Preference for increasing wages: How do people value various streams of income?

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Preference for Increasing Wages: How Do People Value Various Streams of Income?*

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Abstract

Prior studies have found that subjects prefer an improving sequence of income over a constant sequence, even if the constant sequence offers a larger present discounted value. However, little is known about how these preferences vary with the size of the wage payments. In each of our three studies, we find a relationship between the preference for increasing payments and the size of the payments. Further, our measure of the decreasing marginal utility of money is only weakly associated with this relationship. Additionally, our results roughly confirm an earlier theoretical prediction that the preference for increasing wage payments will be largest for intermediate sized payments. Finally, consistent with the literature, we find mixed evidence regarding the relationship between the preference for increasing payments and such preferences in other domains.

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

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1 Introduction

It is well known that subjects can exhibit a preference for improving sequences (Loewenstein and Prelec, 1993). In particular, many people prefer an increasing sequence of payments over a constant sequence, even if the increasing sequence has a lower present value (Loewenstein and Sicherman, 1991). However, little is known about how this preference varies with the size of the payments. Additionally, little is known about the preference for sequences of nonmonetary aspects of a job. To address these issues, we elicit preferences over sequences of payments and hours required for a job.

In each of the studies which follow, we elicit preferences over sequences of payments. In these questions, each response item specifies an explicit sequence of payments. Within each question, the undiscounted sum of each payment stream is identical among all response items. However, each response item varies in its rate of increase. In each payment question, we offer a constant payment sequence and various increasing sequences, where the rate of increase is negatively related to the present value of that sequence. As a result, the chosen payment sequence provides a measure of the preference for increasing payments exhibited by the subject.

In Study 1, we elicit preferences for income payment streams and hours required for a job. We find that the preference for increasing sequences of income is stronger when the payments are larger. We also find that subjects whose preference for increasing income varies with the size of the income payments also tend to have a relationship between the preference for decreasing hours and the number of hours required.

Note that in Study 1, we are unable to distinguish between the preference for sequences of nonwage payments and the preference for sequences of income, which Loewenstein and Sicherman (1991) has found to be different. In particular, the authors find that the preference for increasing payments is stronger when the money is described as wages rather than from another source. Therefore, in Study 2 we elicit preferences for sequences of money, where the payments originate from one of two possible sources: one earned through employment and one not. We find that the difference between the two treatments is largest for intermediate

sized payments. This finding is consistent with the results in Smith (2009a), which roughly predicts that the preference for increasing payments of income will be largest for payments which are neither very large nor very small, namely intermediate sized payments.

A possible explanation for the relationship between the preference for increasing payments and the size of the payments is that it is due to the decreasing marginal utility of money. Consider a subject who has a preference for money and a preference for improvements in the sequence of money. The subject is contemplating Choice A which is between a sequence of payments with a slow rate of increase and a sequence with a high rate of increase, where the undiscounted sums are identical. Now suppose that the subject is also contemplating Choice B, which is identical to Choice A, with the exception that we add a constant amount to each payment in both sequences. Further, suppose that the subject selects the slow increasing sequence in Choice A and the fast increasing sequence in Choice B. The decreasing marginal utility explanation would contend that the higher payments in Choice B are less beneficial than the same increases in Choice A, and therefore the subject will seek to compensate for this by selecting a larger rate of increase.

In order to test this decreasing marginal utility explanation, in Study 3 we also measure the shape of the utility of money. Specifically, we employ an Eckel and Grossman (2008) type measure of risk aversion, in order to measure the rate of the decreasing marginal utility of money. While we again find that the preference for increasing payments is related to the size of the payment, we find a very weak relationship between this behavior and our measure of the shape of the utility function. As a result, we do not favor the decreasing marginal utility explanation for the relationship between the preference for increasing payments and the size of the payments. Further, unlike Study 1 we do not find a relationship between the subjects whose preference for increasing payments varies with the payment size and those whose preference for decreasing hours varies with the number of hours required.

In our view, this paper makes three contributions to the literature. Although it is well known that many people have a preference for increasing payments, our first contribution is the

finding that this preference is increasing in the size of the payments. Our second contribution is that this effect appears to not be driven by the decreasing marginal utility of the subject. Finally, our third contribution is the evidence supporting the theoretical predictions of Smith (2009a)

2 Related Literature

Research has found that people have a preference for improving sequences of outcomes. This extensive body of research extends to monetary outcomes or nonmonetary outcomes, retrospective evaluations or prospective evaluations, and short or long time horizons.[1] For instance, Loewenstein and Sicherman (1991) offered subjects a choice among payment sequences over 6 years. The amounts within each payment profile summed to identical amounts however each exhibited a different rate at which the payments were made. The choices included options with constant, decreasing, or increasing rates of payment. Therefore, any subject with a positive discount rate should never prefer an increasing profile. Despite the clear prediction of standard discounting, the authors found that many subjects preferred the increasing payment options. As in Loewenstein and Sicherman, we offer subjects payment sequences which sum to identical amounts within each question.

Additionally, Loewenstein and Sicherman found that the preference for increasing payments was particularly pronounced when the payments were described as "income from wages" as opposed to "income from rent." In our experiment, we also wish to distinguish between preferences over payment sequences which require effort and those which do not require effort. However, 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. Therefore, in Study 2 we measure the baseline preference for increasing payments by describing the money as resulting

[1] For instance, see Ariely and Carmon (2000), Chapman (1996a, 1996b, 2000), Chapman and Elstein (1995), Elster and Loewenstein (1992), Gigliotti and Sopher (1997), Guyse et. al. (2002), Hsee et. al. (1991), Hsee and Abelson (1991), Loewenstein and Prelec (1993), Matsumoto et. al. (2000), Ross and Simonson (1991), Soman (2003), and Varey and Kahneman (1992).

from a large lotto jackpot won by a family member.

