

ARBEITSBERICHT

Institut für Ökonomie

**A Bibliography and Data Base
on Environmental Benefit Valuation Studies
in Austria, Germany and Switzerland**

Part I: Forestry Studies

by

Peter Elsasser and Jürgen Meyerhoff



**Bundesforschungsanstalt
für Forst- und Holzwirtschaft**

und

Zentrum Holzwirtschaft
Universität Hamburg

Bundesforschungsanstalt für Forst- und Holzwirtschaft Hamburg
Hausadresse: Leuschnerstr. 91, 21031 Hamburg
Postadresse: Postfach 80 02 09, 21002 Hamburg

Tel: 040 / 73962-301
Fax: 040 / 73962-317
Email: oekonomie@holz.uni-hamburg.de
Internet: <http://www.bfafh.de>

Institut für Ökonomie

**A Bibliography and Data Base
on Environmental Benefit Valuation Studies
in Austria, Germany and Switzerland**

Part I: Forestry Studies

Peter Elsasser (BFH, Institute for Economics)
Jürgen Meyerhoff (TU Berlin, Chair in Environmental and Land Economics)

Arbeitsbericht des Instituts für Ökonomie 2007 / 01

Hamburg, März 2007

A Bibliography and Data Base on Environmental Benefit Valuation Studies in Austria, Germany and Switzerland

Part I: Forestry Studies

Peter Elsasser and Jürgen Meyerhoff

Abstract

1. This collection presents a comprehensive bibliography of those empirical environmental valuation studies in the German speaking countries which relate to demand oriented measures of utility. Part I is restricted to the valuation of public goods provided by forests.
2. The associated data base (which is provided as a separately downloadable file) contains 54 data sets (studies) by today (March 2007). These data sets are characterised by 46 descriptors for the associated publications, the valuation object, details of the statistical and economic methods applied, the results of the valuation exercise and some other descriptors for study quality. These are explained in detail here.

Keywords: forest, environmental valuation, Austria, Germany, Switzerland

*The data base associated with this bibliography can be downloaded at the following URL:
http://www.bfafh.de/bibl/pdf/iii_07_01.xls*

1. Introduction

Is there a black hole in the universe of environmental valuation, right at the centre of Europe? A distant observer might fear so. From the international literature it appears that monetary valuation studies from the German language area are few and far between.

This has several reasons. Indeed, systematic research on the economic value of environmental benefits started not before the 1990s decade in the German speaking countries. As an example, a fairly complete list of contingent valuation studies from this region showed less than 50 entries at the turn of the millennium (ELSASSER & MEYERHOFF 2001). In contrast, an international bibliography contained more than 2000 such studies already in 1995 (CARSON *et al.* 1995), and a decade later this number even exceeded some 5000 (CARSON 2004). But a still more important reason for the limited visibility of valuation research in our countries is the language barrier: most of the respective studies are published in German. Until recently, many academic departments required PhD theses to be published in German, and research funding institutions as well as public administrations would not accept any other language for the final reports commissioned by them. Finally, most valuation studies from here in fact are either academic theses or reports to funding organisations. Even someone capable of reading German might not easily trace this scattered kind of literature.

The present bibliography and database is intended to surmount obstacles which are caused by such linguistic, institutional and practical barriers. Its goals are:

- to ease the access to the existing valuation studies from the German language area;
- to facilitate the exchange between environmental valuation researchers within our countries and abroad; and
- to increase the awareness about methodological qualities of valuation studies.

2. Structure of the collection

The present collection of valuation studies consists of a bibliography (as part of this paper) and an associated data base (which is provided as a separately downloadable file). Part I covers studies focussed on forests; it will be complemented at a later stage with a second part on non-forestry studies.

By today (March 2007), the forestry part of the bibliography contains about 50 literature sources which cover 30 different studies; obviously there are partial intersections. On the other hand, many studies addressed more than one target population or more than one good, or they applied more than one valuation method. Therefore it proved sensible to subdivide the data base into 'data sets' which are distinct from each other. As a result, the data base comprises of 54 different 'data sets' (rows). For each 'data set' there are 46 descriptors (columns) which characterise the associated publication(s), the valuation object, details of the statistical and economic methods applied, the results of the valuation exercise and some other descriptors for study quality. Details are explained below.

3. Principles for the inclusion of studies in the collection

Studies are included in part I either if they solely address forest benefits or address benefits from areas which are mainly shaped by forests; all other studies will be covered by part II. Geographically the collection is restricted to valuations of objects in Austria, Germany and

Switzerland (that is, studies are excluded which may have been conducted in one of the German speaking countries, but which address environmental values outside this area). Another restriction applies to the methodology used: the collection concentrates on studies which have a welfare theory foundation and relate to demand oriented measures of utility (however, the bibliography additionally lists some further studies which do not fit these narrow criteria; yet these latter studies are not covered by the data base).

Apart from these restrictions, we hope that the collection embraces nearly all studies which have been conducted by today, including grey literature and some unpublished papers (as far as we came to know about these). We apologise if we have overlooked something, and for any mistakes which probably will be present in the descriptions of the studies – any amendments or corrections will be most welcome!

