How does the preference for increasing payments depend on the size and source of the payments?

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7. May 2015

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May 7, 2015

Abstract

It is well-known that subjects can exhibit a preference for increasing payments. Smith (2009a) makes a related prediction that the difference between the preference increasing wage payments and the preference for increasing non-wage payments will be largest for intermediate payments. We find evidence consistent with this prediction. Consistent with previous experiments, we find that the preference for increasing payments is increasing in the size of the payments. Also consistent with the literature, we find that the preference for increasing wage payments is stronger than the preference for non-wage payments.

Keywords: time preference, sequences, intertemporal choice, economic psychology
JEL: C91, D90

*The authors thank Roberto Barbera for helpful conversations. This research was supported by Rutgers University Research Council Grant #202167.

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1 Introduction

It is well-known that subjects often exhibit a preference for sequences of outcomes with an improving trend over sequences that are constant or declining (Loewenstein and Prelec, 1993). In fact, many subjects prefer increasing sequences of payments over constant sequences, even if the increasing sequences have a lower present value (Loewenstein and Sicherman, 1991). Loewenstein and Sicherman (1991) also found that the that the preference for increasing payments is stronger when the money is described as wages rather than from another source.

As an explanation of the difference in the preference for increasing wage payments and non-wage payments, Smith (2009a) offered a model of a decision maker with imperfect memory who makes a prospective choice among payment sequences. Smith (2009a) predicts that the difference between the preference for increasing wage payments and the preference for increasing non-wage payments will be largest for intermediate amounts.

In order to test the prediction of Smith (2009a), Duffy and Smith (2013) offered subjects a series of questions where each response item specified an explicit sequence of payments over time. Within each question, there was an option for a constant payment sequence. We refer to this constant amount as the *base amount* of the question. The other response items were increasing sequences of payments, where each response item varied in its rate of increase. Within each question, the undiscounted sum of each payment stream was identical among all response items. Therefore, the rate of the increase of the sequence is negatively related to the present value of that sequence.

Duffy and Smith (2013) found that the preference for increasing sequences of income is stronger when the payments are larger and described as payments from wages as opposed to payments of non-wage money. The authors also found some evidence that the difference between the preferences for increasing wage payments and the preference for increasing non-wage payments was largest for intermediate payments. The authors interpreted this evidence as consistent with the prediction of Smith (2009a).

However, the design of Duffy and Smith (2013) exhibits a shortcoming: the prediction of Smith (2009a) was tested by employing sequences that were constructed using a proportional

technique, whereby the amounts were obtained by multiplying the base amounts by fixed proportions. This technique implies that questions with a larger base amount exhibited a greater rate of increase than questions with a smaller base amount. Duffy and Smith (2013) also elicited preferences over sequences that were constructed by an additive technique, which adds fixed amounts to the base amounts. The authors found that the relationship between the preference of increasing payments and the size of the payments is not different between the items constructed with the additive and proportional techniques. Despite this, it remains a possibility that choices over sequences of increasing payments that are constructed with the additive technique would not provide evidence in support of the prediction of Smith (2009a).

In this paper, we construct sequences of payments via the additive technique, and explore the effect of changing the base amounts and the description of the sources of the payments. Similar to Loewenstein and Sicherman (1991), we find that the preference for increasing wage payments is stronger than the preference for non-wage payments. Additionally, consistent with Duffy and Smith (2013), we find that the preference for increasing payments is increasing in the size of the payments. Finally, even with the additive technique for constructing the sequences of payments, we find evidence in support of the predictions of Smith (2009a): the largest difference between the preference for increasing wage payments and the preference for increasing non-wage payments occurs for intermediate amounts.

2 Related Literature

There is an extensive literature that examines the preference for improving sequences of outcomes, which extends to monetary outcomes or nonmonetary outcomes, retrospective evaluations or prospective evaluations, short or long time horizons and even includes non-human subjects.[1] We contribute to this literature in that we investigate the effects of the size of the payments and the source of the payments on the preference for increasing payments.