Our experimental setup allows us to test the predictions of Smith (2009a). The paper models a decision maker who selects among prospective sequences of income payments. Additionally, the decision maker faces a cost of effort however has imperfect recall of these experienced costs. The paper shows that the decision maker exhibits a preference for increasing payments and this effect is strongest when the payments are neither very likely nor very unlikely to cover the cost of effort. In other words, Smith predicts that the preference for increasing payments will be strongest for intermediate payments. In Study 2, we find that the largest difference between the preference for increasing sequences of wages and the preference for increasing sequences of nonwage payments occurs for intermediate sized payments.

Of course, we are eliciting preferences over objects which differ in the timing and amount of money to be received. When observing such choices, it is not a trivial problem to distinguish the effects due to the instantaneous preferences for money and that due to time preferences.[2] In an effort to measure the former, Eckel and Grossman (2008)[3] offer a simple measure the risk aversion. In the Eckel-Grossman measure, the subject selects among 5 possible gambles whereby riskier gambles offer a higher expected value. The choice allows the experimenter to obtain a measure of the Constant Relative Risk Aversion parameter of the subject. We employ a variation of the Eckel-Grossman measure and compare the results to the preference for increasing sequences of money. We find that our measure is very weakly associated with the relationship between the preference for increasing payments and the size of the payments.

There is a literature which seeks to establish a relationship between the size a monetary payment, the delay in which it is received, and the subject's time preference. In particular, Green et. al. (1997) offered subjects a choice between single payments, of different amounts to be paid at different times, and found a negative relationship between the implicit discount

[2] See Barsky et. al. (1997), Issler and Piqueira (2000), Warner, and Pleeter (2001), Kapteyn and Teppa (2003), Andersen et. al. (2008) for efforts in this regard.

[3] See Holt and Laury (2002) for another such measure and Dave et. al. (2010) for an examination of the merits of both.

rate and the amount of the payment.[4] 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, to our knowledge, there has been no study which examines such an effect on the preference for sequences of payments.

Prior research has examined whether preferences of sequences in one domain (say money) is related to preferences of sequences in another domain (say health). The existing evidence on this matter is mixed. Early literature found that the preference for sequences can be independent of the domain of the sequence (Chapman, 1996a, 1996b; Schoenfelder and Hantula, 2003).[5] However, more recent papers have found evidence of a similar time preference across some domains (Chapman, 2002; Chapman and Weber, 2006; Hardisty and Weber, 2009). Consistent with the literature, we also find mixed results on the matter. In neither Study 1 nor Study 3 do we find a relationship between the exhibition of the preference for increasing payment and the exhibition of the preference for decreasing hours.. However in Study 1, we find that the subjects which exhibit a relationship between the preference for increasing payments and the size of the payments also exhibit a relationship between the preference for decreasing hours and the number of hours required. On the other hand, in Study 3 we find no such relationship.

There are two primary criticisms of the preference for increasing payments literature discussed above. The first is that the evidence supporting the existence of the preference for increasing payments tends not to be robust to the method of elicitation. The second criticism is that the responses of the subjects are not incentive compatible and should therefore be interpreted with caution. We now address both of these criticisms.

Frederick and Loewenstein (2008) show that the preference for increasing sequences is sensitive to the means of elicitation.[6] We design our questions in order to mitigate the

[4] Also see Attema et. al. (2010), Benzion et. al. (1989), Green et. al. (2005), Raineri and Rachlin (1993), Smith and Hantula (2008), Stevenson (1993), and Thaler (1981).

[5] Schoenfelder and Hantula (2003) is one of the few papers to explore the issue of time preferences over job attributes in different domains. Schoenfelder and Hantula did not find a relationship between the time preference for income and the time preference for the percentage of the job engaged in preferred tasks.

[6] See Gigliotti and Sopher (2004) for another paper which challenges the robustness of the preference for

spurious effects discussed in Frederick and Loewenstein. The authors list three reasons[7] regarding which a subject might exhibit a preference for increasing 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, we design the experiment to mitigate the extrapolation effect by stating that prospects beyond a certain year are identical.[8] For instance, the income questions explicitly state that the subject will either be promoted or fired and therefore the answers to the questions will not affect their income beyond the specified period.

There is another criticism that the experimental work on the preference for increasing payments is largely not incentive compatible. (It is after all relatively difficult and expensive to experimentally manipulate a person's income schedule.) Nonetheless, there is evidence that data generated by such experiments is useful. For instance, Johnson and Bickel (2002) find no 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 payments of income. In particular, research has found that wages increase at a faster rate than productivity.[9] This would only seem to persist in the case when the worker has a preference for such improvements. In another strand of literature, researchers have found that happiness or satisfaction is significantly related to increases in wages.[10] Based on the experimental and empirical work cited above, we are confident in the applicability of the experiments which follow.

increasing payments. Also see Manzini et. al. (2010) for mixed evidence on the topic.

[7] Also see Read and Powell (2002) for more on the reasons which underpin decisions over time.

[8] We mention the motivations given by Frederick and Loewenstein for preferences for constant or diminishing sequences. Regarding a preference for constant sequences: diminishing marginal utility, equality among "selves" and "divide equally" heuristic. Regarding a preference for decreasing sequences: uncertainty that the future outcomes will occur, opportunity costs and pure time preference.

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

[10] See Burchardt (2005), Di Tella et. al. (2010), Grund and Sliwka (2007), Inglehart and Rabier (1986), and Senik (2008).

