

School/Department:	Erasmus School of Health Policy & Management (ESHPM) / Department of Health Economics
Project Title:	Improving health state valuations through behavioral economics
Abstract:	<p>In this project, the PhD student will work on the methodological underpinnings of the quality-adjusted life years (QALY) model. The QALY is an often used outcome measure in the context of economic evaluations in the health care sector. It is used in allocation decisions in countries like the UK and Netherlands. It allows health states to be valued, based on preferences of individuals for different health states, on a scale from 0 (dead) to 1 (perfect health). Both its theoretical underpinning and empirical measurements of health state preferences were importantly based on expected utility theory, which has been shown to be descriptively flawed. This raises important issues regarding the validity of the QALY measure and QALY weights.</p> <p>Hence, in the proposed research, the candidate will conduct experiments to test how this model can be further improved to reflect the most recent insights from behavioral economics, including (correcting for) loss aversion and probability weighting.</p> <p>The focus will be on strengthening health state valuation methods, which aim to assess the specific weights (on the 0-1 scale) of particular health states, such as the time tradeoff (TTO) and standard gamble (SG).</p> <p>Regarding the TTO, the influence of loss aversion will be studied, while for the SG, research into the feasibility of replacing the probability equivalence with the lottery equivalence approach will be performed.</p> <p>The research will be reported in peer reviewed articles, jointly forming a PhD thesis.</p>
Requirements of candidate:	Background: The successful applicant for this position is expected to have a recent or almost completed Master's degree in (health/behavioral) economics or econometrics. The ideal candidate has a strong economic and psychological intuition with knowledge of

	<p>the experimental economic approach. Knowledge of programming languages is a plus. Applicants must have excellent communication and writing skills in English, and have a strong motivation for doing methodological and experimental research in the field of health economics.</p> <p>Master's degree: Yes</p> <p>EUR requirement: IELTS: 7.0 (min. 6.0 for all subs.) Or, TOEFL: 100 (min. 20 for all subs.)</p>
Supervisor information:	<p>Applicant and co-promotor: Dr. Arthur Attema E-mail: attema@eshpm.eur.nl Website: https://www.eur.nl/people/arthur-attema/</p> <p>Formal promotor: Prof. dr. Werner Brouwer (ESHPM)</p> <p><i>Recent publication list Arthur Attema (last 5 years)</i></p> <ol style="list-style-type: none"> 1. Lipman SA, Attema AE (2019). Rabin's paradox for health outcomes. <i>Health Economics</i>, 28 (8), 1064-1071. 2. Lipman SA, Brouwer WBF, Attema AE (2019). The corrective approach: policy implications of recent developments in QALY measurement based on prospect theory. <i>Value in Health</i>, 22 (7), 816-821. 3. Lipman SA, Brouwer WBF, Attema AE (2019). QALYs Without Bias? Non-Parametric Correction of Time Trade-Off and Standard Gamble Weights Based on Prospect Theory. <i>Health Economics</i>, 28 (7), 843-854. 4. Attema AE, He L, Cook AJC, Del Rio Vilas VJ (2019). Unbiased assessment of disease surveillance utilities: a prospect theory application. <i>PLOS Neglected Tropical Diseases</i>, 13 (5), e0007364. 5. Attema AE, l'Haridon O, van de Kuilen G (2019). Measuring multivariate risk preferences in the health domain. <i>Journal of Health Economics</i>, 64, 15-24. 6. Lipman SA, Brouwer WBF, Attema AE (2019). A QALY loss is a QALY loss is a QALY loss: A note on independence of loss aversion from health states. <i>The European Journal of Health Economics</i>, 20 (3), 419-426. 7. Attema AE, Bleichrodt H, l'Haridon O (2018). Ambiguity preferences for health. <i>Health Economics</i>, 27 (11), 1699-1716. 8. Rouyard T, Attema AE, Baskerville R, Leal J, Gray A (2018). Risk attitudes of people with 'manageable' chronic disease: an analysis

