# Cultural and attitudinal influences on destination choice: preferences of Chinese domestic tourists

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# Abstract

The rapid growth of China's domestic tourism market represents a substantial challenge to the natural resources on which the industry is based. Combining state-of-the-art economic valuation methods with analyses of attitudes toward sustainable tourism services and of cultural background perceptions of the human-nature relation ("images of nature"), this study contributes to the knowledge base for a more sustainable development of Chinese domestic tourism from a demand side perspective. Economic valuation is based on choice experiment (CE) data from a survey of Chinese middle class tourists who were inquired with respect to their preferences for nature-based destinations in southwestern China, which is a focus area of Chinese domestic tourism development, contains a global biodiversity hotspot and a rich cultural heritage. The econometric preferences analysis of destination attributes is complemented by an investigation of the influences that standard socio-demographic, attitudinal and cultural background variables exert on preferences.

Based on literature research and qualitative interviews (n=22), a precursor study (n=213; split-sampled with either attitude or image of nature items) and a main study (n=616) were organized in mainland China in 2005 and 2006 with 'middle-class' respondents from Beijing and Chengdu. The results from both studies indicate that Chinese middle class respondents generally prefer destinations with improved levels of *convenience* (p<0.001, all p-values from main study data), more *cultural attractions* (p<0.001) and more *natural attractions* (p<0.001). The *natural attractions* attribute includes a *landscape* and a *species* component. The *landscape* component alone (p<0.001) is much more preferred on average than the *species* component alone (p=0.5571), although presence of the Giant Panda (*Ailuropoda melanoleuca*) was included in the species component. Destinations that offer a *tarnished nature experience* because of high visitor numbers or much tourism infrastructure in the landscape (p=0.0031) represents a factor of disutility as well as – not surprisingly – higher *costs* of a trip (p<0.001).

Positive preferences for *sustainable tourism services* were difficult to detect in any of the tested simple CE models. A *limited* level of *sustainable tourism services* (p=0.0017) is appreciated by respondents but a more *extensive* level of *sustainable tourism services* (p=0.3866) did not receive any economic appreciation. Interaction analysis shows that respondent preference patterns are influenced by socio-demographics, mainly age, education, annual travel expenditures and self-perceived social status.

To examine Chinese tourist attitudes toward sustainable tourism services, attitudinal items were designed based on protection motivation theory because such items were not available from the literature. The items include a broad range of sustainable tourism risks and concerns, including the acceptance of coping strategies such as emission-reduced local transportation, or local community involvement in the tourism industry. The images of nature items stem from two sources. Most items were translated from an intercultural study conducted by Kroemker; however, items that represent the strong 'harmony' theme for the relation between humans and nature in Chinese traditional culture were originally designed for this study.

Factor analysis shows that the attitudes of Chinese middle class tourists toward sustainable tourism are best reflected by two *positive* attitudinal dimensions and one *negative* dimension. In main study, the *positive* attitudinal dimensions reflect agreement with statements in line with *conservative* ideas on *sustainable development* (Cronbach's Alpha: 0.685) and in line with a more broad *concern for socio-ecological development* (Cronbach's Alpha: 0.511). The negative attitudinal dimension features a predominantly *sceptical attitude* toward sustainable tourism services (Cronbach's Alpha: 0.441). A total of 43.5% of variance is explained by these three dimensions.

Based on our sample, factor analysis identified five images of nature dimensions of Chinese middle class tourists that either reflect values of a *harmonious human-nature relation* or *human domination*. The following images of nature dimensions were identified: *equality and harmony* (Cronbach's Alpha: 0.768), *respect and protection value* (Cronbach's Alpha: 0.668),

*consequence and personal connection* (Cronbach's Alpha: 0.642), *spirituality and fragility* (Cronbach's Alpha: 0.506), and *robustness and non-spirituality* (Cronbach's Alpha: 0.596). The first four dimensions can be summarized as representing a *harmonious human-nature relation* while and the *robustness and non-spirituality* dimension is oriented toward *human domination*. A total of 46.8% of variance is explained by these five dimensions.

Correlation analysis between the attitudinal and the images of nature dimensions reveals that the *positive* attitudinal dimensions are strongly correlated with *harmonious human-nature relation* images of nature. In contrast, the *negative* attitudinal dimension is strongly correlated with the *human domination* dimension from the images of nature analysis.

Regarding their influences on preferences for destination choice, the *positive* altitudinal dimensions generate positive influences only regarding trip *convenience* in the main study as well as in the precursor study (p<0.001 for both dimensions; p-values from main study only) and for *cost* in the precursor study (p=0.037). The *sceptical* attitude dimension demonstrates strong influences on several destination attributes, including a negative influence resulting in decreased marginal willingness-to-pay for *cultural attractions* (p=0.031) and *natural attractions* (p=0.016) (main study). In the precursor study, all destination choice attributes were influenced. In particular, even preferences for *sustainable tourism services* were influenced by the extent of agreements with the *sceptical* attitude dimension (p=0.001).