3 Study 1

3.1 Procedure

A total of 105 subjects, recruited from economics classes at Rutgers University-Camden, participated in the experiment. Sessions were conducted in classes of 19, 50, 13, and 23. Subjects were given course credit for attendance and were told that within each session, roughly 1 out of 25 subjects would be randomly drawn to win a prize of $20 in cash.[11] Instructions were provided by the same male experimenter.[12] The subjects were told to consider a hypothetical employment setting. The study posed 5 income sequence questions and 4 hours sequence questions. Each response was entered on paper.

Before each income sequence question, the subjects were told that they "...are happy with nonmonetary aspects of the job..." and are offered the following options for payment over time. Each income sequence question, offered subjects six income sequences over 6 years. The subjects were told to select the one which they most prefer. In each of the five income questions, the subject was presented with a constant sequence 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. These sequences were designed so that each sequence option, within each question, summed to an identical amount. Therefore, a subject who positively discounts would select the constant sequence of income, irrespective of the size of the payments. Further within each question, the response items had identical values in the third year. However, the increasing payments each had lower incomes in first and second years and higher incomes in the fourth, fifth, and sixth years. Each sequence was constructed using the same procedure. See the appendix for a sample income question and a more detailed explanation of its construction.

We varied the order in which the questions were presented to the subjects. Also, the response items were presented to subjects so that they were ordered by their rate of increase.

[11] Two payments were made in the large class, whereas only a single payment was made in the others.

[12] The delivery of the instructions was aided by Power Point slides. These slides, and any experimental material, are available from the corresponding author upon request.

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

In order to minimize the extrapolation effect discussed in Frederick and Loewenstein (2008), each response item included the description "same for each" for "year 7 and beyond." Also in an effort to minimize the extrapolation effect, the subjects were told that at the end of the sixth year, they would either be promoted or fired, and therefore their choice of income stream would not affect their income after the sixth year. The subjects were told that the dollar amounts were listed in 2009 dollars and that their forecast of inflation should not be factored into their responses.

We performed a similar exercise for sequences of hours required at their job. After the income questions, the subjects were provided with a list of possible hours sequences over the next 6 years. In each of the four hours questions, the subject was presented with a constant amount of 40, 50, 60, or 70 hours per week. The other response items in each question were increasing or decreasing step functions, with only a single step, which summed to the same amount over the six years. Therefore, any subject who positively discounts would never prefer a decreasing sequence of hours. As with the income questions, we varied the order of the questions and the response items.

Finally, in order to account for the heterogeneity of the valuation of the various salary amounts, we also asked for their *description* of the amounts. Specifically, the subjects were asked to provide their description 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).

3.2 Data

To check the validity of the variation of the payments, we note that 104 out of the 105 subjects offered a description of the incomes of $\$17,000$, $\$37,000$, $\$57,000$, $\$77,000$ and $\$97,000$ in a monotonic fashion. See Table 1 for the mean response to the description of a starting salary of the various amounts, with the standard deviation in parenthesis.

$\$17,000$	$\$37,000$	$\$57,000$	$\$77,000$	$\$97,000$
1.624	3.510	4.743	5.724	6.629
(0.890)	(0.883)	(0.867)	(0.826)	(0.624)

Table 1: Mean responses (with standard deviation in parentheses) to description of starting salaries.

See Table 2 for the means and standard deviations of the choices for each of the income questions.

$\$17,000$	$\$37,000$	$\$57,000$	$\$77,000$	$\$97,000$
3.086	3.571	3.714	3.857	3.867
(2.085)	(2.042)	(2.027)	(2.059)	(1.976)

Table 2: Mean responses (with standard deviation in parentheses) of choice for each income question.

Also, we do not find any significant differences between the choices of subjects who were given the options in ascending order and the choices of those who were given the options in descending order. Further, there is no relationship between the order in which the questions were presented and subsequent behavior.

We find a relationship between the preference for increasing payments and the size of the payments. We run several regressions which provide evidence of this result. Each regression specifies the degree of the preference for increasing payments as the dependent variable. Regressions (1) and (3) employ the wage as the independent variable whereas regressions (2) and (4) use the description as the independent variable. As we have subjects making a sequence of choices, we also perform fixed effects regressions. Regressions (1) and

(2) do not account for the subject specific fixed effects, whereas in regressions (3) and (4) we account for the fixed effects. Each regression has $n = 525$. See Table 3 for a summary of the regressions.[13]

	(1)	(2)	(3)	(4)
Wage	0.0092***	–	0.0092***	–
	(0.0031)		(0.0018)	
Description	–	0.16***	–	0.15***
		(0.046)		(0.028)
Fixed Effects?	No	No	Yes	Yes
R^2	0.016	0.022	0.75	0.75

Table 3: Regression results of option choice with *** indicating significance at 0.01.

As can be seen in Table 3, each regression specification suggests a positive relationship between the preference for increasing payments and either the size of the wages or the description of the wages. Also note that accounting for the fixed effects does not affect the coefficient estimates. However, when accounting for the fixed effects we do observe smaller standard errors, and hence a greater significance of the independent variables. Further, when accounting for the fixed effects, we observe a better fit, as evidenced by the higher values for R^2.

Study 1 allows the analysis of the within subject relationship between the preference over sequences of monetary outcomes and the preference over sequences of nonmonetary outcomes. As a measure of the preference for increasing payments, we sum the rank of the options selected in the 5 income questions. As a measure of the preference for decreasing hours, we sum the rank of the options selected in the 4 hours questions. We perform a regression between these two variables, and do not find a relationship between the exhibition of a preference for increasing payments and a preference for decreasing hours ($p = 0.94$).