4. Bibliography of forest valuation studies

4.1. Forestry studies covered in the data base

main source [related sources]	valuation object	data sets	region (country)
GLÜCK & KUEN 1977	forest recreation	1	Grosser Ahornboden (A)
SHELBERT <i>et al.</i> 1988	forest recreation	2	Zürich (CH)
BERGEN & LÖWENSTEIN 1992	forest recreation	1	Südharz (D)
NIELSEN 1992 [NIELSEN 1991]	forest recreation	1	Lugano (CH)
	forest health	1	
KLEIN 1994 [KLEIN & ELSASSER 1994]	forest recreation	1	Ruhr District (D)
LÖWENSTEIN 1994	forest recreation	2	Südharz (D)
SCHWATLO 1994 [SCHRÖDER 1997]	forest recreation	1	Mühlheim/Ruhr (D)
HACKL & PRUCKNER 1995b [HACKL & PRUCKNER 1995a, 1999, 2001]	establishment of national park	2	Kalkalpen (A)
LÖWENSTEIN 1995	avalanche protection	1	Allgäu (D)
LUTTMANN & SCHRÖDER 1995	recreation	2	Lüneburger Heide (D)
SCHÜSSELE 1995 [VON SPERBER <i>et al.</i> 1996; SCHRÖDER 1997]	forest recreation	1	Ziegenhagen (D)
UFLACKER 1995 [VON SPERBER <i>et al.</i> 1996; SCHRÖDER 1997]	forest recreation	1	Kaufunger Wald (D)
BEST <i>et al.</i> 1999	forest recreation	1	Thüringen (D)
ELSASSER 1996 [ELSASSER 1999]	forest recreation	6	Hamburg; Pfälzerwald (D)
KOSZ 1996a [KOSZ 1998; BÜRG <i>et al.</i> 1999]	forest recreation	4	Wienerwald (A)
SCHÖNBÄCK <i>et al.</i> 1997 [KOSZ 1996b]	forest recreation	1	Donauauen (A)
	forest existence	1	
BRAUNE 1998	forest condition	1	Lübeck (D)
ROMMEL 1998 [ROMMEL 2000]	biosphere reserve development programme	2	Schorfheide (D)

main source [related sources]	valuation object	data sets	region (country)
BEST <i>et al.</i> 1999 [TMLNU 1999; WESTERNACHER 2000]	non wood services	1	Thüringen; Hessen (D)
FRANZEN <i>et al.</i> 1999	forest recreation	1	Switzerland (CH)
HANUSCH <i>et al.</i> 2000	integrity of alluvial forest	3	Donau (D)
ELSASSER 2001	forest recreation	1	Germany (D)
KÜPKER & ELSASSER 2001	forest biodiversity	1	Germany (D)
BERNASCONI & SCHROFF 2003	forest recreation	1	Bern (CH)
OTT & BAUR 2005	forest recreation	1	Switzerland (CH)
BERNATH 2006 [BERNATH <i>et al.</i> 2006; BERNATH <i>et al.</i> 2007 in press; BERNATH forthcoming; BERNATH & ROSCHEWITZ forthcoming]	forest recreation	4	Zürich (CH)
KLEIBER 2006 [BILECEN & KLEIBER 2003]	forest recreation	1	Baselbiet (CH)
MEYERHOFF & LIEBE 2006	forest biodiversity	1	Germany (D)
MEYERHOFF <i>et al.</i> 2006 [LIEBE & MEYERHOFF 2007 forthcoming; MEYERHOFF & LIEBE accepted]	forest biodiversity	4	Lüneburger Heide; Solling/Harz (D)
KÜPKER 2007 [KÜPKER <i>et al.</i> 2005; ELSASSER 2007 forthcoming]	forest biodiversity	2	Germany; Schleswig-Holstein (D)

4.2. Further forestry studies (not covered by the data base)

Beyond the literature quoted above, there are other “non-wood” valuation studies which have not been included in the data base, either because they applied a methodology which does not fit the present classification system (e.g. studies estimating producer surplus values), or because they did not aim at deriving welfare theory related measures at all (e.g. studies which investigated cost based measures or prices). The following table lists such studies, without trying to be exhaustive.

source	valuation object	region (county)
MOOG & PÜTTMANN 1986	soil protection	(D)
PFISTER 1991	landscape change due to afforestation	Niedernjesa (D)
ALFTER 1996	non-wood goods and services	Switzerland (CH)
ELSASSER & THOROE 1997	non-wood benefits	Germany (D)
HAMPICKE & SCHÄFER 1997	nature protection	Isarmündung (D)
OLSCHEWSKI 1997	drinking water protection	Holdorf (D)
GROTKER 1999	flood protection	Vicht (D)
GUTOW 2000	forest recreation	Pfälzerwald (D)
GUTOW & SCHRÖDER 2000	drinking water protection	Kastellaun (D)
LÖWENSTEIN 2000	microclimate protection	Avelsbach, Serrig (D)
DIETER & ELSASSER 2002	carbon sequestration	Germany (D)

5. Annotations to the descriptors in the data base

5.1. Study descriptors

study/data set

Short descriptor of data set (not identical with publication, since one publication may have addressed several different target populations and/or different goods, or it may have applied different methods)

study qualification

Academic theses at undergraduate level (diploma) or at graduate level (PhD), or other research projects. Diploma theses typically are not thoroughly reviewed and are often not publicly available; PhD theses must be published and are reviewed by at least two senior researchers which normally must be university professors or people with a “Habilitation” (venia legendi).

study funding

Studies may be funded by independent organisations (labelled as “research grant”) or commissioned by administrations, or not funded at all (i.e. financed by an institute’s or an individual researcher’s own resources).

