009 for surveys). Economics majors appear a great deal more impulsive than other subjects in the time-preference task. On average, economics majors need an additional $1.50 to prefer money in one week to $8 today.

The scores from the two psychological tests, the Barratt Impulsivity Test and Zuckerman Sensation-Seeking Scale, designed to measure subject impulsivity and risk-seeking in terms of psychological events[33] (not financial ones) have little correlation with actual economic decisions involving impulsivity and risk.

Table A.2 provides a characterization of our finite mixture model where there are only three types ($C = 3$) instead of four ($C = 4$). Figure A.2 provides histograms of subject posterior probabilities for each of the four types ($C = 4$) in the finite mixture model shown in section 5.3.

D Calculating risk-, time- and intertemporal-substitution- preference parameters using the second switch point

From equation 6, the second switch point on the risk-, time-, or intertemporal-substitution- preference elicitation tasks is consistent with a small interval of parameter values for α, β and ρ. If switch does not occur in the second ten decision of any of the tasks, then a specific equation rather than a specific group of inequalities is solved to estimate parameter values.

Calculating risk-preference parameters

When the second switch point is not on the boundary, then subjects have a unique switch point defined on the second set of ten choices made in the risk-preference elicitation task, then there exists a p^* such that lottery

$$(\$8.00, \$6.00; p^*, 1 - p^*) \quad \text{is preferred to} \quad (\$15.40, \$0.40; p^*, 1 - p^*) \quad \text{and}$$
$$(\$15.40, \$0.40; p^* + 0.01, 0.99 - p^*) \quad \text{is preferred to} \quad (\$8.00, \$6.00; p^* + 0.01, 0.99 - p^*).$$

Using the Epstein-Zin model, there are values of α such that

$$[p^*8^\alpha + (1 - p^*)6.4^\alpha]^{1/\alpha} \quad > \quad [p^*15.4^\alpha + (1 - p^*)0.4^\alpha]^{1/\alpha} \quad \text{and}$$
$$[(p^* + 0.01)8^\alpha + (0.99 - p^*)6.4^\alpha]^{1/\alpha} \quad < \quad [(p^* + 0.01)15.4^\alpha + (0.99 - p^*)0.4^\alpha]^{1/\alpha}$$

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[33]The Barratt impulsivity test has 30 questions where a subject chooses whether he rarely/never occasionally, often, or almost always agrees with statements like "I get easily bored when solving thought problems." The Zuckerman Sensation-Seeking scale has 24 questions where subjects choose between two opposite statements like "I like wild uninhibited parties." and "I prefer quiet parties with good conversation." Answers are added to produce scores. Eckel and Grossman (2008) examine the relationship of subjects' Zuckerman score with elicited risk preferences; Brown et al. (2009) examine the relationship of subjects' Barratt scores with elicited time preferences. Both find no correlation. See the supplementary materials for full versions of either survey.

The range of α's that satisfy both inequalities above are the parameter range for consistent subjects' risk parameters. The median of the interval is then used as the parameter estimate.

When the second switch point falls on the boundary (i.e., it is 1 or 11, meaning that subjects choose all of one type of option), the first or last decision is used to determine the value of α. That is an equation such as

$$[p^*8^\alpha + (1 - p^*)6.4^\alpha]^{1/\alpha} = [p^*15.4^\alpha + (1 - p^*)0.4^\alpha]^{1/\alpha} \tag{A.8}$$

is solved for a specific value of α. Where the p is the value found in the first or last choice the subject makes (depending on whether they switch at the first choice or never switch).

Calculating time- and intertemporal-substitution- preference parameters

Subjects have two unique switch points defined on the second set of ten choices made in both the time-preference and intertemporal-substitution-preference elicitation tasks. There exists a money baseline B^* and a proportional share a^* such that

1. \$8.00 now is preferred to \$$B^*$ in one week.

2. \$$(B^* + 0.10)$ in one week is preferred to \$8.00 now.

3. \$8.00 now is preferred to \$$(aB^*)$ now and \$$(1 - a)B^*$ in one week.

4. \$$(a + 0.005)B^*$ now and \$$(0.995 - a)B^*$ in one week is preferred to \$8.00 now.