However, our subjects do exhibit a relationship between changes in the preference for increasing income as the size of the payments vary and changes in the preference for decreasing

[13] In this and the remaining set of regressions, because we are not interested in the intercepts, we do not list them.

hours as the required hours vary. As a measure of the relationship between the preference for increasing payments and the size of the payments, we note the number of instances in which there is an increase in the number selected in adjacent questions. As there are 5 income questions, there are 4 possibilities to have such an increase ($\$17K$ to $\$37K$, $\$37K$ to $\$57K$, $\$57K$ to $\$77K$ and $\$77K$ to $\$97K$). As a measure of the relationship between the preference for decreasing hours and the number of required hours, we note the number of instances in which there is a decrease between the number selected in adjacent questions. As there are 4 hours questions, there are 3 possibilities to have such a decrease (40 hours to 50 hours, 50 hours to 60 hours, 60 hours to 70 hours). We perform a regression between these variables, where income variable is the independent variable. In this regression, the estimated coefficient is positive (0.104, *s.e.* 0.0577) and almost significant ($t = 1.80$, $p = 0.074$).

We now perform a similar analysis but rather than examine increases in income choices, we examine the number of adjacent income questions with identical choices. Further, rather than examine decreases in hours choices, we examine the number of adjacent hours questions with identical choices. We run a regression between these two variables, where the income variable is the independent variable. In this regression, the estimated coefficient is positive (0.163, *s.e.* 0.0673) and significant ($t = 2.43$, $p = 0.017$). Therefore, we conclude that the study provides evidence that within subjects, there is a relationship between changes in the preference for increasing payments as the size of the payments vary and changes in the preference for decreasing hours as the required hours vary.

3.3 Discussion

Study 1 found a positive relationship between the preference for increasing payments and the size of those payments. Additionally, the study demonstrated a link between preferences for improving sequences involving monetary and nonmonetary outcomes. However, one drawback of Study 1 is that there was no baseline measure of the preference for sequences of nonwage money with which to compare the preference for sequences of income. In the following study we measure such preferences for sequences of money and nonwage money.

4 Study 2

4.1 Procedure

A total of 212 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. The same male experimenter administered the items and answered any possible questions. The responses were recorded on paper.

Subjects were randomly selected to be in one of two treatments: the Job treatment or the Lotto treatment. Subjects in the Job treatment were given the identical 5 income questions as used in Study 1. In the Lotto treatment, the financial amounts were identical to that in the Job treatment, 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. Therefore, the only difference between the two treatments is the description of the source of the payments. The Lotto treatment had 108 subjects and the Job treatment had 104 subjects.

As in Study 1, we varied the order of the response items. Again, we recoded the responses so that Option 1 represents the constant sequence and Option 6 represents the most increasing sequence. As a result we are able to speak of a stronger preference for increasing payments as being associated with a higher number. We also varied the order of the questions. Finally, as in Study 1, we asked subjects to provide their description 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).

4.2 Data

To check the validity of the variation of the payments, note that 209 out of the 212 subjects described the starting incomes of $\$17,000$, $\$37,000$, $\$57,000$, $\$77,000$, and $\$97,000$ in a monotonic fashion. We also do not observe a difference between the choices of the subjects presented with the response items in ascending order and those presented with the response

items in descending order. We also do not observe any differences related to the order of the questions.

To demonstrate the relationship between the wage and the preference for increasing payments, we run the following regressions. Both regressions specify the degree of the preference for increasing payments as the dependent variable and the payments as the independent variable. Regression 1 does not account for fixed effects and regression 2 accounts for fixed effects. See Table 4 for the results of the regressions.

	(1)	(2)
Payments	0.040^{***}	0.047^{***}
	(0.019)	(0.013)
Fixed Effects?	No	Yes
R^2	0.0040	0.68

Table 4: Regression results of option choice with *** indicating significance at 0.01.

As can be seen in Table 4, both regression specifications suggest a positive relationship between the preference for increasing payments and the size of the payments. Using repeated measures ANOVA, the within-subject factor was $F(1, 210) = 169.56$, $p < 0.001$, $\eta^2 = 0.447$, where the degrees of freedom were adjusted for sphericity using the lower bound approach.

We now compare the Lotto and Job treatments. See Figure 1 which displays the mean choice by the payment size and payment treatment.

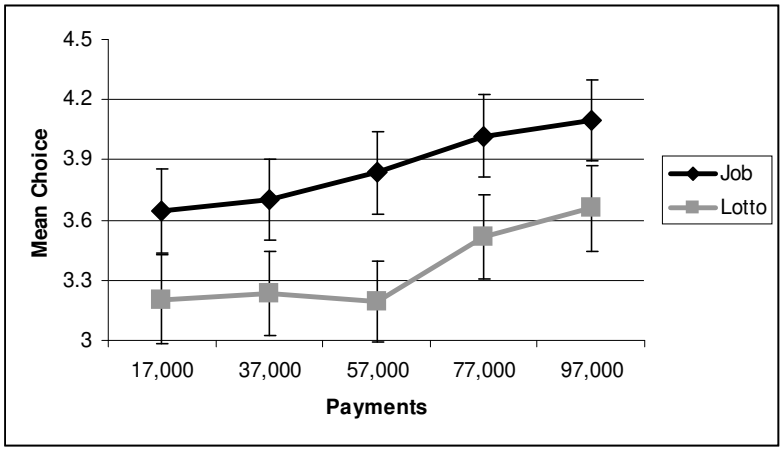

Figure 1: Mean preference for increasing payments by payment size and payment treatment.

