YOUR RIGHT ARM FOR A PUBLICATION IN AER?

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The time tradeoff (TTO) method is popular in medical decision making for valuing health states. We use it to elicit economists' preferences for publishing in top economic journals and for living without limbs. The economists value journal publications highly and have a clear preference among them, with the American Economic Review (AER) the most preferred. Their responses imply they would sacrifice more than half a thumb for an AER publication. These TTO results are consistent with ranking and willingness to pay results, and indicate that journal preferences are not entirely determined by impact factors or by expectations of a salary increase following a publication in a prestigious journal. (JEL A10, B41, I10)

I. INTRODUCTION

"I would give my right arm for a publication in the *American Economic Review*" (AER), a fellow economist once sighed. Considering the utility value of an arm, a literal interpretation of the statement made by our fellow economist would imply quite a strong preference for an AER publication.

In this article we investigate two questions:

(i) Would economists really sacrifice a limb for a publication in a top journal?

(ii) What would be the ranking of top economic journals based on preferences elicited by trading off health against publications?

Notwithstanding the obvious difficulties to be expected in such an investigation, we designed a study for this purpose. To measure the preferences for a publication in a leading economic journal in relation to health, we used the time tradeoff (TTO) method. This is a popular method for eliciting preferences for health states (Dolan et al. 1996; Lamers et al. 2006).

While it is a stated preference method (since revealed preferences for health states are difficult to obtain), the resulting preferences are used in economic evaluations that inform actual health care decision making in several countries, notably the United Kingdom.

In this article we used the TTO method to value publishing in top economic journals and compared this to TTO valuations of limbs. We considered a tradeoff between living 20 years without a(n additional) publication in the AER and a shorter period with such a publication, and tradeoffs between living 20 years without a limb, or a shorter period in perfect health. This gave us an estimate of the fraction of their life that respondents would be willing to give up for a publication in AER, which could be compared to the fraction they would be willing to sacrifice for retaining a limb. This allowed us to empirically evaluate the statement at the beginning of this article.

By having respondents make these trade-offs for four different economic journals—AER,

ABBREVIATIONS

AER: American Economic Review
EER: European Economic Review
FH: Full Health
OLS: Ordinary Least Squares
QALY: Quality-Adjusted Life Years
QJE: Quarterly Journal of Economics
RES: Review of Economic Studies
TTO: Time Tradeoff
WTP: Willingness to Pay

European Economic Review (EER), *Quarterly Journal of Economics* (QJE), and the *Review of Economic Studies* (RES)—we could also observe their preference-based ranking of journals and compare them to their impact-factor ranking. In order to test these results we also used the more commonly used willingness to pay (WTP) technique to investigate stated preferences for a publication in these journals. (This also allowed us to express the value of publications—and limbs—in monetary terms.)

This article shows that economists indicate a stronger preference for publications in AER than in the other top economic journals, which suggests that impact factors may not fully reflect the preferences of scholars. Moreover, while we find that it is possible to use the TTO method to elicit such preferences (and that the resulting rank order matches that of the WTP estimates), sacrificing half a right thumb appears to be a better approximation of the strength of preference for a publication in AER than sacrificing a right arm. If our colleague intended for his remark to be taken literally, it follows that he is either exceptionally desperate for such a publication, or that he places a very low value on his right arm.

Section II of this article introduces the theoretical background of our study, focusing on the TTO method. Section III provides experimental details and Section IV presents the results, which are discussed in Section V.

II. METHOD

The TTO method (Torrance, Thomas, and Sackett 1972) is commonly applied in health economics. The method basically lets individuals make a tradeoff between quality and quantity of life. A typical TTO exercise involves a tradeoff between living in some imperfect chronic health state (such as living without a limb) for 20 years and living in perfect health for a period of less than 20 years. The amount of time that people are willing to sacrifice in order to restore perfect health then indicates the value of the health state under consideration. For example, if a person indicates that she is indifferent between living 20 more years with a certain condition and living eight more years in perfect health, she values the condition at 0.4 (=8/20) on a scale from 0 to 1, where 0 represents death and 1 represents perfect health.