Using the Epstein-Zin model, there are values of β and ρ such that

$$
\begin{aligned}
B^*\beta^{\frac{1}{\rho}} \quad &< 8 < \quad (B^* + 0.1)\beta^{\frac{1}{\rho}} \\
B^* \quad &< \frac{8}{\beta^{\frac{1}{\rho}}} < \quad (B^* + 0.1) \\
\frac{8}{B^*} \quad &> \beta^{\frac{1}{\rho}} > \quad \frac{8}{B^* + 0.1} \\
\left(\frac{8}{B^*}\right)^\rho \quad &> \beta^{\frac{1}{\rho}} > \quad \left(\frac{8}{B^* + 0.1}\right)^\rho,
\end{aligned} \tag{A.9}
$$

and values of β and ρ such that

$$[[(a + 0.005)\,B^*]^\rho + \beta\,[(0.995 - a)\,B^*]^\rho]^{\frac{1}{\rho}} > 8 \tag{A.10}$$

$$[[(a)\,B^*]^\rho + \beta\,[(1 - a)\,B^*]^\rho]^{\frac{1}{\rho}} < 8. \tag{A.11}$$

The range of β's and ρ's that satisfy the system of inequalities (A.9), (A.10), (A.11) are the parameter ranges of β and ρ. The median of each interval is taken as the parameter estimates.

If a subject has a second switch point of 1 or 11 on either the time-preference or intertemporal-substitution-preference tasks, meaning they chose all of one type of option and never switched, two of the inequalities in (A.9), (A.10), (A.11) are be replaced with an equation, representing the boundary choice. Parameter values are obtained by solving the system of inequalities and equations, and taking the median of intervals where necessary.

Experimental Instructions

Today, you will be participating in an economics experiment. The experiment tests how people make decisions involving money. The decisions you make in this experiment will determine your earnings, which will be converted to cash and paid at the end of this session or the next session in one week. You will make all of these decisions on the computer in front of you. Please pay attention to these instructions so you will understand how to make money.

The session today will take about an hour. To complete this experiment you must return to another session in one week. That session will last a half-hour. If you participate in both sessions, you will be mailed a $20 money order one week after the last session to the address you provide, regardless of your choices in the experiment. Your earnings made from the decisions in this experiment will be in addition to the $20 money order.

If you have any questions, please raise your hand, and the experimenter will quietly answer your question. Please do not talk to any other person during this experiment.

In this experiment you will be asked to choose one of two options. Both options will involve cash payments, but they may differ in size, the probability that they will be awarded, and the time at which they are awarded. All of these conditions will be specified in your choice.

You will be asked to select your preferred option for each of 61 pairs of options. At the end of the experiment, one of these decisions will be randomly chosen (we will explain how it is chosen at the end of the instructions) and you will be given the option you selected. Because one of your decisions will be used as your payment, it is *in your interest* that you give your honest preferences over each pair of options. That way, whatever decision is drawn you will receive your preferred option.

There are four stages in this experiment consisting of a total of seven parts. They are stage 1, part A, stage 1, part B, stage 2, part A, stage 2, part B, stage 3, part A, stage 3 part B, and stage 4. The figure on the next page shows the ten choices you will be asked to make in stage 1, part A.

In stage 1, part A, you will be choosing between two options, A and B, ten times. Notice you may choose option A in one decision, and option B in another decision. All the gambles refer to rolls of one ten sided die. Decision 1 features the choice between a gamble of $8.00 (if the die rolls 1) and $6.40 (if the die rolls 2-10) vs. a gamble of $15.40 (if the die rolls 1) and $0.40 (if the die rolls 2-10). You are asked to select which of these two gambles you prefer. After the experiment, if this decision is randomly selected to be paid, you will roll a ten sided die to determine the money you will receive. All the other decisions in the table work the same way. In each part, each of these decisions is equally likely to be selected.

Other stages will feature different choices, some involve two ten sided dice, some that involve money being paid today and/or in one week. Regardless, the basic structure will remain the same: you will make a choice in each decision and choose your preferred option.