Consistent with Loewenstein and Sicherman (1991) the preference for increasing sequences of payments is larger for sequences described as income payments from a job rather than income payments from some other source. The question then becomes, what is the relationship between these differences and the size of the payments. In order to determine this relationship, we perform a t-test between the Lotto and Job treatments for each of the 5 income questions. We also perform the Mann-Whitney test between the Lotto and Job treatments in each of the 5 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 5.[14]

	$\$17,000$	$\$37,000$	$\$57,000$	$\$77,000$	$\$97,000$
Lotto Treatment	3.20	3.23	3.19	3.52	3.66
	(2.29)	(2.18)	(2.12)	(2.17)	(2.20)
Job Treatment	3.64	3.70	3.84	4.02	4.10
	(2.16)	(2.09)	(2.11)	(2.07)	(2.06)
t-statistic	-1.44	-1.61	-2.21	-1.72	-1.50
p-value	0.075	0.055	0.014	0.043	0.067
Mann-Whitney z-statistic	-1.35	-1.68	-2.18	-1.74	-1.31
p-value	0.089	0.047	0.015	0.041	0.095

Table 5: Results of t-tests and Mann-Whitney tests across treatments with means (and standard deviations in parentheses).

Note that Table 5 demonstrates that the Lotto treatment and Job treatment are significantly different for intermediate payments but not significantly different for large or small payments. Specifically, we observe a significant difference between the Lotto and Job treatments for the $\$57,000$ question. We observe a marginally significant difference between the Lotto and Job treatments for the $\$37,000$ and $\$77,000$ questions. Finally, we do not observe a significant difference between the Lotto and Job treatments for the $\$17,000$ and $\$97,000$ questions.

[14] Each t-test has 210 degrees of freedom. The p-values listed are for a one-sided test.

4.3 Discussion

The results of Study 2 provide support for the predictions of Smith (2009a). Roughly, Smith predicts that, for an agent with a imperfect recall of the experienced cost of effort, increasing payments for wage income can reduce the perceived cost of effort. For payments which 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 preference for increasing payments will be largest for intermediate payments. Indeed, the results in Study 2 support these predictions.

Other than a mechanism similar to that proposed in Smith (2009a), it is difficult to see how this nonmonotonic relationship could arise. Other explanations of the difference between the preference for increasing sequences of wages and the preference for increasing sequences of nonwage money involved a feeling of mastery which accompanies succeeding at a job.[15] While this is likely to be an important reason to value increasing sequences of wages, it is difficult to see how this explanation is consistent with the nonmonotonic relationship found in Study 2.

Similar to Study 1, in Study 2 we observe a relationship between the preference for increasing payments and the size of the payments. However, we have yet to explore the the potential reasons for this relationship. One possible explanation for the relationship between the preference for increasing payments and the size of the payments is that it is due to the decreasing marginal utility of money. In order to test this explanation, we also measure the shape of the utility for money in the following study.

[15] Loewenstein and Sicherman (1991).

5 Study 3

5.1 Proecdure

A total of 230 Rutgers-Camden law students completed our survey.[16] The items were administered online via Surveymonkey.com. An email notification was sent to each law student, which invited them to participate in the survey. The subjects were told that, upon completion of the survey, they would be entered into a lottery for a $50 prize, where one prize would be given for every 50 subjects who complete the survey.[17]

It was important to tailor the employment questions to the expectations of the subjects. However, somewhat peculiar to the field, the post law school job market is characterized by two distinct employment options.[18] In our survey, we refer to these options as "Big Firm" and "Small Firm/Public Interest." When compared to the latter, the former is characterized by longer hours, higher pay, and less control over caseload. As a result, in the first item of the survey the subjects were asked for their plans after law school: Definitely Big Firm, Probably Big Firm, Possibly Big Firm, I don't Know, Possibly Small Firm/Public Interest, Probably Small Firm/Public Interest, or Definitely Small Firm/Public Interest. This initial item would allow the subject to be directed to the appropriate income questions and job description.

As in both Study 1 and 2, each income question offered subjects 6 options regarding possible income streams. Within each question, the undiscounted sum of the payments of the response items were identical. However, we varied the rate of increase, and hence their present discounted value. As is more standard in the legal profession, we offer the payments over 7 years. We told the subjects that at the end of the 7th year, they will either be fired or promoted hence their choice will have no affect on income after the 7th year.

In an effort to hold the perceived cost of effort constant, while we varied income levels, we provided an employment description for both the Big Firm subjects and the Small Firm/Public

[16] A total of 279 surveys were submitted however only 239 were completed from a unique respondent. We additionally excluded 9 surveys because they were not completed within one hour.

[17] We made 5 payments of $50.

[18] National Association for Legal Career Professionals (2008).

Interest subjects. Additionally, we selected the income levels in order to include values which, within the selected employment option, would be considered to range from very low to very high. The Small Firm subjects were told, "You work 50 hours per week or less. You have control over your caseload. The job is relatively stress-free and you have a good work-life balance." For the Small Firm subjects, we varied the income levels of $28,000, $48,000, $68,000, $88,000, $108,000 and $128,000. The Big Firm subjects were told, "You work an excess of 80 hours per week. You have no control over your caseload. The job is relatively stressful and you do not have a good work-life balance." We varied the income levels of $58,000, $88,000, $118,000, $148,000, $178,000 and $208,000. We randomly[19] determined whether the income questions were asked in an increasing or decreasing order. Within each question, the response items were automatically randomized by the survey tool. The subjects were then asked to provide the description of the relevant starting salaries on a scale of 1 (very low) to 7 (very high).