Administrations may try to influence study results to some degree, but this need not necessarily be the case.

5.2. Publication descriptors

authors, year, title, details

Since a data set may be analysed in several different publications, these entries apply to the “main source”, i.e. typically the publication which contains the most comprehensive description of the data set. This is sometimes grey or unpublished literature. Most entries in the data base refer to the main source, but this may be supplemented by data from “related publications”. In cases where the main source was not available, entries are only based at “related publications”. (Keep in mind that details may occasionally differ between sources).

related publications

Other publications which relate to the same data set (often methodological analyses about specific problems, or shorter summaries). These entries may often not be complete since it is not easy to trace every publication. Again, keep in mind that details may occasionally differ between sources.

type

Refers to main source.

language

First entry refers to main source; if (related) publications exist in other language, this is noted as a second entry.

review

If any of the publications related to the data set have been formally reviewed (as a journal peer review or as a PhD review), this is noted here. Keep in mind that only some of the publications related to the data set may have been reviewed, others not. (A review typically encourages researchers to stick to some technical rules, but it is no guarantee for quality. Inversely, the lack of a review needs not necessarily indicate lower precision).

5.3. Valuation object descriptors

land use form

In part I, forest or a mix of land use forms which include forestry.

service valued

A short label for the service (or good) valued, as typically defined in the texts of publications.

object valued

A more concrete description of what has been valued in the study. This is mainly based on the description of the good in the questionnaire. If this description has been vague, you will find a vague entry here, too. (In some cases, “service valued” and “object valued” do not completely correspond. Keep in mind that here is some level of interpretation here. We might have interpreted the questionnaire differently from the authors of the original studies – and there might have been a third interpretation by the survey respondents).

scope

Local, regional (i.e. including several study sites, or addressing a larger area), or nationwide.

region, country

Localisation of the valued good or service.

5.4. Statistical method descriptors

primary/secondary

Primary studies are based on separately collected data, secondary studies on previously existing data. Some studies used a combination of primary and secondary data.

target population

Population which has been sampled.

sampling type

This is often not well described in the studies. For example, samples chosen by commercial survey institutes are often described as “random” even if the institutes applied some kind of systematic or quota sampling. Therefore these entries are rather rough.

data collection mode

Again, this is not always well described in the studies; on the other hand, the details of the sampling procedures actually applied may sometimes be too complicated to be aggregated in this data base. Hence these are again rather rough indicators. It is highly recommended to consult the original studies on this.

gross sample size

Total number of elements of the target population which have been attempted to include in the sample (i.e. before any sample losses, e.g. due to interview refusals), but except of sample neutral losses. Not reported in many cases.

net sample size

Number of elements of the target population which are actually included in the sample (i.e. after sample losses e.g. due to interview refusals).

utilisable for valuation

Number of elements of the target population for which usable valuation data exist (i.e. after losses e.g. due to question specific refusals).

data collection dates

Year and months of data collection.

survey method

Mostly face-to-face, mail, telephone, or a combination of these.

5.5. Valuation method descriptors

method

Short descriptor for the applied valuation approach (BT: Benefit Transfer [including benefit function transfer]; CBM: Contingent Behaviour Method; CE: Choice Experiment [or Contingent Choice]; CVM: Contingent Valuation Method; TCM: Travel Cost Method).

Concerning the TCM, there is sometimes a confusion between the welfare theoretic approach (i.e. estimating consumer surplus as the area below the demand curve by using travel cost data) and a cost-based approach (i.e. interpreting travel costs as some indicator of “value”). This is indicated under “specification” and “measure”.

reference method

Alternative method of value estimation (if any). Same abbreviations as above.

specification

Specification of the valuation method. For the TCM this is either “zonal” or “individual”. For stated preference methods, an indication is given what kind of estimate is given under “results” (e.g., mean estimates, mean estimates based on regression analysis, weighted means).

measure

Abbreviations: CS (Consumer Surplus); WTA (Willingness To Accept); WTP (Willingness To Pay; different Hicksian measures not distinguished); ‘WTP to avoid’ (WTP to avoid a proposed environmental change).

payment vehicle

Method by which the payment for the valued commodity would take place in the hypothetical market. For revealed preference methods, this does not apply (marked as ‘-’).

elicitation method

Stated preference methods: Dichotomous Choice (DC) is used as a generic term, including variants of this approach (e.g. double/triple bounded DC).