[1] See Ariely and Carmon (2000), Attema (2012), Blanchard, Wolfe, Vlaev, Winston, and Hayden (2014), Chapman (1996a, 1996b, 2000), Chapman and Elstein (1995), Dixon and Verma (2013), Elster and Loewenstein (1992), Gigliotti and Sopher (1997), Guyse, Keller, and Eppel (2002), Hsee, Abelson, and Salovey (1991), Hsee and Abelson (1991), Loewenstein and Prelec (1993), Matsumoto, Peecher, and Rich (2000), Peine, Wentzel, and Herrmann (2012), Ross and Simonson (1991), Soman (2003), and Varey and Kahneman (1992).

Similar to Loewenstein and Sicherman (1991), we are interested in the difference between the preference for increasing wage payments and the preference for increasing non-wage payments. Loewenstein and Sicherman find that the preference for increasing payments are particularly pronounced when the payments are described as "income from wages" as opposed to money from another source, which the authors describe as "income from rent." Here we do not utilize the "income from rent" description because if the subject has prosocial preferences, the subject might not want to obtain an improving sequence of money by imposing a declining sequence on the person paying the rent. We measure the preference for increasing payments of non-wage money by describing the payments as resulting from a large lotto jackpot won by a family member.

Smith (2009a) presents a model of a decision maker with imperfect memory who makes a choice involving payment sequences in exchange for work-related effort. It is assumed that the decision maker has an uncertain cost of effort, and before the decisions regarding effort, the decision maker receives information about the cost of effort. After the action related to effort, the decision maker forgets the signal but makes an inference of its content from the objective features of the decision which are not forgotten: the wage paid and the choice of effort. Smith (2009a) shows that increasing payments imply a lower perceived cost of effort and thus a larger experienced surplus from engaging in the effort. Intuitively, this is the case because a lower payment before the choice of effort serves to reduce the subsequent perceived cost of effort. Here we find evidence consistent with this prediction: the difference between the preference for increasing wages and the preference for increasing non-wage payments is largest for intermediate amounts.

There is a strand of research that studies the relationships between the size of a single monetary payment, the delay in which it is received, and the subject's time preference.[2] Here we perform a similar exercise in the sense that we wish to learn how the subject's time preferences (or negative time preference in our case) varies with the size of the payments. However, other than Duffy and Smith (2013), to our knowledge, there has not been a study

[2] Also see Attema, Bleichrodt, Rohde, and Wakker (2010), Benzion, Rapoport, and Yagil (1989), Green, Myerson, and Macaux (2005), Green, Myerson, and McFadden (1997), Raineri and Rachlin (1993), Schoenfelder and Hantula (2003), Smith and Hantula (2008), Stevenson (1993), and Thaler (1981).

that examines the relationship between the preference for increasing payments and the size of the payments.

There are two primary criticisms of the preference for increasing payments literature. First, there is evidence that the preference for increasing payments is not to be robust to the method of elicitation. Second, the responses of the subjects are not incentivized and should therefore be interpreted with caution. We now address these two criticisms.

Frederick and Loewenstein (2008) show that the preference for improving sequences is sensitive to the means of elicitation.[3] We design our questions in order to mitigate the spurious effects discussed by Frederick and Loewenstein. The authors list three reasons why a subject might exhibit a preference for improving sequences: the utility of anticipating future outcomes, a contrast effect by having a series of improvements according to a reference point, and an extrapolation effect where subjects come to believe that the payment trajectory will continue beyond that specified by the experimenter. These first two reasons are not driven by the means of elicitation, however we view the final reason to be an unwanted remnant of the methodology. Therefore, our experiment is designed to mitigate the extrapolation effect by explicitly stating that the choice of option will not affect subsequent income.