The utility theory underlying the TTO method is characterized by the quality-adjusted life years (QALY) model. QALYs are often used in economic evaluations to determine which medical interventions generate the most health gains given a fixed budget, thereby helping policy makers to efficiently allocate scarce public resources. A formal derivation of the implications of the QALY model for the indifferences elicited in our experiment can be found in Appendix A.

The logic of the TTO method is not necessarily restricted to the valuation of health states. It could just as well be applied to valuing other types of goods. If an individual is prepared to sacrifice some of their lifetime for a health improvement, for example, then perhaps they would be willing to make a similar sacrifice in order to drive an expensive sports car. Economists would presumably consider this reasoning plausible, but lay people may perceive it as quite odd; this exemplifies the idiosyncrasies of economists to the rest of the world (and vice versa).

An alternative method of valuing goods and services that are not readily tradable on markets is to rely on some kind of contingent valuation, such as willingness to pay (WTP). This technique basically asks members of society to indicate the maximum amount of money they would be prepared to pay to obtain some amount of a good under valuation, or to avoid something undesired, such as pollution (Arrow et al. 1993; Brookshire and Coursey 1987; Dardis 1980; de Meijer et al. 2010; Olsen, Donaldson, and Pereira 2004; Zhao and Kling 2004). For example, they may be asked how much additional taxes they would tolerate in order to have the government install streetlights in their neighborhood.

This article follows the above logic by eliciting the willingness of economists to trade off lifetime or money for an additional publication in a top economics journal. If an individual values such a publication, it will increase their utility. Using the TTO method, it should therefore be possible for this individual to indicate how much of a decrease in lifetime would compensate exactly for the higher utility of life (i.e., living shorter with the publication yields the same utility as living longer without it). Similarly, the WTP method can be used to obtain an alternative estimation of the value of an additional publication.

III. EXPERIMENT

Our sample consisted of authors who published at least one article in one of the following

economic journals in 2008 or 2009: AER, EER, QJE, *Journal of Economic Behavior and Organization*, *Journal of Economic Psychology*, and *Journal of Socio Economics*. We collected their e-mail addresses as provided in the articles and invited them to participate in the experiment. About 1,300 were invited; only 85 of them filled out the online questionnaire.

A few of the non-responders motivated their refusal to participate. One wrote: "I am actually resigning from work now because of health issues." Other invitees appeared to take issue with the setup and topic of the questionnaire, notwithstanding our efforts to contribute to scientific knowledge in this field in a profound way. Along these lines, one wrote: "I started answering it but the questions are ridiculous. It's just impossible to answer them seriously." Another added: "Please, do not remind me again. By the way, what is new with this method? As the psychologist Jon Baron once wrote (*Psychological Bulletin*), asking these kinds of questions to people is painfully embarrassing." Finally, one economist reacted fully in accordance with sound economic reasoning: "Will you pay for my time?" Obviously, we did not, as contributing to science should be a reward in itself. (This remark can of course not be stretched to the extent that it could be taken to imply that our salaries could be lowered.)

The questionnaire[1] started with some questions concerning personal characteristics (academic position, age, gender, nationality, scientific discipline, institution, and writing hand). We asked which hand respondents used for writing so as to be able to refer to it in the TTO questions. This reduced differences in interpretation and ensured that people used their highest valued arm in the experiment.

Part 2 applied the TTO method to value the respondent's quality of life without a thumb, hand, and arm. We first asked whether a respondent preferred living 20 more years with the thumb of their writing hand to living 20 years without that thumb. This rather obvious question was posed in order to highlight that having a thumb has some value and, hence, that people may be willing to give up some resources to retain their thumb. Next, since all 85 respondents indicated that they did indeed value their thumb, we asked the following of right-handers (and a parallel question for left-handers):

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1. The complete questionnaire can be found online at: http://oldwww.bmg.eur.nl/personal/attema/Right_Arm.htm

Suppose you can either live 20 more years without your right thumb or a shorter period with your right thumb. How long should the latter period be such that you are indifferent between these options?