The term PC (Payment Card) approach is used with various meanings in the literature. Here it refers to a separate card (most of the respective studies used a variant of a card with some graphical elements at the centre and bid proposals arranged around which has been developed and tested to avoid anchoring biases; see ELSASSER 1996:65ff.). Other lists of proposed bits which were part of the questionnaire are labelled “choice between xy bids”. Additionally it is indicated whether answers are analysed with DC techniques or as open-ended responses.

Revealed preference methods: it is indicated whether travel costs do or do not include time costs (or both, in different calculation variants).

zeros/protests

(Does not apply to revealed preference methods). Respondents stating a zero WTP either may have a genuine zero WTP or may have refused the valuation question. If a study has tried to distinguish these by additional questions (and accordingly by different treatment in the analysis), this is labelled as “distinguished”. Exclusion of all zeros likely biases results upwards; the other way round, accepting all dubitable zeros likely biases results downwards.

MEYERHOFF & LIEBE (2006) analysed the relation between WTP and attitudes towards protest motives (labelled as “analysed”). Their results suggest that the average true WTP of people stating a “protest zero bid” might be higher than zero, but indeed lower than the full sample’s WTP. This additionally backs the arguments against an exclusion.

regression

Indicates whether results have been analysed by regression techniques, and type of regression approach used.

validity experiments

Number of separate experiments to test for validity of results associated with the data set.

sensitivity analysis

Indicates whether and which different calculations were conducted in order to reveal influence of necessary assumptions.

focus group

A preceding small study in order to develop questionnaire; may range from very informal (e.g. KÜPKER 2007) to very elaborate (e.g. MEYERHOFF *et al.* 2006). Often not reported or not fully described in studies.

pilot

A preceding small study in order to test whether questionnaire design works under field conditions.

questionnaire available

Indicates whether questionnaire is printed in publication or at least available from authors.

valuation question disclosed

Indicates whether the valuation question (as part of the questionnaire) is printed in the publication. (It is not possible to interpret stated preferences without knowledge of the valuation question).

5.6. Results

mean

Average CS/WTP.

dispersion measure, dispersion value

CI: Confidence Intervals (95%, if not otherwise noted); CV: Coefficient of Variation (in % of the mean); SD: Standard Deviation of the mean. (It is not possible to interpret statistical reliability without any of these values).

aggregated result

Mean estimates aggregated to whole population (if aggregated to hectares, this is indicated).

data available

Indicates whether data are available for further analyses.

remarks

Other observations characterising the study which did not fit the preceding inventory scheme (necessarily more subjective in some cases).

Literature sources

- ALFTER, P. (1996): *Projet NWGS: Quantification et valorisation des biens et services non-bois de la forêt faisant l'objet d'une utilisation. Rapport final [The NWGS project: Quantification and valuation of (directly or indirectly used) non-wood forest goods and services. Final report]*. Bern: OFEFP/BUWAL, 103 pp.
- BERGEN, V.; LÖWENSTEIN, W. (1992): Die monetäre Bewertung der Fernerholung im Südharz [Monetary valuation of remote recreation in Southern Hercynia]. In: BERGEN, V.; LÖWENSTEIN, W.; PFISTER, G. (eds.): *Studien zur monetären Bewertung von externen Effekten der Forst- und Holzwirtschaft*. Frankfurt: Sauerländer's. Schriften zur Forstökonomie 2, p. 1-60
- BERNASCONI, A.; SCHROFF, U. (2003): *Erholung und Walddynamik: Verhalten, Erwartungen und Zahlungsbereitschaft von Waldbesuchern in der Region Bern [Recreation and forest dynamics: behaviour, expectations and willingness-to-pay of forest visitors in the Berne region]*. Zürich: Arbeitsgemeinschaft für den Wald. 77 pp.
- BERNATH, K. (2006): *Umweltökonomische Bewertung der stadtnahen Walderholung in Zürich. Empirische und Methodische Beiträge zur Analyse von Ziel- und Quellgebietsdaten [Environmental economic valuation of forest recreation close to the city of Zurich. Empirical and methodological contributions to the analysis of data sampled on-site and off-site]*. Zürich: Universität (Math.-Natwiss. Fak.). Dissertation, 190 pp.
- BERNATH, K. (forthcoming): Estimating Travel Cost Models with Endogenously Stratified Data: Comparative Results of an On-Site and an Off-Site Survey of Forest Recreation Benefits.
- BERNATH, K.; ELSASSER, P.; ROSCHEWITZ, A. (2007 in press): Reduktion zufallsbedingter und systematischer Fehler aus Zielgebietsbefragungen: Theorie und empirische Ergebnisse einer Waldbesucherbefragung in Zürich [Reduction of random errors and systematic biases from on-site samples: Theory and empirical results of a forest visitor survey in Zurich]. *Allgemeine Forst- und Jagdzeitung* **177**,
- BERNATH, K.; ROSCHEWITZ, A. (forthcoming): Recreational Benefits of Urban Forests: Explaining Visitors' Willingness to Pay in the Context of the Theory of Planned Behavior. *Journal of Environmental Management*,
- BERNATH, K.; ROSCHEWITZ, A.; STUDHALTER, S. (2006): *Die Wälder der Stadt Zürich als Erholungsraum. Besuchsverhalten der Stadtbevölkerung und Bewertung der Walderholung [The forests of the city of Zurich as recreation area. Visitor behaviour of the city's population and valuation of forest recreation]*. Birmensdorf: WSL. 43 pp.
- BEST, H.H.; HORNPOSTEL, S.; KLEIN, H. (1999): *Endbericht zum Projekt "Zur monetären Bewertung der Kollektivguteleistungen des Waldes" für Thüringen (im Vergleich mit Hessen)*. Jena: Institut für Soziologie der F.-Schiller-Universität (Typoskript), 15 pp.
- BILECEN, E.; KLEIBER, O. (2003): Ökonomische Aspekte der Freizeitaktivitäten im Wald [Spare time activities in the forests of the region Basel - ecological impacts and economic consequences]. In: BAUR, B.; BILECEN, E.; FEIGENWINTER, B.; GILGEN, C.; GUGGISBERG, R.; HEER, C.; KLEIBER, O.; KÜMIN, P.; LACK, M.; MEIER, U.; MÜLLER, S.W.; RUSTERHOLZ, H.; SPAHR, E. (eds.): *Freizeitaktivitäten im Baselbieter Wald - Ökologische Auswirkungen und ökonomische Folgen*. Liestal: Verlag des Kantons Basel-Landschaft