The other criticism is that the experimental work on the preference for increasing payments is largely not incentivized. Nonetheless, there is evidence that data generated by such experiments are useful and consistent with the empirical evidence. For instance, Johnson and Bickel (2002) do not find significant differences between the measurement of time preferences involving hypothetical and actual money. Additionally, a large body of empirical evidence supports the claim that people prefer increasing sequences. For instance, research finds that wages increase at a faster rate than productivity.[4] It is difficult to see how this could persist unless the workers had a preference for such improvements. Finally, researchers find that happiness and satisfaction are related to increases in wages.[5] Whereas we acknowledge the

[3] See Gigliotti and Sopher (2004) for another paper that challenges the robustness of the preference for increasing payments. Also see Manzini, Mariotti, and Mittone (2010) for mixed evidence on the topic.

[4] See Clark (1999), Flabbi and Ichino (2001), Frank and Hutchens (1993), Lazear (1999), Medoff and Abraham (1980), and Smith (2009b).

[5] See Burchardt (2005), Di Tella, Haisken-De New, and MacCulloch (2010), Grund and Sliwka (2007), Inglehart and Rabier (1986), and Senik (2008).

unincentivized nature of our study, we also note that the evidence regarding the preference for increasing payments includes unincentivized experiments and incentivized empirical work.

3 Experimental Procedure

A total of 398 undergraduate and graduate students in the psychology subject pool at Rutgers University-Camden were recruited to participate in the experiment. The subjects were given course credit for participating. Each response was entered on paper.

Subjects were each presented with five payment stream questions, which involved six possible payment sequences over six years. The subjects were told to select the one which they most prefer. In each of the five payment questions, the subject was presented with a constant sequence with a base amount of either $\$17,000$, $\$37,000$, $\$57,000$, $\$77,000$, or $\$97,000$. The other response items within each question varied the degree to which the payments were increasing. Therefore, we can associate each income question with the base amount of the sequence.

These payment sequences were designed so that, within each question, each sequence option summed to an identical amount. Therefore, a subject who discounts in the standard fashion would select the constant sequence of income, regardless of the size of the payments. Further, within each question, the response items had identical values in the third year. However, the increasing response items each had lower payments in the first and second years, and higher payments in the fourth, fifth, and sixth years. Each sequence was constructed using the same additive technique where fixed amounts were added to the base amounts. See the appendix for a sample payment question and an explanation of this additive technique.

Additionally, we varied the order in which the questions were presented to the subjects. Also, we presented the response items so that they were ordered by their rate of increase. Approximately half of the subjects were given the options in ascending order: the constant sequence as the first option and the most increasing sequence as the last option. Approximately half were given the options in descending order: the most increasing sequence as the first option and the constant sequence as the last option. In the analysis of the data, we recoded

the responses so that Option 1 represents the constant sequence and Option 6 represents the most increasing sequence. Since the rate of increase in the payments is negatively related to the present value of the sequence, and since we recoded the responses, we are therefore able to speak of a *stronger* preference for increasing payments as being associated with a higher option number.

In order to minimize the extrapolation effect (Frederick and Loewenstein, 2008), each response item included the description "same for each" for "year 7 and beyond." The subjects were told that the dollar amounts were listed in 2012 dollars and that their forecast of inflation should not be factored into their responses.

Subjects were randomly selected to be in one of two treatments: the Job treatment or the Lotto treatment. Subjects in both treatments were given the identical five payment questions, however the description of the source of the money was different. Lotto treatment subjects were told that a relative won a substantial lotto jackpot and offered the following streams of money. Job treatment subjects were told that the payments are associated with wages from employment.

Finally, we also asked for their *descriptive rating* of the base amounts. Specifically, the subjects were asked to provide their descriptive rating of "starting salaries" of $\$17,000$, $\$37,000$, $\$57,000$, $\$77,000$, and $\$97,000$ on a scale of 1 (very low) to 7 (very high).

We excluded 15 subjects that did not complete every item and subjects that offered a non-monotonic descriptive rating. Of the 384 subjects, 183 were in the Lotto treatment and 201 were in the Job treatment.