This allowed us to estimate the TTO value of living without a thumb. We repeated this procedure for the respondent's hand and arm (again referring to the writing arm). Part 3 continued with a couple of questions to elicit discount rates (Attema, Bleichrodt, and Wakker 2012), which could be used to correct TTO values for the lower values given to future life years.

Part 4 used the TTO method to elicit the value of life without a new publication in AER, EER, QJE, or RES. We attempted to minimize the influence of distorting factors and to reduce potential confusion by making the instructions as clear as possible. In particular, we instructed the respondents to imagine not publishing any articles at all in the given journals over the next 20 years. The respondents might otherwise have thought they would publish in these journals anyway and their true valuation of it would not become clear.

We then asked respondents to imagine that the only way to obtain such a publication in the next 20 years would be through a medicine that would give them a one-day brain wave, but that it had bad long-term consequences as well because it would decrease lifetime. Although we acknowledge this is a rather unrealistic scenario, it enabled us to exclude a lot of external distorting factors. For example, respondents might otherwise have thought they would not have written the article themselves, or that they would be bribing the editors. In addition, the use of a medicine made the possibility of a lower lifetime because of another publication more credible, which would not make sense otherwise.

Appendix B provides the exact formulations of the questions for the case of AER. We first asked whether the respondents would take the medicine without a reduction in lifetime. If they would, we continued by asking how many years of life with the publication (i.e., taking the medicine) would make them indifferent to 20 years without the publication (i.e., not taking the medicine). It they would not take the medicine, we asked them for their reason(s) and continued with the next journal. The formulations for the other journals were identical.

Part 4 also elicited WTP for the aforementioned medicine. We first asked for the

respondent's currency unit, so that they could answer the questions in terms of their own currency. We subsequently transformed all answers to US dollars (if necessary) by applying the market exchange rates at the time of the experiment. Appendix C shows the instructions, as well as the formulation of the WTP question for AER (again identical for the other journals). Part 4 continued by asking whether the economists expected a publication in any of the four journals would increase their income, and, if so, by how many percent of their net income. The final task of Part 4 was to rank the journals according to preferred journal to publish in, conditional on having taken the medicine (Appendix D).

Part 5 ended the survey with a few questions to obtain some background information about the respondents: number of publications in the four journals, total number of publications in economic journals, self-assessed probability of a publication in one of these four journals throughout the next 20 years without help of the medicine, net monthly income, expected income increase as a result of a publication in each of the four journals, expected age of death, and self-assessed health status on a scale between 0 and 100.

The distribution of the TTO and WTP estimates was skewed and tests of normality were rejected (Kolmogorov–Smirnov test, $p < .02$ for all variables). Therefore, we only performed the nonparametric Wilcoxon signed ranks test to compare within-subject values. We repeated the TTO analyses while assuming no discounting of future life years, but this did not change the results.

IV. RESULTS

Table 1 reports some background characteristics of the respondents (mean age 44.8, *SD* 11.6). These reveal a good geographical spread. Some 88.2% of the respondents were male.

Missing an arm by definition implies also missing a hand and a thumb; hence monotonicity requires a life without a thumb to be valued at least as highly as a life without a hand, etc. Seven respondents violated this pattern and were excluded from the analysis for this reason. Four more respondents were left out because their answers implied they preferred to live without a limb, that is, their answer was higher than 20 years, or they answered "no" to the question whether they preferred living 20 years with a particular limb over living 20 years without that

TABLE 1
Origin of the Respondents

Continent	Number	Percentage
Asian	6	7.0
Australian	1	1.2
European	45	52.3
North American	29	33.7
Middle or South American	2	2.3
Unknown	3	3.5
Total[a]	86	100

[a]The total exceeds the total sample size because one respondent had two nationalities.

TABLE 2
Would Take Medicine

Journal	Yes	No
AER	68	17
EER	66	19
QJE	69	16
RES	71	14

limb. Therefore, this part of the analysis was performed on the data from 74 respondents.