- BRAUNE, U. (1998): *Meinungen der Lübecker Bürger zu ihrem Wald [Opinions of the citizens of Lübeck concerning their forest]*. Dresden: TU. Inst. Forstökonomie und Forsteinrichtung (unveröff. Diplomarbeit), 49 pp.
- BÜRG, J.; OTTITSCH, A.; PREGERNIG, M. (1999): *Die Wiener und ihre Wälder. Zusammenfassende Analyse sozioökonomischer Erhebungen über die Beziehung der Wiener Stadtbevölkerung zu Wald und Walderholung [The Viennese and their forests. Summarised analysis of socio-economic investigations about the relation of the town population of Vienna to forests and forest recreation]*. Wien: BOKU. Schriftenreihe des Instituts für Sozioökonomie der Forst- und Holzwirtschaft 37, 117 pp.
- CARSON, R.T. (2004): *Contingent Valuation. A Comprehensive Bibliography and History*. Edward Elgar. 450 pp.
- CARSON, R.T.; WRIGHT, J.; ALBERINI, A.; CARSON, N.; FLORES, N.E. (1995): *A Bibliography of Contingent Valuation Studies and Papers*. LaJolla (California): Natural Resource Damage Assessment Inc.
- DIETER, M.; ELSASSER, P. (2002): *Quantification and Monetary Valuation of Carbon Storage in the Forests of Germany in the Framework of National Accounting*. Hamburg: BFH, Institute for Economics, 64 pp. URL: http://www.bfafh.de/bibl/pdf/iii_02_08.pdf
- ELSASSER, P. (1996): *Der Erholungswert des Waldes. Monetäre Bewertung der Erholungsleistung ausgewählter Wälder in Deutschland [The recreation value of the forest. Monetary valuation of the recreation service of selected forests in Germany]*. Frankfurt: Sauerländer's. Schriften zur Forstökonomie 11, 218+25 pp.
- ELSASSER, P. (1999): Recreational Benefits of Forests in Germany. In: ROPER, C.S.; PARK, A. (eds.): *The Living Forest. Non- Market Benefits of Forestry*. London: The Stationery Office, p. 175-183
- ELSASSER, P. (2001): Der ökonomische Wert der Wälder in Deutschland für die Naherholung: Eine "Benefit Function Transfer"-Schätzung [The economic value of Germany's forests for day users: A benefit function transfer approach]. *Zeitschrift für Umweltpolitik und Umweltrecht* 24 (3), 417-442
- ELSASSER, P. (2007 forthcoming): The neglect of possible disutility as a bias source in the contingent valuation of public goods. In: MEYERHOFF, J.; LIENHOOP, N.; ELSASSER, P. (eds.): *Stated Preference Methods for Environmental Valuation: Applications from Austria and Germany*. Marburg: Metropolis
- ELSASSER, P.; MEYERHOFF, J. (2001): KBM-Studien zur Bewertung von Umweltgütern im deutschsprachigen Raum - eine Kurzübersicht [CVM-studies valuing environmental goods in the German language area - a short survey]. In: ELSASSER, P.; MEYERHOFF, J. (eds.): *Ökonomische Bewertung von Umweltgütern. Methodenfragen zur Kontingenten Bewertung und praktische Erfahrungen im deutschsprachigen Raum*. Marburg: Metropolis, p. 291-308
- ELSASSER, P.; THOROE, C. (1997): Mögliche Auswirkungen von Summations- und Distanzschäden auf den monetären Wert nicht vermarkteter Leistungen des Waldes [Possible impacts of summation and distance damages on the monetary value of non market services of forests]. In: OTT, C.; PASCHKE, M. (eds.): *Ausgleichswürdige Summations- und Distanzschäden am Beispiel der neuartigen Waldschäden*. Berlin: UBA. Texte 89/97, p. 227-244