Next, the subjects were presented with a modified Eckel and Grossman (2008) measure of risk aversion. The item was posed as a choice of bonus structure, whereby the subject could not control the likelihood of obtaining the bonus, and that such a choice would not affect future payments. The choices were: $70,000 for sure, $68,000 with 50% and $74,000 with 50%, $64,000 with 50% and $82,000 with 50%, $60,000 with 50% and $90,000 with 50%, $54,000 with 50% and $102,000 with 50%, $44,000 with 50% and $122,000 with 50%. The Big Firm subjects were presented with the identical options, with the exception that each monetary payment was multiplied by 2. As in the original Eckel and Grossman measure, the response items as listed above are increasing in both risk and expected value. Further, a choice among the options provides a measure of the shape of their utility for money.

Finally, the subjects were offered the hours questions as in Study 1, with the exception that the required hours were specified over 7 rather than 6 years.

[19] Survey Monkey does not offer a randomization of the question order however this randomization was accomplished by asking for the final digit of the subject's date of birth. Odd numbered dates were directed to a sequence of questions which decreased in the income levels and even numbered dates were directed to increasing questions. There was no relationship between the last digit of their birthdate and any subsequent response.

5.2 Data

To check the validity of the variation of the payments, we note that 229 out of the 230 subjects described the incomes in a monotonic fashion.

As in the two previous studies, the preference for increasing payments is related to the size of the payments. We run several regressions with the rank of the income question as the independent variable and the income choice as the dependent variable. In each regression $n = 1360$. As there are possibly unobserved differences in the subjects who select the Small Firm/Public Interest career over the Big Firm career, we also include a dummy variable which takes a value of 1 if the subject was given the Small Firm/Public Interest questions, and 0 otherwise. We also include the interaction between the Small Firm dummy and the question rank. See Table 6 for the results of these regressions.

	(1)	(2)	(3)	(4)
Question	0.20***	0.20***	0.20***	0.12***
	(0.031)	(0.021)	(0.021)	(0.034)
Small Firm	–	–	−1.67**	−2.09***
			(0.75)	(0.76)
Interaction	–	–	–	0.121***
				(0.043)
Fixed Effects?	No	Yes	Yes	Yes
R^2	0.028	0.65	0.65	0.65

Table 6: Regression results of option choice with ** indicating significance at 0.05, and *** indicating significance at 0.01.

As the results of Table 6 demonstrate, the preference for increasing payments is positively related to the size of the income payments. Further, this result is robust when one includes the fixed effects and the expected career path of the subject.

Similar to Study 1, we elicit preferences over sequences of income and sequences of hours. Therefore, as in Study 1, we are able to explore whether subjects who exhibit a preference for increasing payments also exhibit a preference for decreasing hours. As in Study 1, we measure the preference for increasing payments by summing the rank of the income responses and we

measure the preference for decreasing hours by summing the rank of the hours responses. We run a regression between these two variables, and do not find a significant relationship ($p = 0.42$). This negative result is not terribly surprising, given that we observed similar behavior in Study 1.

However, we can also test whether the subjects who exhibit a relationship between the preference for increasing payments and the size of the payments also exhibit a relationship between the preference for decreasing hours and the number of hours required. Further, because we conduct a measure of the shape of the utility for money, we are able to determine whether this is associated with the relationship between the preference for increasing payments and the size of the payments.

We run 6 regressions in order to better understand the relationship between the preference for increasing payments and the size of the payments. To do so, we examine the role of preferences for improving sequences of nonmonetary domains and the shape of the utility curve as measured by the choice of bonus structure. In each of the regressions below, the dependent variable is the number of instances of a constant response to adjacent income questions. Regressions (1), (2), (5), and (6) use the number of instances of constant response to adjacent hours questions as an independent variable. Regressions (3) - (6) use the response to the bonus question as an independent variable. Regressions (2), (4), and (6) include the Small Firm dummy variable and the relevant interaction terms. Each regression has $n = 230$. The results are summarized in Table 7.

	(1)	(2)	(3)	(4)	(5)	(6)
Hours	0.041	−0.070	–	–	0.230	0.11
	(0.11)	(0.17)			(0.224)	(0.26)
Bonus	–	–	0.091	0.16	0.216	0.31*
			(0.068)	(0.11)	(0.147)	(0.18)
Hours-Bonus Interaction	–	–	–	–	−0.0654	−0.072
					(0.0688)	(0.070)
Small Firm	–	−0.14	–	0.53	–	0.11
		(0.47)		(0.45)		(0.62)
Small Firm-Hours Interaction	–	0.21	–	–	–	0.25
		(0.22)				(0.23)
Small Firm-Bonus Interaction	–	–	–	−0.10	–	−0.12
				(0.14)		(0.14)
R^2	0.00059	0.00923	0.0079	0.015	0.013	0.025

Table 7: Regressions with the number of instances of constant responses to adjacent income questions as the dependent variable and number of instances of constant responses to adjacent hours questions as the independent variable in regressions (1), (2), (5), and (6), where * indicates significance at 0.10.

We note that in the six regressions, there is only a single relationship approaching significance: in regression (6) the bonus variable is significant at 0.10. This offers very weak evidence in support of the decreasing marginal utility explanation. However, it is possible that this lack of significance is due to the specification. As a result, we conduct a similar exercise as above, with the exception that we examine changes across adjacent questions rather than constant responses across adjacent questions. In the regressions below, the dependent variable is the number of instances of increasing responses to adjacent income questions. Regressions (1), (2), (5), and (6) use the number of instances of decreasing responses to adjacent hours questions as an independent variable. Regressions (3) - (6) use the response to the bonus question as an independent variable. Regressions (2), (4), and (6) include the Small Firm dummy variable and the relevant interaction terms. Each regression has $n = 230$. The results are summarized in Table 8.