	<p>under prospect theory. <i>Social Science & Medicine</i>, 214, 144-153.</p> <p>9. Attema AE, Brouwer WBF, Pinto JL (2018). Peer effects in health valuation: The relation between rating of contemporaries' health and own health. <i>Health and Quality of Life Outcomes</i>, 16: 148.</p> <p>10. Attema AE, Brouwer WBF, Claxton K (2018). Discounting in economic evaluations. <i>Pharmacoeconomics</i>, 36 (7), 745-758.</p> <p>11. Attema AE, Bleichrodt H, l'Haridon O, Perreti-Wattel P, Seror, V (2018). Discounting Health and Money: New evidence using a more robust method. <i>Journal of Risk and Uncertainty</i>, 56 (2), 117-140.</p> <p>12. Attema AE, Lipman SA (2018). Decreasing impatience for health outcomes and its relation with healthy behavior. <i>Frontiers in Applied Mathematics and Statistics</i>, 4 (16).</p> <p>13. Attema AE, Krol HM, van Exel NJA, Brouwer WBF (2018). New findings from the TTO for income approach to elicit willingness to pay for a QALY. <i>The European Journal of Health Economics</i>, 19 (2), 277-291.</p> <p>14. Jonker MF, Attema AE, Versteegh MM, Donkers B, Stolk EA (2017). Are health-state valuations from the general public biased? A test of health state reference dependency using self-assessed health and an efficient discrete choice experiment. <i>Health Economics</i>, 26 (12), 1534-1547.</p> <p>15. Attema AE (2017). De meting van maatschappelijke voorkeuren voor gezondheid(szorg) vanuit een gedragseconomisch perspectief. <i>TPEdigitaal</i>, 11 (2), 36-48. (In Dutch).</p> <p>16. Attema AE (2017). Economische inzichten in stimulatie van gezond gedrag: de voor- en nadelen van een financiële prikkel. <i>Nederlands Tijdschrift voor Geneeskunde</i>, 161, D1933. (In Dutch).</p> <p>17. Tilling C, Krol HM, Attema AE, Tsuchiya A, Brazier J, van Exel NJA, Brouwer WBF (2016). Exploring a new method for deriving the monetary value of a QALY. <i>The European Journal of Health Economics</i>, 17 (7), 801-809.</p> <p>18. Attema AE, Bleichrodt H, Gao Y, Huang Z, Wakker PP (2016). Measuring discounting without measuring utility. <i>American Economic Review</i>, 106 (6), 1476-1494.</p> <p>19. Attema AE, Brouwer WBF, l'Haridon O, Pinto JL (2016). An elicitation of utility for quality of life under prospect theory. <i>Journal of Health Economics</i>, 48, 121-134.</p> <p>20. Krol HM, Attema AE, van Exel NJA, Brouwer WBF (2016). Altruistic preferences in time tradeoff: Consideration of effects on others in health state valuations. <i>Medical Decision Making</i>, 36 (2), 187-198.</p> <p>21. Attema AE, Brouwer WBF, l'Haridon O, Pinto JL (2015). Estimating sign-dependent societal preferences for quality of life. <i>Journal of Health Economics</i>, 43, 229-243.</p> <p>22. Attema AE (2015). Incorporating sign-dependence in health-</p>
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	<p>related social welfare functions. <i>Expert Review of Pharmacoeconomics & Outcomes Research</i>, 15 (2), 223-228.