- FRANZEN, A.; HUNGERBÜHLER, A.; WILD-ECK, S.; ZIMMERMANN, W. (1999): *Gesellschaftliche Ansprüche an den Schweizer Wald - Meinungsumfrage [Claims of society towards the Swiss forest - opinion poll]*. Bern: BUWAL. Schriftenreihe Umwelt 309, 151 pp.
- GLÜCK, P.; KUEN, H. (1977): Der Erholungswert des großen Ahornbodens [The recreation value of the 'Grosse Ahornboden']. *Allgemeine Forstzeitung (Wien)* **88** (1), 7-11
- GROTTKER, T. (1999): *Erfassung und Bewertung der Hochwasserschutzleistungen von Wäldern - Dargestellt am Beispiel des Wassereinzugsgebietes der Vicht - [Quantification and valuation of flood protection by forests - the example of the Vicht catchment area -]*. Frankfurt: Sauerländer's. Schriften zur Forstökonomie 19, 298 pp.
- GUTOW, S. (2000): Zur Ermittlung impliziter Preise für Walderholung im Pfälzerwald [On the identification of implicit prices for forest recreation in the Palatinate Forest]. In: BERGEN, V. (ed.): *Ökonomische Analysen von Schutz-, Erholungs- und Rohholzleistungen des Waldes in Rheinland-Pfalz*. Mainz: LFV Rheinland-Pfalz. Mitteilungen 17/2000, p. 85-106
- GUTOW, S.; SCHRÖDER, H. (2000): Monetäre Bewertung der Trinkwasserschutzfunktion des Waldes [Monetary valuation of the drinking water protection function of the forest]. In: BERGEN, V. (ed.): *Ökonomische Analysen von Schutz-, Erholungs- und Rohholzleistungen des Waldes in Rheinland-Pfalz*. Mainz: LFV Rheinland-Pfalz. Mitteilungen 17/2000, p. 29-58
- HACKL, F.; PRUCKNER, G.J. (1995a): Der Wert der Natur - Eine ökonomische Bewertung des Nationalparks Kalkalpen [The value of nature - an economic valuation of the national park 'Kalkalpen']. *Wirtschaftspolitische Blätter* (6), 506-514
- HACKL, F.; PRUCKNER, G.J. (1995b): *Eine nachfrageseitige ökonomische Bewertung des Nationalparks Kalkalpen [A demand site economic valuation of the Kalkalpen national park]*. Projektbericht für das österreichische Umweltministerium und das Planungsbüro Nationalpark Kalkalpen.
- HACKL, F.; PRUCKNER, G.J. (1999): On the gap between payment card and closed-ended CVM-answers. *Applied Economics* **31**, 733-742
- HACKL, F.; PRUCKNER, G.J. (2001): Die Schwankungsbreite von KBM-Ergebnissen [The fluctuation range of CVM results]. In: ELSASSER, P.; MEYERHOFF, J. (eds.): *Ökonomische Bewertung von Umweltgütern*. Marburg: Metropolis, p. 83-100
- HAMPICKE, U.; SCHÄFER, A. (1997): *Forstliche, finanzmathematische und ökologische Bewertung des Auwalds Isarmündung [Valuation of the alluvial forest at the Isar mouth from a forestry, financial and ecological perspective]*. Berlin: Schriftenreihe des IÖW 117/97. 93 pp.
- HANUSCH, H.; CANTNER, U.; MÜNCH, K.-N. (2000): *Erfassung und Bewertung der Umweltwirkungen des Ausbaus der Donaustrecke Straubing - Vilshofen*. URL: http://www.donauforum.de/article_detail.php?site_id=4&article_id=36 (23.8.2005)
- KLEIBER, O. (2006): *Monetäre Bewertung von Erholungsnutzen und Nutzerkonflikten in stadtnahen Wäldern. Konzeption und empirische Prüfung am Beispiel des Allschwiler Waldes [Monetary valuation of recreational utility and use conflicts in periurban forests. Design and empirical examination in the example of the Allschwil forest]*. Marburg: Tectum. 376 pp.

