

# VU Research Portal

## Spatial effects in stated preference studies for environmental valuation

Schaafsma, M.

2011

### **document version**

Publisher's PDF, also known as Version of record

[Link to publication in VU Research Portal](#)

### **citation for published version (APA)**

Schaafsma, M. (2011). *Spatial effects in stated preference studies for environmental valuation*.

### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

### **Take down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

### **E-mail address:**

[vuresearchportal.ub@vu.nl](mailto:vuresearchportal.ub@vu.nl)

# Table of contents

Acknowledgements.....	i
List of abbreviations.....	v
1. Introduction .....	1
1.1 Water as an economic good .....	1
1.2 Economic valuation of water benefits.....	3
1.3 Main objective .....	6
1.4 Research questions.....	7
1.5 Outline .....	8
2. Preferences, choice behaviour and valuation.....	11
2.1 Introduction .....	11
2.2 Preferences, behaviour and choice .....	12
2.3 Stated preference methods.....	15
2.3.1 Contingent Valuation .....	15
2.3.2 Choice Experiments.....	16
2.3.3 Discrete choice models .....	17
2.4 Validity and reliability in environmental valuation of spatial alternatives.....	22
2.5 Geographical knowledge, preferences, and choice behaviour .....	26
2.6 Spatial analysis: addressing spatial dependencies .....	30
2.7 An improved framework for the analysis of spatial choices in environmental valuation .....	32
2.8 Summary and conclusions .....	37
3. Distance decay in environmental valuation.....	39
3.1 Introduction .....	39
3.2 Spatial discounting and distance decay.....	40
3.3 Distance decay in stated preference studies.....	42
3.4 Cognitive distance errors.....	47
3.5 Spatial heterogeneity of distance-decay functions .....	50
3.6 The functional form for distance-decay effects.....	53
3.7 Towards a new conceptual understanding of distance decay .....	56
3.8 Summary and conclusions .....	57
4. Substitution in the stated preference literature.....	59
4.1 Introduction .....	59
4.2 Substitution effects in stated preference studies .....	60
4.3 Discrete choice models and spatial substitution effects .....	65
4.4 Substitution and choice set specification .....	68
4.5 Summary and conclusions .....	74
5. Analysing differences in distance decay and substitutability: a case study of the Scheldt river basin ..	77
5.1 Introduction .....	77
5.2 Main objectives and hypotheses .....	78
5.3 Modelling approach.....	80
5.4 Case study area.....	84

5.5 Survey design and implementation .....	85
5.6 Results.....	92
5.6.1 General survey results.....	92
5.6.2 Site-specific values and substitution effects .....	96
5.6.3 Heterogeneity in distance-decay effects.....	106
5.7 Summary and conclusions .....	114
6. Testing for spatial choice set effects and spatial heterogeneity in WTP: a case study of the Rhine river basin .....	119
6.1 Introduction .....	119
6.2 Main objectives and hypotheses .....	120
6.2.1 Heterogeneity in distance decay.....	120
6.2.2 Effects of the spatial scale of the choice set and spatial distribution of alternatives.....	122
6.3 Modelling approach.....	126
6.4 Case study area .....	131
6.5 Survey design and implementation .....	132
6.6 Choice experiment results .....	138
6.6.1 General survey results.....	138
6.6.2 Cognitive distance errors.....	141
6.6.3 Directional heterogeneity .....	148
6.6.4 Expanding the geographical scale of the choice set.....	156
6.6.5 Spatial proximity of alternatives .....	163
6.7 Summary and conclusions .....	170
7. Summary and conclusions .....	175
7.1 Introduction .....	175
7.2 Main research question and objectives.....	176
7.3 Main results and insights .....	179
7.3.1 Site-specific values .....	179
7.3.2 Distance decay.....	179
7.3.3 Substitution effects .....	181
7.4 Policy relevance .....	184
7.5 Suggestions for further research .....	186
References .....	188
Annex I: Models in WTP-space.....	202
Annex II: Swait & Louviere scale test .....	204
Annex III: Questionnaire of the Scheldt case study .....	205
Annex IV: Additional results of Chapter 5.....	216
Annex V: Questionnaire of the Rhine case study.....	218
Annex VI: Additional results of Chapter 6.....	227
Samenvatting in het Nederlands.....	233