Experimental Instructions

All stages will feature a one minute delay. That is, you will not be able to click "submit choices" until a minute has elapsed. This is to assure that you will take your time when making your choices.

Stage 1, Part A
Please select either A or B for each of the ten Decisions below.
Remember: Each decision has an equal chance of being used to determine your earnings.

Real Money Payoffs: The choices that you make on this page may be used to determine your earnings, these are real money payoffs that will be paid to you in cash. The decisions made here, if selected, will be paid to you today, at the end of the experiment.

Decision	Option A	Option B	Your Choice
1st	$8.00 if the die is 1 $6.40 if the die is 2-10	$15.40 if the die is 1 $0.40 if the die is 2-10	○ A or ○ B
2nd	$8.00 if the die is 1-2 $6.40 if the die is 3-10	$15.40 if the die is 1-2 $0.40 if the die is 3-10	○ A or ○ B
3rd	$8.00 if the die is 1-3 $6.40 if the die is 4-10	$15.40 if the die is 1-3 $0.40 if the die is 4-10	○ A or ○ B
4th	$8.00 if the die is 1-4 $6.40 if the die is 5-10	$15.40 if the die is 1-4 $0.40 if the die is 5-10	○ A or ○ B
5th	$8.00 if the die is 1-5 $6.40 if the die is 6-10	$15.40 if the die is 1-5 $0.40 if the die is 6-10	○ A or ○ B
6th	$8.00 if the die is 1-6 $6.40 if the die is 7-10	$15.40 if the die is 1-6 $0.40 if the die is 7-10	○ A or ○ B
7th	$8.00 if the die is 1-7 $6.40 if the die is 8-10	$15.40 if the die is 1-7 $0.40 if the die is 8-10	○ A or ○ B
8th	$8.00 if the die is 1-8 $6.40 if the die is 9-10	$15.40 if the die is 1-8 $0.40 if the die is 9-10	○ A or ○ B
9th	$8.00 if the die is 1-9 $6.40 if the die is 10	$15.40 if the die is 1-9 $0.40 if the die is 10	○ A or ○ B
10th	$8.00 if the die is 1-10	$15.40 if the die is 1-10	○ A or ○ B

Submit Choices

After you have finished completing your decisions in each of the seven parts (and clicked seven "submit choices" buttons), and entered your name, your name will be called by the experimenter. At this point you will go up to the front of the room and roll dice to determine your cash payment. You will roll a four-sided die to determine which stage will be used to determine your payments. If you roll a 1, 2, or 3, (for stage 1, 2, or 3) you will roll a ten sided die to determine if part A or part B will be used. If you roll a 1-9, part A will be used; part B will be used if you roll a zero. Then you will roll the ten-sided die to determine which of the ten decisions will be used for your payment. If your decision involves a gamble (like in figure 1), you will roll the dice again depending on the gamble.

While this randomization procedure may seem complicated, your strategy need not be. Rather than worry about the "right" answer—there isn't one—consider how you would like to be paid and select your options accordingly.

Surveys Given to Subjects.

Please complete the following survey questions.
Subject ID_____   Date_____

1. In what year were you born?   19___

2. Who in your household would you consider to be primarily in charge of expenses and budget decisions? (circle one)

   self   spouse   parent   other(specify)_____   do not know

3. What is your gender? (circle one)   male   female

4. What is your racial or ethnic background? (circle one)

   white or Caucasian   black or African American   Hispanic   Asian

   Native American   multiracial   other

5. What is your marital status? (circle one)

   married   single   divorced   widowed   other

6. How would you best describe your current employment situation? (circle one)

   full-time employment outside of school   part-time employment outside of school

   work at school research assistantship   student only   other

7. Please indicate the category that best describes your household income from all sources before all taxes in 2008. (circle one)

   under $5,001 $5,001-$15,000 $15,001-$30,000 $30,001-$45,000 $45,001-$60,000

   $60,001-$75,000 $75,001-$90,000 $90,001-$100,000   over $100,000

8. How many people are in your household? (Yourself and those who live with you and share your income and expenses)

9. What was your own income from all sources before taxes in 2008? Do not include income from other household members. (circle one)

   under $5,001 $5,001-$15,000 $15,001-$30,000 $30,001-$45,000 $45,001-$60,000

   $60,001-$75,000 $75,001-$90,000 $90,001-$100,000   over $100,000

10. How do you receive your income? (circle one)

    fixed source (salary, pension)   hourly rate   hourly rate plus tips   loans/scholarships   parents   other

11. What is your student status? (circle one)

    full-time student   part-time student, taking less than 12 hours per semester   other, non-student

Surveys Given to Subjects.