	(1)	(2)	(3)	(4)	(5)	(6)
Hours	0.054	−0.085	–	–	0.00871	−0.14
	(0.11)	(0.20)			(0.224)	(0.27)
Bonus	–	–	−0.080*	−0.086	−0.0844	−0.095
			(0.041)	(0.067)	(0.0518)	(0.072)
Hours-Bonus Interaction	–	–	–	–	0.0123	0.0083
					(0.0707)	(0.072)
Small Firm	–	−0.14	–	−0.072	–	−0.21
		(0.18)		(0.28)		(0.31)
Small Firm-Hours Interaction	–	0.21	–	–	–	0.25
		(0.24)				(0.24)
Small Firm-Bonus Interaction	–	–	–	0.0093	–	0.014
				(0.085)		(0.087)
R^2	0.0010	0.0049	0.016	0.017	0.017	0.022

Table 8: Regressions where the number of instances of increasing responses to adjacent income questions as the dependent variable and number of instances of constant responses to adjacent hours questions as the independent variable in regressions (1), (2), (5), and (6), where * indicates significance at 0.10.

Note that in none of the twelve regressions as summarized in Tables 7 and 8, do any of the variables reach the 0.05 level of significance. Further, in only two of the twelve regressions does a single variable reach the 0.10 level of significance. Thus, the only variable approaching significance is the response to the bonus question. Therefore, we conclude that there is very weak evidence that the shape of the utility curve is responsible for the relationship between the preference for increasing payments and the size of the payments. Also we conclude that, unlike Study 1, subjects who exhibit a relationship between the preference for increasing payments and the size of the payments are not likely to exhibit a relationship between the preference for decreasing hours and the number of hours required.

5.3 Discussion

As in Study 1 and Study 2, we find that there is a relationship between the preference for increasing payments and the size of the payments. This result is robust to the precise specification of the income questions and the subject specific fixed effects.

A natural explanation for this relationship is that people tend to exhibit a decreasing

marginal utility of money. However, for this explanation to hold, the relationship must vary with the shape of the subject's utility for money. We measured the shape of the utility of money using a technique adapted from Eckel and Grossman (2008). We find very weak evidence in support of the decreasing marginal utility explanation.

Study 3 also finds that, unlike Study 1, the subjects who exhibit a relationship between the preference for increasing payments and the size of the payments do not exhibit a relationship between the preferences for decreasing hours and the hours required. This mixed evidence regarding the role the preference for improving sequences across different domains is consistent with the literature. In our study, we speculate that the law students in Study 3 are aware that explicitly offering a declining sequence of required hours is not common. As a result, it is possible that they discount the possibility. By contrast, the undergraduate students in Study 1 are perhaps not aware of this fact, and therefore do not discount the possibility.

6 Conclusion

Although prior research has found that people often exhibit a preference for increasing payments, little was known about how these preferences vary with the size of the payments. We contribute to the literature by finding evidence that the preference for increasing payments is increasing in the size of the payments. Indeed, we found this in each of our three studies, despite the differences in the subject populations.

Although the relationship between the preference for increasing payments and the size of the payments seems to be robust, our research also sheds light on potential explanations. The available evidence does not support the decreasing marginal utility explanation. In particular, we measured of the shape of the utility for money and found that it is only weakly associated with the relationship between the preference for increasing payments and the size of the payments.

Finally, our paper contributes to the literature by finding experimental evidence supporting the theoretical predictions of Smith (2009a). As people tend to exhibit a stronger preference

for sequences of money when the payments are described as wages as opposed to nonwage money, we took a baseline measure of preference for increasing sequences of nonwage money. We found that the difference between the preference for increasing income and the preference for increasing payments of nonwage money is largest for these intermediate values.

It is worth reflecting on the limitations of the present study. First, before we completely rule out the marginal utility explanation, we note that our evidence is clearly affected by our choice of the measure of utility. Perhaps behavior in our adaptation of the Eckel and Grossman (2008) measure is unreliable for the large payment amounts which we employ. Secondly, choice in our experiment is not incentive compatible. It is worthwhile to look for empirical data which could potentially falsify the experimental studies presented here.

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8 Appendix

In Studies 1 and 2, we constructed the income sequence questions are follows. Each question consisted of multiplying one of the base values of $\$17,000$, $\$37,000$, $\$57,000$, $\$77,000$, and $\$97,000$ to the values in the table below.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Option 1	1.00	1.00	1.00	1.00	1.00	1.00
Option 2	0.97	0.98	1.00	1.01	1.015	1.025
Option 3	0.94	0.96	1.00	1.02	1.03	1.05
Option 4	0.91	0.94	1.00	1.03	1.045	1.075
Option 5	0.88	0.92	1.00	1.04	1.06	1.10
Option 6	0.85	0.90	1.00	1.05	1.075	1.125

The sequences in Study 3 were constructed in a similar fashion.

Below is a sample income question from Study 1.

To better understand your preferences for your future career, we will ask a series of questions.

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

You are reasonable happy with the nonmonetary aspects of the job and you are offered the following payment schedules over the next 6 years.