- KLEIN, C. (1994): *Strategisches Antwortverhalten am Beispiel der Contingent Valuation Method [Strategical answering behaviour - the example of the Contingent Valuation Method]*. Freiburg. Forstwiss. Fak., 53 pp.
- KLEIN, C.; ELSASSER, P. (1994): Strategisches Verhalten als mögliche Fehlerquelle der Contingent Valuation Method (CVM) [Strategic behaviour as a possible source of bias of the Contingent Valuation Method]. In: OESTEN, G.; ROEDER, A. (eds.): *Zur Wertschätzung der Infrastrukturleistungen des Pfälzerwaldes*. Trippstadt: FVA Rheinland-Pfalz. Mitteilungen der FVA Rheinland-Pfalz 27/94, p. 111-128
- KOSZ, M. (1996a): *Der Erlebniswert stadtnaher Erholungslandschaften am Beispiel des Wienerwaldes*. Vienna: Research report of the Department of Public Finance and Infrastructure Policy 46, University of Technology.
- KOSZ, M. (1996b): Valuing Riverside Wetlands: the Case of the "Donau-Auen" National Park. *Ecological Economics* 16 (2), 109-127
- KOSZ, M. (1998): *On-site vs. Distant questioning: some empirical evidence from valuing recreation functions of city-near forests*. Klagenfurt: Institut für Wirtschaftswissenschaften der Universität.
- KÜPKER, M. (2007): *Der Wert biologischer Vielfalt von Wäldern in Deutschland. Eine sozioökonomische Bewertung von Maßnahmen zur Förderung der Biodiversität [The value of biological Diversity of forests in Germany. A socio-economic valuation of measures to further biodiversity]*. Universität Hamburg: PhD dissertation. 181 pp.
- KÜPKER, M.; ELSASSER, P. (2001): *Pretest zur Studie "Der Wert biologischer Vielfalt von Wäldern in Deutschland" (unpublished)*. Hamburg.
- KÜPKER, M.; KÜPPERS, J.-G.; ELSASSER, P.; THOROE, C. (eds.) (2005): *Sozioökonomische Bewertung von Maßnahmen zur Erhaltung und Förderung der biologischen Vielfalt der Wälder [Socio-economic valuation of biodiversity protection measures in forests]*. BFH Hamburg: BFH. Arbeitsbericht des Instituts für Ökonomie 2005/01, 114 pp.
- LIEBE, U.; MEYERHOFF, J. (2007 forthcoming): A Sociological Perspective on Stated Willingness to Pay. In: MEYERHOFF, J.; LIENHOOP, N.; ELSASSER, P. (eds.): *Stated Preference Methods for Environmental Valuation: Applications from Austria and Germany*. Marburg: Metropolis
- LÖWENSTEIN, W. (1994): *Reisekostenmethode und Bedingte Bewertungsmethode als Instrumente zur monetären Bewertung der Erholungsfunktion des Waldes - Ein ökonomischer und ökonometrischer Vergleich [Travel Cost Method and Contingent Valuation Method as instruments for the monetary valuation of the recreation function of the forest - an economic and econometric comparison]*. Frankfurt: Sauerländer's. Schriften zur Forstökonomie 6, 206 pp.
- LÖWENSTEIN, W. (1995): Die monetäre Bewertung der Schutzfunktion des Waldes vor Lawinen und Rutschungen in Hinterstein (Allgäu) [Monetary valuation of the protection function of the forest against avalanches and slumps in Hinterstein (Allgaeu)]. In: BERGEN, V.; LÖWENSTEIN, W.; PFISTER, G. (eds.): *Studien zur monetären Bewertung von externen Effekten der Forst- und Holzwirtschaft*. Frankfurt: Sauerländer's. Schriften zur Forstökonomie 2, p. 117-178

- LÖWENSTEIN, W. (2000): Monetäre Bewertung kleinklimatischer Wirkungen des Waldes auf angrenzende Weinbaugebiete [Monetary valuation of microclimatic impacts of forests on adjacent vineyards]. In: BERGEN, V. (ed.): *Ökonomische Analysen von Schutz-, Erholungs- und Rohholzleistungen des Waldes in Rheinland-Pfalz*. Mainz: LFV Rheinland-Pfalz. Mitteilungen 17/2000, p. 1-28
- LUTTMANN, V.; SCHRÖDER, H. (1995): *Monetäre Bewertung der Fernerholung im Naturschutzgebiet Lüneburger Heide [Monetary valuation of long distant recreation in the nature reserve of the Lüneburg Heath]*. Frankfurt: Sauerländer's. Schriften zur Forstökonomie 10, 108 pp.
- MEYERHOFF, J.; HARTJE, V.; ZERBE, S. (eds.) (2006): *Biologische Vielfalt und deren Bewertung am Beispiel des ökologischen Waldumbaus in den Regionen Solling und Lüneburger Heide [Biological diversity and its valuation - the example of ecological forest conversion in the regions Solling and Lüneburg Heath]*. Göttingen: Forschungszentrum Waldökosysteme (Selbstverlag), 240 pp.
- MEYERHOFF, J.; LIEBE, U. (2006): Protest beliefs in contingent valuation: Explaining their motivation. *Ecological Economics* **57**, 583-594
- MEYERHOFF, J.; LIEBE, U. (accepted): Do protest responses to a contingent valuation question and a choice experiment differ? *Environmental and Resource Economics*,
- MOOG, M.; PÜTTMANN, F. (1986): Überlegungen zur Bewertung von Minderungen der Bodenschutzleistungen des Waldes mit einem praktischen Beispiel [Considerations about the decrease of soil protection services of the forest with a practical example]. *Forst und Holz* **41** (6), 158-162
- NIELSEN, C. (1991): *Der Erholungswert stadtnaher Wälder im Kanton Tessin. Eine ökonomische Analyse am Beispiel von Lugano [The recreation value of periurban forests in the canton of Ticino. An economic analysis in the example of Lugano]*. Bern: Bundesamt für Umwelt Wald und Landschaft. 50 pp.
- NIELSEN, C. (1992): *Der Wert stadtnaher Wälder als Erholungsraum. Eine ökonomische Analyse am Beispiel von Lugano [The value of periurban forests as recreation area. An economic analysis at the example of Lugano]*. Chur/Zürich: Rüegger. 261 pp.
- OLSCHEWSKI, R. (1997): *Nutzen-Kosten-Analyse des Wasserschutzes durch eine Aufforstung [Cost benefit analysis of water protection by an afforestation]*. Frankfurt: Sauerländer's. Schriften zur Forstökonomie 15, 155 pp.
- OTT, W.; BAUR, M. (2005): *Der monetäre Erholungswert des Waldes [The monetary recreation value of the forest]*. Bern: BUWAL (Bundesamt für Umwelt, Wald und Landschaft). Umwelt-Materialien 193, 68 pp.
- PFISTER, G. (1991): Der monetäre Wert einer Landschaftsveränderung am Beispiel der Aufforstung einer landwirtschaftlichen Fläche [The monetary value of a change in landscape shown at the example of reforestation of an agricultural area]. *Forst und Holz* **46** (17), 465-467
- ROMMEL, K. (1998): *Methodik umweltökonomischer Bewertungsverfahren. Kosten und Nutzen des Biosphärenreservates Schorfheide-Chorin [Methodology of environmental valuation techniques. Costs and Benefits of the biosphere reserve Schorfheide-Chorin]*. Regensburg: transfer verlag. Volkswirtschaftliche Schriften 16, 267 pp.