A number of respondents were not willing to take the medicine, even if it did not reduce lifetime (Table 2). When asked for their motivation, some indicated they did not want to take the medicine at all, irrespective of the journal in question, because of ethical arguments:

"this is dishonest"
"I am against doping, whether in sports or academia…"
"I would be cheating, I am certain I can publish equivalently ranked papers"

Others attached a value of zero (or perhaps even a negative value) to publications in particular journals:

"the EER isn't any good"
"Why would I want to publish there?"
"No interest in the QJE"
"Already published in EER, and my friends say the journal is on its way down"

Overall, 13 respondents were not prepared to take the medicine at all, regardless of the journal. They were excluded from the TTO for journal analysis, but not necessarily from the other parts of the study. If someone was prepared to take the medicine only for a subset of the journals, we assigned a TTO value of 1 to the

other journals. Furthermore, three respondents had difficulties understanding the TTO questions. Their answers implied they were indifferent between, for example, 21 years of life with a publication and 20 years of life without such a publication. This implies a negative value of the publication and is inconsistent with their earlier answer that they would take the medicine. Hence, these respondents were also removed, leaving 69 (= 85 −13 −3) respondents for the TTO for journal analysis.

Summary statistics of the number of life years given up, as well as the TTO values (corrected for discounting), are presented in Table 3. They are significantly lower for AER than for the other journals ($p < .01$). In other words, economists are willing to give up more lifetime for an additional publication in AER than for other top economic journals. The TTO results are consistent with the average rankings of the journals by the respondents, with 80% of economists ranking AER as their preferred journal (average ranking scores: AER 1.21; EER 3.76; QJE 2.04; RES 2.99).

These tradeoffs also allow us to derive the implicit willingness to give up a limb for an additional publication. For example, given that the average subject is willing to give up 0.77 years for another AER publication and 1.02 years for keeping a thumb, we can infer that a publication in AER is worth about (0.77/1.02 = 0.75) three quarters of a thumb,[2] versus a little less than half a thumb (0.39/1.02 = 0.38) for EER, the lowest-ranked journal. QJE and RES weighed in at 0.55/1.02 = 0.54 and 0.43/1.02 = 0.42, respectively.

The distribution of the TTO values is negatively skewed: many respondents refuse to give up any lifetime, or only a very small amount. Given this, it is important to also consider the median estimates. Relative valuations are not affected by this alternative measure: AER is still valued the highest (together with QJE). However, it is now valued at only one fifth of a thumb (0.1/0.5 = 0.2).

The WTP estimates (Table 4) are consistent with the rankings and the TTO values. The mean estimate for AER is again significantly higher than the mean estimate for the other journals (Wilcoxon signed ranks test, $p < .01$).

2. As pointed out by a referee, this computation requires assuming what we may denote "constant returns to scale of parts of a thumb." That is, half a thumb is assumed to give half the value of an entire thumb, but it may be argued that the former generates more (or less) value than this amount.

The other differences are also significant ($p < .01$), with the ranking WTP(QJE) > WTP(RES) > WTP(EER). These different valuations can to some extent be explained by differences in expected income increases that result from a publication in that journal. A new publication in AER is expected to generate a mean wage rise of 8%, versus 2.4% [6.4%, 5.3%] for EER [QJE, RES].

The impact factors of the journals in 2009 (see Table 4) imply the following ranking: 1. QJE; 2. RES; 3. AER; 4. EER. This ranking is consistent neither with the respondents' rankings nor with their TTO and WTP answers.

Finally, we performed several regressions to investigate whether these results were associated with background characteristics of our sample. For AER, the only significant variable was respondents' income, which had a positive relationship with WTP for an additional publication (OLS, $p < .05$). However, neither the number of publications obtained in top economic journals before, nor the subjective probability of realizing a publication in a top economic journal without help of a medicine, had a significant influence on the WTP.

Interestingly, for all four journals, the anticipated increase in income from a publication in that journal had no significant influence on WTP. This suggests that economists do not consider the publication in a top journal as a purely monetary investment. Instead, they seem to care about other, nonmonetary aspects such as status and quality of the journal.

