

# Contents

<b>List of Figures .....</b>	8
<b>List of Tables .....</b>	9
<b>1. Introduction .....</b>	11
1.1. Agricultural Policy Background .....	12
1.2. Main Objectives and Central Themes of the Study .....	16
1.3. Framework of the Study .....	18
1.4. Structure of the Study .....	21
<b>2. Pro-Environmental Farming and the Rural Environment .....</b>	23
2.1. From Landscape to the Rural Environment.....	24
2.2. Socially Optimal Characterization of Pro-Environmental Farming .....	30
<b>3. Decision-Making and Valuation .....</b>	37
3.1. Social Decision-Making and the Benefit-Cost Analysis .....	38
3.2. Total Economic Value and Its Components .....	42
3.3. Monetary Valuation Techniques for Measuring Environmental Benefits and Costs .....	48
<b>4. Measurement and Welfare Economic Theory .....</b>	53
4.1. Measuring Welfare Changes in Monetary Terms .....	54
4.2. Choice Between WTP and WTA .....	64
4.3. Aggregating Welfare Measures .....	67
4.4. Some Institutionally Oriented Viewpoints .....	70
<b>5. Creating Hypothetical Markets - the Contingent Valuation Method (CVM) .....</b>	74
5.1. Some Milestones and Future Prospects of the CVM .....	75
5.2. Design of a CVM Survey .....	80
5.3. Model of Response Behavior and Biases in the CVM .....	83
5.4. Protest Behavior in Relation to Weakly Comparable and Noncompensatory Preferences .....	98
5.5. Role of Information in CVM Surveys .....	107
5.6. Choice of the Elicitation Method .....	113
5.7. Previous CVM Studies on the Value of Rural Amenities .....	121

<b>6. Willingness to Pay for Pro-Environmental Farming .....</b>	125
6.1. Survey Design .....	126
6.2. Modeling and Estimation of Willingness to Pay When Using the Dichotomous Choice Questioning Format .....	131
6.3. Mean and Median Willingness to Pay for Pro-Environmental Farming .....	141
6.4. Demand Function for the Pro-Environmentally Cultivated Agricultural Land .....	145
6.5. Existence of Starting Point Bias and Information Effects .....	148
<b>7. Attitudes, Information, Preferences, and Willingness to Pay .....</b>	151
7.1. Attitudinal Factors Among Respondents.....	151
7.2. Further Division of Respondents into Clusters Based on Attitudes .....	157
7.3. Influence of Additional Information .....	171
7.4. Assessment of Preferences .....	178
<b>8. Discussion: Relating the Results to the Welfare Theory .....</b>	181
8.1. Total WTP for Pro-Environmental Farming and Its Interpretation in the Welfare Analysis Context .....	181
8.2. Preferences, Attitudes, Information, and Validity of the Results ...	185
8.3. Possible Policy Recommendations .....	188
<b>9. Summary .....</b>	191
<b>References .....</b>	198
<b>Appendix A:</b> Structure of the Sample .....	211
<b>Appendix B:</b> Questionnaire .....	213
<b>Appendix C:</b> Exemplary Iteration Process to Reveal the Respondent's Willingness to Pay .....	219
<b>Appendix D:</b> Parameter Estimates for Standard Logit Models .....	220
<b>Appendix E:</b> Cattell's Scree Test Plots of Eigenvalues .....	221
<b>Appendix F:</b> Essentials of the Factor Analysis .....	223

## List of Figures

Figure 1.1. Framework of the Study .....	19
Figure 2.1. Rural Environment and Its Observation and Perception Process .....	27
Figure 2.2. Effect of Pro-Environmental Farming on the Optimal Use of Conventional Inputs at the Farm Level.....	32
Figure 2.3. Effect of Pro-Environmental Farming on the Socially Optimal Use of Conventional Inputs.....	35
Figure 3.1. Total Economic Value and Its Components .....	44
Figure 3.2. BCA Compatible Monetary Valuation Methods .....	49
Figure 4.1. Marshallian Consumer Surplus, Compensating Variation and Equivalent Variation .....	58
Figure 4.2. Difference between Variation and Surplus Measures .....	60
Figure 4.3. Compensated Welfare Change Measures for an Unpriced Quantity Constrained Good .....	63
Figure 5.1. Framework to Analyze Response Behavior from the Internal Bias Perspective .....	86
Figure 5.2. Irreversibility of Lexicographic Preferences .....	102
Figure 5.3. Preference Changing Thresholds in Relation to Income ( $Y$ ) and Environmental Commodity ( $Z$ ) .....	103
Figure 5.4. Effect of Consistent and Inconsistent Additional Information (in Respect of Prior Information) on WTP and on Variance of WTP. ....	110
Figure 5.5. Relationship Between the Expected Value of the Stated WTP and the Starting Bid.....	119
Figure 6.1. Sequence of Sections in the Questionnaires .....	130
Figure 6.2. Total Demand Function for Acreage under Pro-Environmental Farming .....	148
Figure 7.1. Relation Between the Number of Clusters and the Test Criteria.....	159
Figure 7.2. Normalized Cluster-Related Means of the Response Concerning the Quality Change of the Rural Environment During the Past Twenty Years .....	170

## List of Tables

Table 2.1.	Changes in Consumers' Social Welfare ( $SW_c$ ) due to Pro-Environmental Farming .....	34
Table 4.1.	Hicksian Measures for Contingent Valuation Surveys .....	61
Table 6.1.	Mean WTPs Estimated by Using Different Elicitation Methods and Statistical Models, FIM/Person/Year .....	142
Table 6.2.	Median WTPs Estimated by Using Different Elicitation Methods and Statistical Models .....	142
Table 6.3.	Some Characteristics of Possible "Outlier" Observations .....	144
Table 6.4.	The Mean WTPs of Different Questionnaires and Their Combinations in Respect of the Starting Bid and Additional Information .....	149
Table 6.5.	T-test Values of Pairwise Comparisons of Different Questionnaires and Their Combinations .....	150
Table 7.1.	Variables, Factor Loadings, Communalities, Eigenvalues, and Percentage Variance in the Varimax-Rotated Principal Factor Solution of Three Factors (Method I) .....	154
Table 7.2.	Solution with Seven Clusters .....	160
Table 7.3.	Cluster-Related Means of Certain Socio-Economic Variables .....	160
Table 7.4.	The Statistically Significant ( $t = 0.05$ ) Differences in the Cluster-Related Means of Age, Gender, and Place of Living ...	161
Table 7.5.	Summary of the Attitudinal Profiles of Clusters .....	167
Table 7.6.	Statistically Significant Differences in Means between Clusters Regarding the Attitude towards the Change of the Rural Environment during the Past Twenty Years .....	171
Table 7.7.	Initial Attitudes, Additional and Prior Information, and the Expected Change in Mean WTP and in the Variance of WTP .....	172
Table 7.8.	Cluster-Related Mean WTPs and Standard Deviations of Respondents Receiving ( $I_p + I_a$ ) or Not Receiving ( $I_p$ ) Additional Information .....	176
Table 7.9.	Number of Zero and Non-Zero WTP Responses across Attitudinal Clusters and Information Content .....	179
Table 7.10.	Number of $WTP < 1000$ and $WTP \geq 1000$ Responses across Attitudinal Clusters .....	180