

# Eliciting Utility Functions for International Migration Decisions

Toby Prike<sup>1,2</sup>, Jakub Bijak<sup>1,3</sup>, Philip A. Higham<sup>1</sup>

<sup>1</sup> University of Southampton, UK <sup>2</sup> Adelaide University, Australia. <sup>3</sup> University of Oxford, UK

 Corresponding author, [toby.prike@adelaide.edu.au](mailto:toby.prike@adelaide.edu.au).

## Supporting Information

### Appendix A: Task Instructions for Financial and International Migration Decisions

For the following task, imagine that you are going to make an investment and as a result of this investment your monthly income will change. There are two different investments that you could potentially make and these investments differ in the amount that your monthly income might increase or decrease. The values presented under each investment represent a change in your monthly income that would result from making that investment.

Therefore, **positive values (e.g., \$500) represent an increase in your monthly income whereas negative values (e.g., -\$500) represent a decrease in your monthly income.**

Your task is to make a series of choices between the two investments to indicate which investment you would prefer to make. Assume that all other things remain the same and **therefore the choices you are making regarding which investment to make relate only to an immediate change in your level of monthly income.**

For the following task, imagine that you are going to migrate to a new country and as a result of this move your monthly income will change. There are two countries that you could potentially move to and these countries will differ in the amount that your monthly income might increase or decrease. The values presented under each country represent the change in your current monthly income that would result from migrating to that country.

Therefore, **positive values (e.g., \$500) represent an increase in your monthly income whereas negative values (e.g., -\$500) represent a decrease in your monthly income.**

Your task is to make a series of choices between the two countries to indicate which country you would prefer to migrate to. Assume that all other things remain the same and **therefore the choices you are making regarding which country to migrate to relate only to an immediate change in your level of monthly income.**

## Appendix B: Additional Results Tables for the Sensitivity Analysis

**Table A1.**

Wilcoxon Signed-Rank Test Results Checking for Presence of Prospect Theory Characteristics

Measure	Finance				Migration			
	<i>W</i>	<i>p</i>	<i>r<sub>rb</sub></i>	<i>BF</i> <sub>10</sub>	<i>W</i>	<i>p</i>	<i>r<sub>rb</sub></i>	<i>BF</i> <sub>10</sub>
Experiment 1								
KT Loss Aversion	6679	<.001	.57	565119	6876	<.001	.62	24780000
KW Loss Aversion	6504	<.001	.53	48976	6548	<.001	.54	80975
AUC Gain	6297	<.001	.48	272.79	5476	.005	.29	1.82
AUC Loss	5579	.002	.31	3.54	3839	.33	-.10	0.18
Parameter <i>a</i> Gain	2842	<.001	-.42	18.34	2902	.002	-.32	2.92
Parameter <i>a</i> Loss	3567	.14	-.15	0.12	4784	.22	.12	0.66
Measure	Finance				Migration			
Experiment 2	<i>W</i>	<i>p</i>	<i>r<sub>rb</sub></i>	<i>BF</i> <sub>10</sub>	<i>W</i>	<i>p</i>	<i>r<sub>rb</sub></i>	<i>BF</i> <sub>10</sub>
KT Loss Aversion	65202	<.001	.60	4560000000000	64188	<.001	.58	84270000
KW Loss Aversion	59314.5	<.001	.46	6302000	61534.5	<.001	.51	406900000
AUC Gain	56190	<.001	.38	745.84	56157	<.001	.38	95327.4
AUC Loss	45893.5	.027	.13	0.17	40113.5	.94	-.01	0.06
Parameter <i>a</i> Gain	22483	<.001	-.45	1994.91	26360	<.001	-.35	585.65
Parameter <i>a</i> Loss	33167	.002	-.18	0.40	38388	.51	-.04	0.06

Notes: Experiment 1  $n = 113$ , Experiment 2  $n = 403$ . KT Loss Aversion refers to loss aversion measured using the Kahneman and Tversky (1979) method. KW Loss Aversion refers to loss aversion measured using the Köbberling and Wakker (2005) method. AUC refers to area under the curve, calculated using the trapezoidal rule. *W* refers to Wilcoxon signed rank test statistic. *p* indicates statistical significance. *r<sub>rb</sub>* is a rank biserial correlation, measuring the strength of the relationship between a binary and a ranked (ordinal) variable on a standardized scale (from  $-1$  to  $+1$ ). *BF*<sub>10</sub> indicates the Bayes Factor in favour of the alternative hypothesis relative to the null (default priors were used). Source: Own elaboration in JASP

**Table A2.**

## Aligned-Rank Test Results for the Effects of Context and Stake Size on Prospect Theory Characteristics

Measure	Context		Stake size		Context × Stake size	
	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>
Experiment 1						
KT Loss Aversion	109.33	<.001	0.39	.67	2.39	.095
KW Loss Aversion	2.70	.103	1.11	.33	0.28	.76
AUC Gain	6.13	.015	0.81	0.45	0.07	.93
AUC Loss	18.40	<.001	0.02	.98	1.86	.16
Parameter <i>a</i> Gain	6.07	.015	0.28	.76	0.05	.95
Parameter <i>a</i> Loss	5.09	.026	0.38	.68	0.84	.43
	Context		Stake size		Context × Stake size	
Experiment 2	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>
KT Loss Aversion	81.26	<.001	0.60	.55	0.89	.41
KW Loss Aversion	0.04	.84	0.38	0.68	0.57	.57
AUC Gain	0.06	.81	0.58	.56	0.37	.69
AUC Loss	4.21	.041	0.07	.93	0.46	.63
Parameter <i>a</i> Gain	2.79	.096	0.66	.52	1.15	.32
Parameter <i>a</i> Loss	3.68	.056	0.39	.68	0.30	.74

Notes: Experiment 1  $n = 113$ , Experiment 2  $n = 403$ . KT Loss Aversion refers to loss aversion measured using the Kahneman and Tversky (1979) method. KW Loss Aversion refers to loss aversion measured using the Köbberling and Wakker (2005) method. AUC refers to area under the curve, calculated using the trapezoidal rule. *F* refers to *F* test statistics calculated based on rank-transformed aligned data. *p* indicates statistical significance. Source: Own elaboration in JASP and the R packages ARTool and npIntFactRep