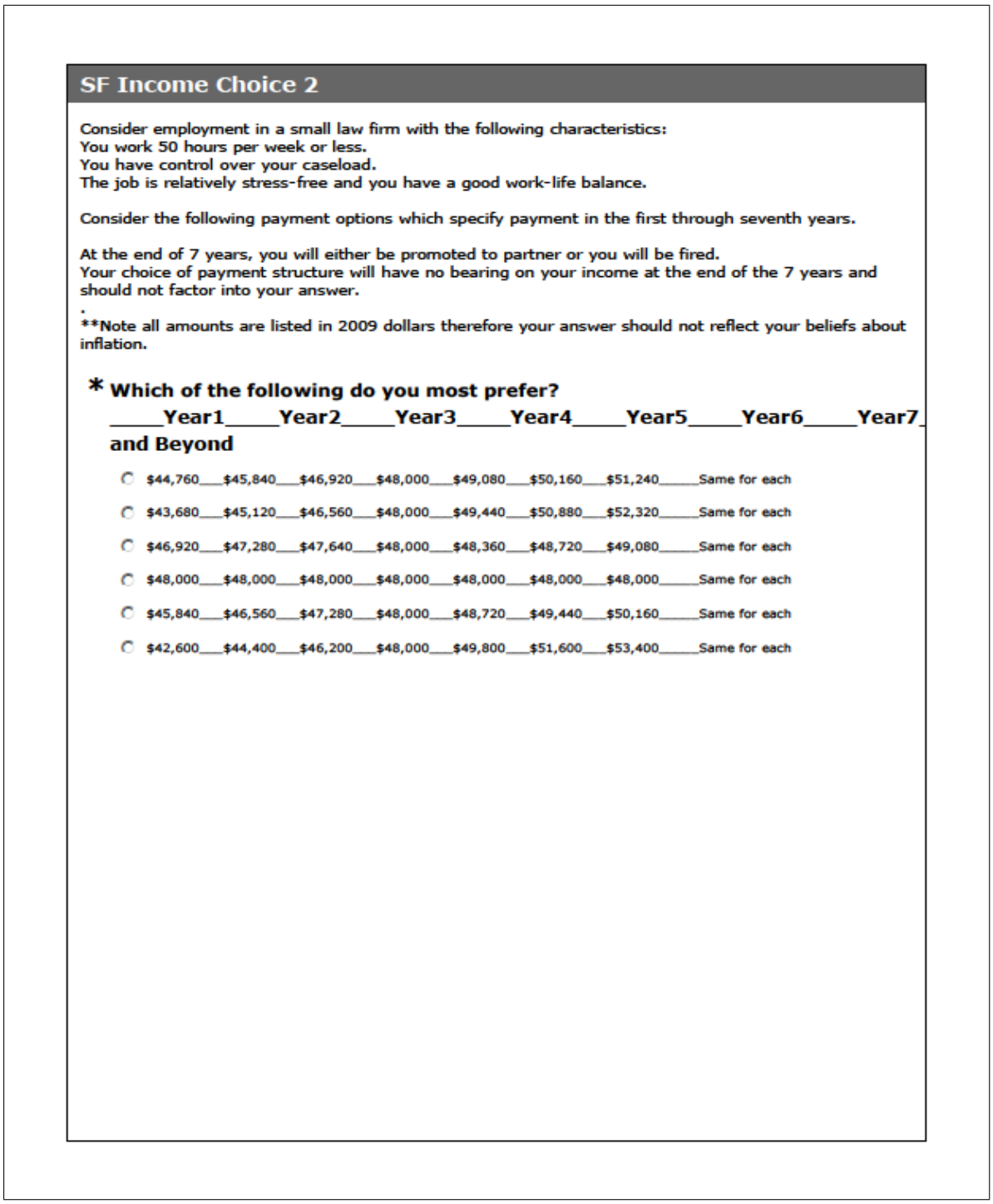
Specifically, you are given 6 options (Option 1,. . . , Option 6) which specifies an amount of income for each of the following 6 years.

At the end of 6 years, you will either be promoted to a higher position or you will be fired. Therefore your choice of payment will have no bearing on your income at the end of the six years.

**Note all amounts are listed in 2009 dollars therefore your answer should not reflect your beliefs about future inflation.

	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	Same for each
Option 2	$35,890	$36,260	$37,000	$37,370	$37,555	$37,925	Same for each
Option 3	$34,780	$35,520	$37,000	$37,740	$38,110	$38,850	Same for each
Option 4	$33,670	$34,780	$37,000	$38,110	$38,665	$39,775	Same for each
Option 5	$32,560	$34,040	$37,000	$38,480	$39,220	$40,700	Same for each
Option 6	$31,450	$33,300	$37,000	$38,850	$39,775	$41,625	Same for each

Below is a sample income question from the Small Firm/Public Interest series in Study 3.



SF Income Choice 2

Consider employment in a small law firm with the following characteristics:
You work 50 hours per week or less.
You have control over your caseload.
The job is relatively stress-free and you have a good work-life balance.

Consider the following payment options which specify payment in the first through seventh years.

At the end of 7 years, you will either be promoted to partner or you will be fired.
Your choice of payment structure will have no bearing on your income at the end of the 7 years and should not factor into your answer.
.
**Note all amounts are listed in 2009 dollars therefore your answer should not reflect your beliefs about inflation.

*** Which of the following do you most prefer?**

	Year1	Year2	Year3	Year4	Year5	Year6	Year7 and Beyond
○	$44,760	$45,840	$46,920	$48,000	$49,080	$50,160	$51,240 Same for each
○	$43,680	$45,120	$46,560	$48,000	$49,440	$50,880	$52,320 Same for each
○	$46,920	$47,280	$47,640	$48,000	$48,360	$48,720	$49,080 Same for each
○	$48,000	$48,000	$48,000	$48,000	$48,000	$48,000	$48,000 Same for each
○	$45,840	$46,560	$47,280	$48,000	$48,720	$49,440	$50,160 Same for each
○	$42,600	$44,400	$46,200	$48,000	$49,800	$51,600	$53,400 Same for each