4 Results

First, we investigate whether the preference for increasing payments is increasing in the size of the payments and whether the preference for increasing payments is stronger for payments described as wages. We perform a series of repeated measures regressions with the dependent variable as the payment option choice. The dependent variables include the base amount of the question, a dummy variable indicating whether the question entailed wage or non-wage

income, and an interaction between the two. Since we have repeated observations, we employ a repeated measures regression with an unstructured covariance matrix. In other words, we assume a unique correlation between any two observations involving a particular subject. However, we assume that observations involving two different subjects are statistically independent. This analysis is summarized in Table 1.

Table 1: Repeated measures regressions of payment option choice

	(1)	(2)	(3)
Base Amount	0.0047***	0.0047***	0.00354*
	(0.00123)	(0.00123)	(0.00178)
Job	–	0.595***	0.479*
		(0.174)	(0.216)
Base Amount*Job	–	–	0.00222
			(0.00245)
-2 Log L	6876.5	6866.8	6876.2
LR χ^2	1323.96***	1294.12***	1293.54***

Notes: coefficient estimates with standard errors in parentheses.
Each regression has 1920 observations involving 5 responses
from 384 subjects. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.1$

Consistent with the findings of Loewenstein and Sicherman (1991), we find that the preference for increasing payments is stronger when the income is described as income from wages as opposed to another source. Further, consistent with Duffy and Smith (2013), we find that the preference for increasing payments is stronger for larger amounts. However, we do not find that the interaction between the variables is significantly related to the preference for increasing payments.

Now we investigate whether the difference between the preference for increasing wage payments and the preference for increasing non-wage payments is largest for intermediate payments, as predicted by Smith (2009a). In order to study this difference, we perform a t-test between the Lotto and Job treatments for each of the five income questions. We also perform a Mann-Whitney test between the Lotto and Job treatments for each of the five income questions. In addition to the means and standard deviations within each treatment, the results of the t-tests and Mann-Whitney tests are listed below in Table 2. We also perform a regression similar to that summarized in regression (3) in Table 1, with the exception that the we treat the Base variable as categorical rather than continuous. We then perform a simple

effects analysis, which tests for differences between the Job and Lotto treatments within each question.[6] This analysis is summarized in Table 2.

Table 2: Results of t-tests, Mann-Whitney tests across treatments and simple effects of a repeated measures regression within each question

	$\$17,000$	$\$37,000$	$\$57,000$	$\$77,000$	$\$97,000$
Lotto Treatment	2.188	2.516	2.453	2.490	2.557
	(1.864)	(2.029)	(1.981)	(1.989)	(2.086)
Job Treatment	2.762	2.869	3.204	3.208	3.238
	(2.021)	(1.985)	(2.040)	(2.048)	(2.081)
t-statistic	2.94^{**}	1.76^{*}	3.72^{***}	3.55^{***}	3.26^{**}
Mann-Whitney z-statistic	3.26^{**}	2.02^{*}	4.04^{***}	3.80^{***}	3.54^{***}
Simple effects F-statistic	8.66^{**}	3.08^{*}	13.84^{***}	12.59^{***}	10.61^{**}

Notes: means with standard deviations in parentheses. We report the t-statistic, the Mann-Whitney z-statistic, and the F-statistic from the simple effects analysis. Each column has 384 observations. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.1$

All three analyses provide some support for the prediction of Smith (2009a) that the difference between the preference for increasing payments of wages and the preference for increasing payments of non-wage money is greatest for intermediate amounts. In particular, we see that the t-statistic, the Mann-Whitney z-statistic and the simple effects F-statistic are all largest for the intermediate $\$57,000$ question.

5 Discussion and Conclusion

We have investigated the nature of the preference for increasing payments. We elicited preferences over sequences of payments by varying the amount of the payment. We also varied the description of the source of the payments as either resulting from a job or from a lotto prize. Consistent with the findings of Loewenstein and Sicherman (1991), we find that the preference for increasing payments is stronger when the payments are described as income from wages rather than from another source. Further, consistent with the findings of Duffy and Smith (2013), we find that the preference for increasing payments is increasing in the size of the payments.