</p> <p><i>Recent publication list Werner Brouwer (last 5 years)</i></p> <ol style="list-style-type: none"> 1. M Perry-Duxbury, J van Exel, WBF Brouwer, A Sködlunger, M Gonçalves-Pereira, K Irving, G Meyer, G Selbaek, B Woods, F Verhey, A Wimo, RLH Handels. A Validation Study of the ICECAP-O in Informal Carers of People with Dementia from Eight European Countries. <i>Quality of Life Research</i>, in press 2. V Reckers-Droog, NJA van Exel, WBF Brouwer. Equity Weights for Priority Setting in Healthcare: Severity, Age, or Both? <i>Value in Health</i>, in press 3. MQN Hackert, WBF Brouwer, RJ Hoefman, NJA van Exel. Views of Older People in the Netherlands on Wellbeing: A Q-Methodology Study. <i>Social Science & Medicine</i>, in press 4. W Ricciardi, PP Barros, A Bourek, WBF Brouwer, T Kelsey, L Lehtonen. How to govern the digital transformation of health services? <i>European Journal of Public Health</i>, in press 5. WBF Brouwer. The inclusion of spill-over effects in economic evaluations: Not an optional extra. <i>PharmacoEconomics</i> 2019; 37(4): 451-456 6. S Lipman, WBF Brouwer, AE Attema. QALYs without bias? Non-parametric correction of time trade-off and standard gamble weights based on prospect theory. <i>Health Economics</i> 2019; 28(7): 843–854. 7. RJ Hoefman, NJA van Exel, WBF Brouwer. The monetary valuation of informal care: obtaining pure time valuations using a Discrete Choice Experiment. <i>PharmacoEconomics</i> 2019; 37(4): 531-540 8. Brown CC, JM Tilford, N Payakachat, K Williams, KA Kuhlthau, JM Pyne, RJ Hoefman, WBF Brouwer. Measuring Caregiver Spillover Effects Associated with Autism Spectrum Disorder: A Comparison of the EQ-5D-3L and SF-6D. <i>PharmacoEconomics</i> 2019; 37(4): 609-620 9. SA Lipman, WBF Brouwer, AE Attema. Prospect theory and the corrective approach: policy implications of recent developments in QALY measurement <i>Value in Health</i> 2019; 22(7): 816-821 10. P Baji, D Golicki, V Prevolnik-Rupel, WBF Brouwer, Z Zrubka, L Gulácsi, M Péntek. The burden of informal caregiving in Hungary, Poland and Slovenia: results from national representative surveys. <i>European Journal of Health Economics</i> 2019; 20(S1): 5-16 11. S Lipman, WBF Brouwer, AE Attema. A QALY loss is a QALY loss is a QALY loss: Independence of loss aversion from health
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	<p>states. <i>European Journal of Health Economics</i> 2019; 20(3):419–426</p> <p>12. WBF Brouwer, PHM van Baal, NJA van Exel, MM Versteegh. When is it too expensive? Cost-effectiveness thresholds and health care decision making. <i>European Journal of Health Economics</i> 2019; 20(2): 175-180</p> <p>13. Hackert M, NJA van Exel, WBF Brouwer. Does the ICECAP-O cover the Physical, Mental and Social Functioning of Older People in the UK? <i>Quality of Life Research</i> 2019; 28:761–770</p> <p>14. PHM van Baal, A Morton, D Meltzer, WBF Brouwer. Future unrelated medical costs need to be considered in cost effectiveness analysis. <i>European Journal Health Economics</i> 2019; 20: 1 - 5</p> <p>15. PHM van Baal, M Perry-Duxbury, P Bakx, M Versteegh, EKA van Doorslaer, WBF Brouwer. A cost-effectiveness threshold based on the marginal returns of cardiovascular hospital spending. <i>Health Economics</i> 2019; 28(1): Pages 87-100</p> <p>16. L de Vries, PHM van Baal, WBF Brouwer. Future costs in economic evaluations: past, present, future. <i>PharmacoEconomics</i> 2019; 37(2):119-130</p> <p>17. Van Krugten F, Goorden M, van Balkom AJLM, Ruhé HG, van Schaik DJF, Brouwer WBF, Hakkaart-van Roijen L. Feasibility, Reliability and Validity of the Decision Tool Unipolar Depression (DTUD). <i>BMC Psychiatry</i> 2019; 19:179</p> <p>18. S Knies, JL Severens, WBF Brouwer. Integrating clinical and economic evidence in clinical guidelines: More needed than ever! <i>Journal of Evaluation in Clinical Practice</i> 2019; 25 (4): 561-564</p> <p>19. MM Versteegh, I Corro Ramos, C Buyukkaramikli, A Ansari-pour, VT Reckers, WBF Brouwer. Severity adjusted probability of being cost-effective. <i>PharmacoEconomics</i> 2019; 37(9): 1155-1163</p> <p>20. M Perry-Duxbury, NJA