V. DISCUSSION

Our results reveal that economists value publications in top journals highly and that they are willing to make substantial sacrifices for such publications. Moreover, they do not necessarily prefer journals with a higher impact factor over those with a lower impact factor. Finally, economists apparently do not perform a purely financial cost-benefit analysis when submitting an article to a scientific journal, but also incorporate other benefits, which may include the status and the subjective quality of the journal.

It is important to note that loss aversion (Kahneman and Tversky 1979; Knetsch 1989; Tversky and Kahneman 1991) may have influenced our results. In particular, giving up a limb can be seen as a loss and therefore receive more weight than getting another publication in a top economics journal, the latter being considered a

TABLE 3

Valuations of Limbs and Publication According to the TTO Method

Object	Mean Years Given Up (SD)	Median Years Given Up	Mean $V(Q)$[a] (SD)	Median V(Q)[a]	N
Thumb	1.02 (1.36)	0.50	0.93 (0.13)	0.98	74
Hand	2.38 (2.57)	2	0.85 (0.19)	0.91	74
Arm	3.54 (3.39)	3	0.79 (0.23)	0.86	74
Journal					
AER	0.77 (1.60)	0.10	0.94 (0.13)	0.9955	69
EER	0.39 (1.28)	0.01	0.98 (0.07)	0.9994	69
QJE	0.55 (0.99)	0.10	0.96 (0.09)	0.9955	69
RES	0.43 (0.91)	0.05	0.97 (0.08)	0.9977	69

[a]Corrected for discounting.

TABLE 4

WTP for Additional Publication ($, $n = 84$)

Journal	Mean	SD	Median	Interquartile Range	Mean Expected Wage Increase	Impact Factor 2009
AER	12,658	26,186	2,613	301–10,074	8.0%	2.62
EER	3,626	11,807	591	68–2,034	2.4%	1.12
QJE	9,928	22,726	1,436	226–7,329	6.4%	5.65
RES	8,824	21,892	1,227	127–5,965	5.3%	3.28

gain. If this is the case, it would exert an upward bias in the TTO valuation of living without an additional publication, as pointed out by Bleichrodt (2002). In other words, the value of such a publication is likely underestimated here.

Of course, our design had several limitations. First, we were not able to use a revealed preference approach and had to rely on stated preferences regarding hypothetical questions. However, the nature of the questions renders the use of revealed preferences impossible in this situation.

Second, some of the questions we posed were clearly not realistic; as explained earlier, this was necessary in order to rule out a number of possible confounding factors. We feel that this procedure generated more reliable answers than a more realistic, but more heterogeneous alternative.

Third, there was a considerable degree of heterogeneity in the data, and given the small sample size, outliers could have influenced the results to a large extent. Nevertheless, nonparametric tests still reported significant differences between the valuations of the different journals.

Fourth, our findings are evidently of a very preliminary nature, partly because of the low response rate. We have therefore also not employed sophisticated econometric techniques. Our main purpose was to illustrate the concept of valuing preferences for publications in terms of another commodity. Above all, economics is the discipline of valuing something relative to something else, isn't it?

Finally, we have not asked whether the respondents still possessed their writing arm. If not, they could obviously no longer give it up. It seems likely, however, that they would have indicated so in their comments to the questionnaire, or perhaps been unable or unwilling to complete the questionnaire in the first place.

Overall, this study has succeeded in quantifying publication career value in terms of lost limbs. How this will affect the careers of the three authors remains to be seen. However, all three would be willing to sacrifice the right arm of the two other co-authors to see this study published...

Further research could examine the possibility of positive externalities arising from the loss of economists' limbs. For instance, some people may greatly welcome an economist sacrificing an arm, including the former US President Truman. He supposedly wanted a one-armed economist to advise him, so that he didn't have to constantly hear about "On the one hand... but on the other hand." Another suggestion for future research would be to conduct a survey that asks respondents to make tradeoffs between the opportunity to gain extra

limbs in exchange for deleting all record of past publications from existence. Future research could also use revealed preferences, which, at the very least, would require informed consent of all authors as well as journals. The development of the brain-wave medicine is still in its infancy, and requires further research effort as well. The current substance composition apparently only gets us into *Economic Inquiry*.