[6] This is also sometimes referred to as slice effects.

Using our data, we test a prediction of Smith (2009a), which states that the difference between the preference for increasing wage payments and the preference for increasing non-wage payments will be largest for intermediate payments. Smith (2009a) presents a model of a decision maker with an imperfect recall of the cost of effort where increasing wage payments can reduce the perceived cost of effort. For payments that are very likely or very unlikely to cover the cost of effort, the benefit of such a reduction is minimal. However, for payments which are neither likely nor unlikely to cover the cost of effort, there could be a significant benefit from such a reduction. Therefore, Smith (2009a) predicts that the difference between the preference for increasing wage payments and the preference for increasing non-wage payments will be largest for intermediate amounts. Duffy and Smith (2013) found evidence in support of this however, the construction of the increasing sequences and the relatively smaller sample size rendered the evidence to be less than fully satisfactory. Here we study the question with an improved construction of the increasing sequences and a larger sample size and we find evidence in support of the prediction of Smith (2009a).

References

Ariely, D, and Z. Carmon (2000) "Gestalt characteristics of experiences: the defining features of summarized events" *Journal of Behavioral Decision Making* **13**, 191–201.

Attema, AE (2012) "Developments in time preference and their implications for medical decision making" *Journal of the Operational Research Society* **63(10)**, 1388–1399.

Attema, A, H. Bleichrodt, K. Rohde, and P. Wakker (2010) "Time-Tradeoff Sequences for Analyzing Discounting and Time Inconsistency" *Management Science* **56(11)**, 2015–2030.

Benzion, U, A. Rapoport, and J. Yagil (1989) "Discount Rates Inferred from Decisions: An Experimental Study" *Management Science* **35(3)**, 270–284.

Blanchard, TC, L.S. Wolfe, I. Vlaev, J.S. Winston, and B.Y. Hayden (2014) "Biases in preferences for sequences of outcomes in monkeys" *Cognition* **130(3)**, 289–299.

Burchardt, T (2005) "Are One Man's Rags another Man's Riches? Identifying Adaptive Expectations Using Panel Data" *Social Indicators Research* **74(1)**, 57–102.

Chapman, G (1996a) "Expectations and preferences for sequences of health and money" *Organizational Behavior and Human Decision Processes* **67**, 59–75.

Chapman, G (1996b) "Temporal discounting and utility for health and money" *Journal of Experimental Psychology: Learning, Memory, and Cognition* **22**, 771–791.

Chapman, G (2000) "Preferences for improving and declining sequences of health outcomes" *Journal of Behavioral Decision Making* **13**, 203–218.

Chapman, G, and A. Elstein (1995) "Valuing the future: Temporal discounting of health and money" *Medical Decision Making* **15**, 373–386.

Clark, A (1999) "Are Wages Habit-Forming? Evidence from Micro Data" *Journal of Economic Behavior and Organization* **39(2)**, 179–200.

Di Tella, R, J. Haisken-De New, and R. MacCulloch (2010) "Happiness Adaptation to Income and to Status in an Individual Panel" *Journal of Economic Behavior and Organization* **76(3)**, 834–852.

Dixon, M, and R. Verma (2013) "Sequence effects in service bundles: Implications for service design and scheduling" *Journal of Operations Management* **31(3)**, 138–152.

Duffy, S, and J. Smith (2013) "Preference for increasing wages: How do people value various streams of income?" *Judgment and Decision Making* **8(1)**, 74–90.

Elster, J, and G. Loewenstein (1992) "Utility from memory and anticipation" In GF Loewenstein, and J Elster (Eds.), *Choice over time* (pp. 213–234). New York: Sage.

Flabbi, L, and A. Ichino (2001) "Productivity, seniority and wages: new evidence from personnel data" *Labour Economics* **8**, 359–387.