12. What is your major?

13. What year are you classified for in the current semester? (circle one)

    freshman   sophomore   junior   senior   masters student (year)_____

    law student (year)_____   doctoral student (year)_____   faculty or other non-student.

14. Who is primarily responsible for your tuition and living expenses while you are attending TAMU? (circle one)

    self   parent   shared between self and parent   scholarship/grant

    loans   combination/other   not applicable

15. Have you ever voted in an election? (circle one)

    yes   no

16. What is your height?

17. Please state the state and country where you were raised.

Surveys Given to Subjects.

Directions: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and place a check in the appropriate box on the right side of the page. Do not spend too much time on any statement. Answer quickly and honestly.	Rarely/Never	Occasionally	Often	Almost always/Always
1. I plan tasks carefully				
2. I do things without thinking				
3. I am happy-go-lucky				
4. I have "racing" thoughts				
5. I plan trips well ahead of time				
6. I am self-controlled				
7. I concentrate easily				
8. I save regularly				
9. I find it hard to sit still for long periods of time				
10. I am a careful thinker				
11. I plan for job security				
12. I say things without thinking				
13. I like to think about complex problems				
14. I change jobs				
15. I act "on impulse"				
16. I get easily bored when solving thought problems				
17. I have regular medical/dental checkups				
18. I act on the spur of the moment				
19. I am a steady thinker				
20. I change where I live				
21. I buy things on impulse				
22. I finish what I start				
23. I walk and move fast				
24. I solve problems by trial-and-error				
25. I spend or charge more than I earn				
26. I talk fast				
27. I have outside thoughts when thinking				
28. I am more interested in the present than the future				
29. I am restless at lectures or talks				
30. I plan for the future				

Surveys Given to Subjects.

Directions: Each of the items below contains two choices A and B. Please indicate which of the choices most describes your likes or the way you feel. In some cases you may find items in which both choices describe your likes or feelings. Please choose the one which better describes your likes or feelings. In some cases you may find items in which you do not like either choice. In these cases mark the choice you dislike least. Do not leave any items blank. It is important you respond to all items with only one choice, A or B. We are interested only in your likes or feelings, not in how others feel about these things or how one is supposed to feel. There are no right or wrong answers as in other kinds of tests. Be frank and give your honest appraisal of yourself.