van Exel, WBF Brouwer. The Value of Safety: A Literature Review. <i>European Journal of Health Economics</i> 2019; 20(7): 1041 – 1061</p> <p>21. AE Attema, WBF Brouwer, K Claxton. Discounting in economic evaluations. <i>PharmacoEconomics</i> 2018; 36(7):745-758</p> <p>22. Reckers-Droog V, NJA van Exel, WBF Brouwer. Looking Back and Moving Forward: On the Application of Proportional Shortfall in Healthcare Priority Setting in the Netherlands. <i>Health Policy</i> 2018; 122(6):621-629</p> <p>23. Van Krugten F, Goorden M, Kaddouri M, van Balkom AJLM, Spijker J, Van W, Brouwer WBF, Hakkaart-van Roijen L. Indicators to Facilitate the Early Identification of Patients with Major Depressive Disorder in Need of Highly Specialized Care: A Concept Mapping Study. <i>Depression and Anxiety</i> 2018; 35: 346 – 352</p>
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	<p>24. K Verbooy, R Hoefman, NJA van Exel, WBF Brouwer. Time is money: Investigating the value of leisure time and unpaid work. <i>Value in Health</i> 2018; 21(12): 1428-1436</p> <p>25. AE Attema, M Krol, NJA van Exel, WBF Brouwer. New findings from the TTO for income approach to elicit willingness-to-pay for a QALY. <i>European Journal of Health Economics</i> 2018; 19(2):277-291</p> <p>26. Van Nooten F, JJV Busschbach, M van Agthoven, NJA van Exel, WBF Brouwer. What should we know about the person behind a TTO? <i>European Journal Health Economics</i> 2018; 19(9): 1207 - 1211</p> <p>27. Reckers-Droog V, NJA van Exel, WBF Brouwer. Who Should Receive Treatment? An Empirical Enquiry into the Relationship between Societal Views and Preferences Concerning Healthcare Priority Setting. <i>PLoS One</i> 2018; 13(6): e0198761</p> <p>28. Attema AE, JL Pinto, WBF Brouwer. Peer effects in health valuation: The relation between rating of contemporaries' health and own health. <i>Health & Quality of Life Outcomes</i> 2018; 16: 148</p> <p>29. K Verbooy, M Wagener, M Kaddouri, P Roelofs, H Miedema, E van Gorp, WBF Brouwer, NJA van Exel. Are people living with HIV less productive at work? <i>Aids Care</i> 2018; 30(10): 1265-1272</p> <p>30. PHM van Baal, A Morton, WBF Brouwer, DO Metzler. Should cost effectiveness analyses for NICE always consider future unrelated medical costs? <i>BMJ</i> 2017;359:j5096</p> <p>31. S Wouters, NJA van Exel, KIM Rohde, J Vromen, WBF Brouwer. Acceptable health and priority weighting. Discussing a reference-level approach using sufficientarian reasoning. <i>Social Science Medicine</i> 2017; 181:158-167</p> <p>32. M Gheorghe, S Picavet, M Verschuren, WBF Brouwer, P van Baal. Health losses at the end of life: a Bayesian mixed beta regression approach. <i>Journal of the Royal Statistical Society: Series A (Statistics in Society)</i>: 180 (3): 723-749</p> <p>33. RJ Hoefman, NJA van Exel, WBF Brouwer. Measuring Care-Related Quality of Life of Caregivers for Use in Economic Evaluations: CarerQol Tariffs for Australia, Germany, Sweden, UK, and USA. <i>PharmacoEconomics</i> 2017; 35(4): 469-478</p> <p>34. S Wouters, NJA van Exel, R Baker, WBF Brouwer. Priority to end of life treatments? Views of the public in the Netherlands. <i>Value in Health</i> 2017; 20(1): 107-117</p> <p>35. L van de Wetering, NJA van Exel, WBF Brouwer. The challenge of conditional reimbursement: Stopping reimbursement can be more difficult than not starting in the first place! <i>Value in Health</i> 2017; 20(1): 118-125</p> <p>36. M Hackert, NJA van Exel, WBF Brouwer. Valid Outcome Measures in Care for Older People: Comparing the ASCOT and ICECAP-O. <i>Value in Health</i> 2017; 20(7): 936-944</p>