Frank, R, and R. Hutchins (1993) "Wages, seniority and the demand for rising consumption profiles" *Journal of Economic Behavior and Organization* **21**, 251–276.

Frederick, S, and G. Loewenstein (2008) "Conflicting Motives in Evaluations of Sequences" *Journal of Risk and Uncertainty* **37**, 221–235.

Gigliotti, G, and B. Sopher (2004) "Analysis of Intertemporal Choice: A New Framework and Experimental Results" *Theory and Decision* **55**, 209–233.

Gigliotti, G, and B. Sopher (1997) "Violations of Present-Value Maximization in Income Choice" *Theory and Decision* **43**, 45–69.

Green, L, J. Myerson, and E. McFadden (1997) "Rate of Temporal Discounting Decreases with Amount of Reward" *Memory and Cognition* **25(5)**, 715–723.

Green, L., J. Myerson, and E. Macaux (2005) "Temporal Discounting When the Choice Is Between Two Delayed Rewards" *Journal of Experimental Psychology: Learning, Memory, and Cognition* **31(5)**, 1121–1133.

Grund, C, and D. Sliwka (2007) "Reference-Dependent Preferences and the Impact of Wage Increases on Job Satisfaction: Theory and Evidence" *Journal of Institutional and Theoretical Economics* **163(2)**, 313–335.

Guyse, J, L.R. Keller, and T. Eppel (2002) "Valuing Environmental Outcomes: Preferences for Constant or Improving Sequences" *Organizational Behavior and Human Decision Processes* **87**, 253–277.

Hsee, C, and R. Abelson (1991) "Velocity Relation: Satisfaction as a Function of the First Derivative of Outcome Over Time" *Journal of Personality and Social Psychology* **60(3)**, 341–347.

Hsee, C, R. Abelson ,and P. Salovey (1991) "The Relative Weighting of Position and Velocity in Satisfaction" *Psychological Science* **2(4)**, 263–266.

Inglehart, R, and J.R. Rabier (1986) "Aspirations Adapt to Situations: But Why Are the Belgians so Much Happier than the French? A Cross-Cultural Analysis of the Subjective Quality of Life" In F. Andrews (Ed.), *Research on the Quality of Life.* Institute for Social Research, University of Michican, Ann Arbor.

Johnson, M, and W. Bickel (2002). Within-Subject Comparison of Real and Hypothetical Money Rewards in Delay Discounting. *Journal of the Analysis of Experimental Behavior*, 77(2), 129–146.

Lazear, E (1999) "Personnel Economics: Past Lessons and Future Directions" *Journal of Labor Economics* **17(2)**, 198–236.

Loewenstein, G, and D. Prelec (1993) "Preferences for Sequences of Outcomes" *Psychological Review* **100(1)**, 91–108.

Loewenstein, G, and N. Sicherman (1991) "Do Workers Prefer Increasing Wage Profiles?" *Journal of Labor Economics* **9(1)**, 67–84.

Manzini, P, M. Mariotti, and L. Mittone (2010) "Choosing Monetary Sequences: Theory and Experimental Evidence" *Theory and Decision* **69(3)**, 327–354.

Matsumoto, D, M. Peecher, and J. Rich (2000) "Evaluations of Outcome Sequences" *Organizational Behavior and Human Decision Processes* **83(2)**, 331–352.

Medoff, J, and K. Abraham (1980) "Experience, Performance, and Earnings" *Quarterly Journal of Economics* **95**, 703–736.

Peine, K, D. Wentzel, and A. Herrmann (2012) "Getting better or getting worse? Consumer Responses to decreasing, constant, and ascending multi-dimensional Price Profiles" *Review of Managerial Science* **6(1)**, 81–101.

Raineri, A, and H. Rachlin (1993) "The Effect of Temporal Constraints on the Value of Money and Other Commodities" *Journal of Behavioral Decision Making* **6**, 77–94.