APPENDIX A: DERIVATIONS

The QALY model can be represented as follows:

$$(A1) \qquad U(t, Q_t) = W(t)V(Q_t),$$

with $U(t,Q_t)$ the utility of a health profile, $W(t)$ the utility of life duration (or the sum of the discount weights), and $V(Q_t)$ the utility of health state Q at time t. The estimation of this functional requires the elicitation of both $W(t)$ and $V(Q_t)$.

The TTO method elicits preferences for health states by letting a subject imagine living T more years in an imperfect health state Q. The subject then has to indicate the number remaining life time $x < T$ in full health (FH) such that he is indifferent between living T years in Q and living x years in FH. According to the QALY model, the resulting indifference can be evaluated by:

$$(A2) \qquad W(T)V(Q) = W(x)V(\text{FH}).$$

$V(Q_t)$ is a cardinal index, so we can freely choose $V(\text{FH})$ = 1. This leaves us with:

$$(A3) \qquad V(Q) = W(x)/W(T).$$

Hence, an estimation of $V(Q)$ using the TTO method requires the elicitation of both x and $W(x)$ ($W[T]$ can be normalized to 1).

For the case of publications, if the utility of a life year with the additional publication is given by $V(P_t)$ and the utility of that life year without the publication is denoted by $V(N_t)$, we have:

$$(A4) \qquad W(T)V(P_t) > W(T)V(N_t).$$

Therefore, there has to exist an amount of lifetime $T_P < T_N$, such that:

$$(A5) \qquad W(T_P)V(P_t) = W(T_N)V(N_t).$$

APPENDIX B: EXAMPLE OF QUESTION ELICITING TTO FOR PUBLICATIONS (CASE OF AER)

Suppose it is certain that during the coming 20 years you won't publish any paper in the following journals, nor in any other journals you regard as at least as good: American Economic Review, European Economic Review, Quarterly Journal of Economics and Review of Economic Studies. However, there is a free medicine available that gives you an immediate 1-day brain wave. The consequence of taking this medicine is that you are able to write an excellent paper on that day, which is guaranteed to be accepted for publication in any high-quality scientific economic journal. The medicine has no other effects, except that it may reduce your lifetime. There is only one medicine of this kind available, so you are the only one in the world with the opportunity to take this medicine.

Suppose you can take the medicine now, leading you to write a paper today that will be accepted for publication in the American Economic Review immediately. The medicine has no other effects: you will live 20 more years for sure whether you take the medicine or not. Would you take the medicine?

○ Yes
○ No

Now suppose the situation is the same as in the previous question, but this time the medicine does reduce your remaining lifetime. How long should this lifetime be such that you are indifferent between taking the medicine (resulting in a publication in American Economic Review) and not taking the medicine (and living 20 more years)?

APPENDIX C: PART 4 — WILLINGNESS TO PAY

Suppose you are certain that during the coming 20 years you won't publish any paper in the following journals, nor in any other journals you regard as at least as good: American Economic Review, European Economic Review, Quarterly Journal of Economics and Review of Economic Studies. However, there is a medicine available that gives you an immediate 1-day brain wave. The consequence of taking this medicine is that you are able to write an excellent paper on that day, which is guaranteed to be accepted for publication in any high-quality scientific economic journal. The medicine has no other effects, but it is not free of charge.

How much are you willing to pay (single payment) for the medicine if it guarantees an immediate publication in the American Economic Review?

Please use your country's currency. You can give it up to 2 decimals.

APPENDIX D: REMAINDER OF PART 4

Do you think a publication in the American Economic Review will increase your income?

○ Yes
○ No

If so, by how much percent of your net income? You can give your answer up to 2 decimals.

Suppose you take the medicine referred to in the previous part of this questionnaire. In which of the 4 journals stated below would you prefer to publish this paper?

○ American Economic Review
○ European Economic Review
○ Quarterly Journal of Economics
○ Review of Economic Studies

What do you think is your probability of at least one publication during the next 20 years in one or more of the following journals: American Economic Review, European Economic Review, Quarterly Journal of Economics and Review of Economic Studies?

Please give your answer as a percentage, up to 2 decimals.

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