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	<p>37. SJ Schawo, WBF Brouwer, L Hakkaart. Clinicians' Views on Therapeutic Outcomes of Systemic Interventions and on the Ability of the EQ-5D to Capture these Outcomes. <i>Journal of Mental Health Policy and Economics</i> 2017; 20(3): 131-136</p> <p>38. SJ Schawo, C Bouwmans, E van der Schee, V Hendriks, WBF Brouwer, L Hakkaart. The search for relevant outcome measures for cost-utility analysis of systemic family interventions in adolescents with substance use disorder and delinquent behavior: A systematic literature review. <i>Health & Quality of Life Outcomes</i> 2017; 15: 179</p> <p>39. DR Rappange, NJA van Exel, WBF Brouwer. A short note on measuring subjective life expectancy: Survival probabilities versus point estimates. <i>European Journal of Health Economics</i> 2017; 18(1): 7-12</p> <p>40. FE van Nooten, K Houghton, J van Exel, M van Agthoven, WBF Brouwer, D Stull. A (latent) class of their own: Response patterns in trading-off quantity and quality of life in TTO exercises. <i>Value in Health</i> 2017; 20(10): 1403-1410</p> <p>41. Attema AE, Brouwer WBF, l'Haridon O, Pinto JL. An elicitation of utility over QALYs under prospect theory. <i>Journal of Health Economics</i> 2016; 48: 121-134</p> <p>42. PHM van Baal, D Meltzer, WBF Brouwer. Future costs, fixed health care budgets and the decision rules of cost effectiveness analysis. <i>Health Economics</i> 2016; 25(2): 237-248</p> <p>43. A Morton, A Adler, A Briggs, D, WBF Brouwer, K Claxton, A Fischer, N Craig, P van Baal. Unrelated future costs and unrelated future benefits: Reflections on NICE Guide to the Methods of Technology Appraisal. <i>Health Economics</i> 2016; 25(8):933-938</p> <p>44. P Wubulihasimu, WBF Brouwer, PHM van Baal. The impact of activity based hospital financing on health care and mortality: evidence from hospital payment reforms in OECD countries. <i>Health Economics</i> 2016; 25(8):1005-19</p> <p>45. H Al-Janabi, NJA van Exel, WBF Brouwer, C Trotter, L Glennie, L Hannigan, J Coast. QALY losses in patients' family networks: A study of the wider health effects of meningitis. <i>Health Economics</i> 2016; 25(12):1529-1544</p> <p>46. HM Krol, NJA van Exel, AE Attema, WBF Brouwer. Altruism in TTO: Considerations of significant others in health state valuations. <i>Medical Decision Making</i> 2016; 36(2): 187-198</p> <p>47. H Al Janabi, NJA van Exel, WBF Brouwer, J Coast. A framework for including health spillovers in economic evaluation. <i>Medical Decision Making</i> 2016; 36(2): 176-186</p> <p>48. MM Versteegh, WBF Brouwer. Patient and general public preferences for health outcomes. <i>Social Science & Medicine</i> 2016; 165: 66-74</p> <p>49. H Mason, NJA van Exel, R Baker, WBF Brouwer, C Donaldson.</p>
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	<p>From representing views to representativeness of views: Illustrating a new (Q2S) approach in the context of health care priority setting in nine European countries. <i>Social Science & Medicine</i> 2016; 166: 205-213</p> <p>50. M Versteegh, S Knies, WBF Brouwer. From good to better: New Dutch guidelines for economic evaluations in health care. <i>PharmacoEconomics</i> 2016; 34(11): 1071-1074</p> <p>51. LJ van de Wetering, NJA van Exel, WBF Brouwer. Health or Happiness? A note on trading off health and happiness in rationing decisions. <i>Value in Health</i> 2016;</p> <p>52. DR Rappange, NJA van Exel, WBF Brouwer. Rational expectations? Subjective survival probabilities and lifestyles across Europe: an exploratory study. <i>Health Expectations</i> 2016; 19(1): 121-137</p> <p>53. PP Barros, WBF Brouwer, S Thomson, M Varkevisser. Competition among health care providers: helpful or harmful? <i>European Journal of Health Economics</i> 2016; 17(3): 229-233</p> <p>54. Tilling C, Krol M, Attema