Ross, WT, and I. Simonson (1991) "Evaluating pairs of experiences: A preference for happy endings" *Journal of Behavioral Decision Making* **4**, 273–282.

Schoenfelder, T, and D. Hantula (2003) "A Job with a Future? Delay Discounting, Magnitude Effects, and Domain Independence of Utility for Career Decisions" *Journal of Vocational Behavior* **62**, 43–55.

Senik, C (2008) "Is Man Doomed to Progress?" *Journal of Economic Behavior and Organization* **68**, 140–152.

Smith, C, and D. Hantula (2008) "Methodological Considerations in the Study of Delay Discounting in Intertemporal Choice: A Comparison of Tasks and Modes" *Behavior Research Methods* **40(4)**, 940–953.

Smith, J (2009a). "Imperfect Memory and the Preference for Increasing Payments" *Journal of Institutional and Theoretical Economics* **165(4)**, 684–700.

Smith, J (2009b) "Cognitive Dissonance and the Overtaking Anomaly: Psychology in the Principal-Agent Relationship" *Journal of Socio-Economics* **38(4)**, 684–690.

Soman, D (2003) "Prospective and Retrospective Evaluations of Experiences: How You Evaluate an Experience Depends on When You Evaluate It" *Journal of Behavioral Decision Making* **16**, 35–52.

Stevenson, MK (1993) "Decision making with long-term consequences: Temporal discounting for single and multiple outcomes in the future" *Journal of Experimental Psychology: General* **122**, 3–22.

Thaler, R (1981) "Some Empirical Evidence of Dynamic Inconsistency" *Economics Letters* **8**, 201–207.

Varey, C, and D. Kahneman (1992) "Experiences extended across time: Evaluation of moments and episodes" *Journal of Behavioral Decision Making* **5**, 169–185.

Appendix

Job treatment:

Imagine that you have just started a job which you expect to enjoy and that you plan on keeping for many years.

The company gives you 6 different options for payment over your first 6 years. Specifically, you are given 6 options (Option 1,... , Option 6) each of which specifies an amount of income for each of the following 6 years.

At the end of 6 years, your contract will be negotiated and your choice of payment option will have no effect on your income at the end of the six years.

Select exactly one of the six payment options you most prefer.

There are no correct answers, so please answer as honestly as possible.

**Note all amounts are listed in 2012 dollars therefore your answer should not reflect your beliefs about future inflation.

Lotto treatment:

A relative of yours has won a substantial lotto jackpot and has decided to provide you with a portion of the winnings over the next 6 years through a trust.

Specifically, you are given 6 payment options (Option 1,..., Option 6). Each option specifies an amount of income for each of the following 6 years.

Assume that these payments will be your only source of income during the next 6 years.

At the end of 6 years, the trust is dissolved and no longer makes any payments. Therefore, your choice of payment option will have no bearing on your income after 6 years.

Select exactly one of the six payment options you most prefer.

There are no correct answers, so please answer as honestly as possible.

**Note all amounts are listed in 2012 dollars therefore your answer should not reflect your beliefs about future inflation.

Sample from the $37,000 base amount

Check one box below		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7 and Beyond
	Option 1	$37,000	$37,000	$37,000	$37,000	$37,000	$37,000	Your choice
	Option 2	$35,890	$36,260	$37,000	$37,370	$37,555	$37,925	of option
	Option 3	$34,780	$35,520	$37,000	$37,740	$38,110	$38,850	will not
	Option 4	$33,670	$34,780	$37,000	$38,110	$38,665	$39,775	affect
	Option 5	$32,560	$34,040	$37,000	$38,480	$39,220	$40,700	subsequent
	Option 6	$31,450	$33,300	$37,000	$38,850	$39,775	$41,625	income

The $17,000 base amount questions subtract $20,000 from every amount listed above, the $57,000 base amount questions add $20,000 to every amount, the $77,000 base amount questions add $40,000 to every amount, and the $97,000 base amount questions add $60,000 to every amount.