1. A. I like wild uninhibited parties.
    B. I prefer quiet parties with good conversation.
2. A. There are some movies I enjoy seeing a second or even third time.
    B. I can't stand watching a movie that I've seen before.
3. A. I often wish I could be a mountain climber.
    B. I can't understand people who risk their necks climbing mountains.
4. A. I dislike all body odors.
    B. I like some of the earthy body smells.
5. A. I get bored seeing the same old faces.
    B. I like the comfortable familiarity of everyday friends.
6. A. I like to explore a strange city or section of town by myself, even if it means getting lost.
    B. I prefer a guide when I am in a place I don't know well.
7. A. I dislike people who do or say things just to shock or upset others.
    B. When you can predict almost everything a person will do and say he or she must be a bore.
8. A. I usually don't enjoy a movie or play where I can predict what will happen in advance.
    B. I don't mind watching a movie or play where I can predict what will happen in advance.
9. A. I have tried marijuana or would like to.
    B. I would never smoke marijuana.
10. A. I would not like to try any drug that might produce strange and dangerous effects on me.
    B. I would like to try some of the drugs that produce hallucinations.
11. A. A sensible person avoids activities that are dangerous.
    B. I sometimes like to do things that are a little frightening.
12. A. I dislike people who are uninhibited and free about sex.
    B. I enjoy the company of people who are uninhibited and free about sex.
13. A. I find that stimulants make me uncomfortable.
    B. I often like to get high (drinking liquor or smoking marijuana).
14. A. I like to try new foods that I have never tasted before.
    B. I order the dishes with which I am familiar so as to avoid disappointment and unpleasantness.
15. A. I enjoy looking at home movies, videos, or travel slides.
    B. Looking at someone's home movies, videos, or travel slides bores me tremendously.
16. A. I would like to take up the sport of water skiing.
    B. I would not like to take up water skiing.
17. A. I would like to try surfboarding riding.
    B. I would not like to try surfboarding riding.
18. A. I would like to take off on a trip with no preplanned or definite routes, or timetable.
    B. When I go on a trip I would like to plan my route and timetable fairly carefully.
19. A. I prefer the down to earth kinds of people as friends.
    B. I would like to make friends in some of the alternative groups like artists or rock musicians.
20. A. I would not like to learn to fly an airplane.
    B. I would like to learn to fly an airplane.
21. A. I prefer the surface of the water to the depths.
    B. I would like to go scuba diving.
22. A. I would like to meet some persons who are homosexual (men or women).
    B. I stay away from anyone I suspect of being gay or lesbian.
23. A. I would like to try parachute jumping.
    B. I would never want to try jumping out of a plane, with or without a parachute.
24. A. I prefer friends who are excitingly unpredictable.
    B. I prefer friends who are reliable and predictable.

25. A. I am not interested in experience for its own sake.
    B. I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal.
26. A. The essence of good art is in its clarity, symmetry of form, and harmony of colors.
    B. I often find beauty in the clashing colors and irregular forms of modern paintings.
27. A. I enjoy spending time in the familiar surroundings of home.
    B. I get very restless if I have to stay around home for any length of time.
28. A. I like to dive off the high board.
    B. I don't like the feeling I get standing on the high board (or I don't go near it at all).
29. A. I like to date persons who are physically exciting.
    B. I like to date persons who share my values.
30. A. Heavy drinking usually ruins a party because some people get loud and boisterous.
    B. Keeping the drinks full is the key to a good party.
31. A. The worst social sin is to be rude.
    B. The worst social sin is to be a bore.
32. A. A person should have considerable sexual experience before marriage.
    B. It's better if two married persons begin their sexual experience with each other.
33. A. Even if I had the money, I would not care to associate with flighty rich people who frequently appear in the newspapers and tabloids.
    B. I could conceive of myself seeking pleasures around the world with the sort of people who are frequently covered in newspapers and celebrity magazines.
34. A. I like people who are sharp and witty even if they do sometimes insult others.
    B. I dislike people who have their fun at the expense of hurting the feelings of others.
35. A. There is altogether too much portrayal of sex in movies.
    B. I enjoy watching many of the sexy scenes in movies.
36. A. I feel best after taking a couple of drinks.
    B. Something is wrong with people who need liquor to feel good.
37. A. People should dress according to some standard of taste, neatness, and style.
    B. People should dress in individual ways even if the effects are sometimes strange.
38. A. Sailing long distances in small sailing crafts is foolhardy.
    B. I would like to sail a long distance in a small but seaworthy sailing craft.
39. A. I have no patience with dull or boring persons.
    B. I find something interesting in almost every person I talk to.
40. A. Skiing down a high mountain slope is a good way to end up on crutches.
    B. I think I would enjoy the sensations of skiing very fast down a high mountain slope.

Surveys Given to Subjects.

　　Recall that last week you were asked about a gamble between $0 and $20 that would be decided by a roll of the dice. You were to be paid in two weeks from when you were asked about the gamble. You were given the option to roll the dice then then, or wait until today to roll. How much would you have paid to learn the result of this gamble at your desired time? [check and fill in the appropriate answer]

____ I said I preferred to know the result immediately. I would have paid *at most* $__.____ to have learned the result immediately rather than later.
____ I said I preferred to know the result in one week. I would have paid *at most* $__.____ to learn the result in one week rather than immediately.
____ I had no preference whether I learned the result immediately or in one week.