AE, Tsuchiya A, Brazier J, van Exel NJA, WBF Brouwer. Measuring the value of life: exploring a new method for deriving the monetary value of a QALY. <i>European Journal of Health Economics</i> 2016; 17(7): 801-809</p> <p>55. DR Rappange, WBF Brouwer, NJA van Exel. A long life in good health: Subjective expectations regarding length and future health related quality of life. <i>European Journal of Health Economics</i> 2016; 17(5): 577-589</p> <p>56. HM Krol, J Papenburg, SS Tan, WBF Brouwer, L Hakkaart. Productivity cost inclusion in cost-effectiveness studies of expensive drugs. <i>European Journal of Health Economics</i> 2016; 17(4): 391-402</p> <p>57. L van de Wetering, NJA van Exel, J Rose, R Hoefman, WBF Brouwer. Are some QALYs more equal than others? <i>European Journal of Health Economics</i> 2016; 17(2): 117-127</p> <p>58. F van Nooten, NJA van Exel, D Eriksson, WBF Brouwer. Back to the future: Influence of beliefs regarding the future on TTO answers. <i>Health and Quality of Life Outcomes</i> 2016; 14: 4</p> <p>59. AE Attema, WBF Brouwer, O l'Haridon, JL Pinto. Estimating sign-dependent societal preferences for quality of life. <i>Journal of Health Economics</i> 2015; 43: 229-243</p> <p>60. HM Krol, WBF Brouwer. Unpaid work in economic evaluations. <i>Social Science & Medicine</i> 2015; 144: 127-137</p> <p>61. NJA van Exel, R Baker, H Mason, C Donaldson, WBF Brouwer. Public views on principles for health care priority setting across Europe. <i>Social Science & Medicine</i> 2015; 126: 128-137</p> <p>62. CA Uyl-de Groot, WBF Brouwer, JM de Maeseneer, J Verweij. Primary care in cancer control: towards mature cancer care. <i>Lancet Oncology</i> 2015;16(12):1226-7</p> <p>63. M Pennington, R Baker, WBF Brouwer, H Mason, D Gyrd</p>
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	<p>Hansen, A Robinson, C Donaldson, EuroVaQ team. Comparing WTP values of different types of QALY gain elicited from the general public. <i>Health Economics</i> 2015; 24(3): 280-293</p> <p>64. M Gheorghe, WBF Brouwer, P van Baal. Quality of life and time to death: have the health gains of preventive interventions been underestimated? <i>Medical Decision Making</i> 2015; 35(3): 316-327</p> <p>65. LJ van de Wetering, NJA van Exel, A Bobinac, WBF Brouwer. Valuing QALYs in Relation to Equity Considerations Using a Discrete Choice Experiment. <i>PharmacoEconomics</i> 2015; 33(12): 1289-1300</p> <p>66. C Bouwmans, HM Krol, JL Severens, MA Koopmanschap, WBF Brouwer, L Hakkaart- van Roijen. The iMTA Productivity Cost Questionnaire: A standardized instrument for measuring and valuing health related productivity losses. <i>Value in Health</i> 2015; 18(6): 753-758</p> <p>67. JM Tilford, N Payakachat, K Kuhlthau, JM. Pyne, E Kovacs, J Bellando, DK Williams, WBF Brouwer, R Frye. Sleep problems for children with autism and caregiver spillover effects: implications for cost-effectiveness analysis. <i>Journal of Autism and Developmental Disorders</i> 2015; 45(11): 3613-3623</p> <p>68. FE van Nooten, NJA van Exel, X Koolman, WBF Brouwer. Married with children: The influence of significant others in TTO exercises. <i>Health & Quality of Life Outcomes</i> 2015; 13: 94</p> <p>69. S Wouters, NJA van Exel, KIM Rohde, WBF Brouwer. Are all health gains equally important? An exploration of acceptable health as reference point in health care priority setting. <i>Health & Quality of Life Outcomes</i> 2015; 13: 79</p> <p>70. S Wouters, NJA van Exel, M van de Donk, KIM Rohde, WBF Brouwer. Do people desire to be healthier than other people? A short note on positional concerns for health. <i>European Journal of Health Economics</i> 2015; 16(1): 47-54</p>
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