- ROMMEL, K. (2000): Analyse umweltökonomischer Wohlfahrtsseffekte von Großschutzgebieten. Die Wertschätzung für das Biosphärenreservat Schorfheide-Chorin [Analysis of environmental economic welfare effects of large protection areas. Valuation for the biosphere reserve Schorfheide-Chorin]. *Zeitschrift für Umweltpolitik und Umweltrecht* **23** (2), 273-290
- SCHELBERT, H.; LANG, T.; BUSE, I.; HENZMANN, J.; MAGGI, R.; ITEN, R.; NIELSEN, C. (1988): *Wertvolle Umwelt. Ein wirtschaftswissenschaftlicher Beitrag zur Umwelteinschätzung in Stadt und Agglomeration Zürich* [Valuable environment. An economic contribution to the valuation of the environment in the city and agglomeration of Zurich]. Zürich: Wirtschaft und Gesellschaft (Schriftenreihe der Zürcher Kantonalbank) N 3. 87 pp.
- SCHÖNBÄCK, W.; KOSZ, M.; MADREITER, T. (1997): *Nationalpark Donauauen: Kosten-Nutzen-Analyse* [National park Donauauen (Danubial water meadows); Cost benefit analysis]. Wien/New York: Springer. 342 pp.
- SCHRÖDER, H. (1997): Die Bewertung der Erholungsfunktion des Waldes. Vorstellung dreier Fallstudien [The valuation of the recreation function of the forest. Presentation of three case studies]. *Forst und Holz* **52** (5), 121-124
- SCHÜSSELE, J. (1995): *Bewertung der Erholungsfunktion des Waldes um den "Kneipp- und Luftkurort Ziegenhagen"* [Valuation of the recreation function of the forest around the kneippism and climatic spa Ziegenhagen]. Göttingen: Fachhochschule Holzminden. FB Forstwirtschaft, 71 pp.
- SCHWATLO, J. (1994): *Neuplanung und Bewertung der Erholungsinfrastruktur am Beispiel des Stadtwaldes Mühlheim an der Ruhr* [Replanning and Assessment of the recreation infrastructure in the example of the city forest of Mühlheim/Ruhr]. Göttingen: Universität (Diplomarbeit).
- VON SPERBER, H.-L.; SCHÜSSELE, J.; UFLACKER, J. (1996): Über den Erholungswert verschiedener Waldbesitzarten [On the recreation value of different kinds of forest ownership]. *Forst und Holz* **51** (20), 673-675
- TMLNU (1999): *Unser Wald schreibt grüne Zahlen. Ein Sozialbilanz der Wälder Thüringens* [Our forest is in the green. A social balance of the forests of Thuringia]. Selbstverlag. 58 pp.
- UFLACKER, J. (1995): *Bewertung der Erholungsfunktion verschiedener Waldbesitzarten im Kaufunger Wald* [Valuation of the recreation function of different kinds of forest ownership in the Kaufungen forest]. Göttingen: FHS Hildesheim/Holzminden. FB Forstwirtschaft, 80 pp.
- WESTERNACHER, E. (2000): Leistungsentgelte für besonders gemeinnützige Waldstrukturen [Recompenses for forest structures of special public utility]. *Allgemeine Forst Zeitschrift* (12), 638-341