Scenario analysis based on the data of the precursor study indicated that destinations with high scores on the natural attraction of the site as well as providing ample opportunities for untarnished nature experiences in southwestern China (e.g., the National Panda Reserve in *Wanglang*), are exposed to substantial risks by non-sustainable modes of tourism development. In contrast, less spectacular sites (e.g., Liupan Mountains) may have the potential to increase their attractiveness by improving the offered convenience levels as well as by better sustainable tourism services. In light of the main study results, it is rather doubtful if an improvement of the sustainable tourism services does actually improve the short term

domestic standing of a destination from a demand perspective. The importance of keeping the natural resource base – particularly the landscape - of the destinations intact is fully supported by the results of the main study, however (statistical as well as material significance of the *natural attractions* and *untarnished nature experience* attributes).

Although the average Chinese middle class respondents hold very strong *harmonious human-nature relation* values, the dimensions of the *harmonious human-nature relation* only yield a statistically significant interaction terms with the *convenience* attribute ($p=0.002$) and with the Alternative Specific Constant (ASC) ($p=0.016$) (main study), and with the *cost* attribute (precursor study) (*nature needs and deserves to be protected:* $p=0.022$; *respect*: $p=0.024$). In spite of the high level of declared agreement with these 'pro-sustainability' attitudes, influences on the *sustainable tourism services* attribute could neither be documented in the precursor study nor in the main study. The *human domination* dimensions strongly influence tourist preferences in both studies, especially reflected in much lower preferences for an *untarnished* nature experience as compared to experiencing more human modified destinations ($p=0.005$, main study).

From a sustainable tourism planning and sustainable tourism marketing perspective, the results of the main study appear sobering. In the short term, i.e. without a substantial shift in average tourist preferences, increased levels of sustainable tourism services are unlikely to be met with appreciation in the Chinese domestic volume market for middle-class consumers. However, the sustainable tourism services attribute is a complex construction operationalised by different levels of resource saving/recycling, nature conservation management, visitor restrictions and local participation in the tourism industry. Mainly from the qualitative interviews we know that more stringent nature conservation management, visitor restrictions and local participation in the tourism industry are not unanimously met with appreciation by mainstream tourists. The results of this study do not rule out the possibility that sustainable tourism services that are not perceived as a personal restriction, e.g. the provisioning with

emission-reduced local means of transportation, are in fact already valued today. In the medium term, it appears imperative from a sustainable tourism perspective to channel the potential that is expressed in high approval ratings for items of the *harmonious human-nature relation* dimensions as well as the surprisingly positive general *attitudes* toward sustainable tourism services into economic *preferences*, i.e. into the willingness-to-pay for such services. According to the data presented in this dissertation, this is likely to be particularly difficult for Chinese middle class consumers who share *sceptical* attitude toward sustainable tourism service and subscribe to an image of the human-nature relation that is characterised by *human domination*.

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# Introduction

## 1   Background

Chinese domestic tourism has been experiencing rapid growth over the past twenty years. Domestic tourism has been growing at an average annual rate of over 10% since the 1980s (CNTA, various years). In 2006, Chinese domestic tourism reached 1.394 billion person-trips, increasing by 15% from 2005. Domestic tourism expenditure was 623 billion RMB (~62.3 billion Euro; 1 RMB≈ €0.1), an increase of 18% over 2005 (CNTA 2006). In contrast to the booming domestic tourism industry, the study of the Chinese domestic tourism market from a demand-side perspective is still at its infancy. Traditionally, Chinese tourism research and planning is conducted from a supply-side perspective (Bao et al., 2002; cf. Zhang, 2003). Starting from the first studies in the 1990s (Wu, 1997; Zhang et al., 1999), most demand-side studies that were conducted focus on aspects such as simple relationships between destination choice and geographical distance (e.g., Bao et al., 2002; Huang & Xiao, 2000; Wu & Cai, 2005). The importance of tourist motivations and preferences has only recently been acknowledged as a primary research focus (e.g., Mao et al., 2005; Li & Cai, 2004; Zhou et al., 2006).

Chinese domestic tourism is mainly driven by price competition in the volume market, while sustainable tourism services are rarely offered. The current tourism growth pattern poses substantial challenges for existing natural and cultural tourism resources (WTTC, 2006), e.g., as it threatens ecologically sensitive areas (Wen, 1998; Nianyong & Zhuge, 2001). These issues are particularly crucial in southwestern China, which harbours one of 25 global biodiversity hotspots (Myers et al., 2000) and is an officially designated tourism development area (Ge, 2002).

This study aims at improving demand-side research on the Chinese domestic tourism market with a particular focus on the potential for sustainable tourism services supplied by southwestern China destinations. To this aim, the study combines the analysis of cultural and psychological aspects with a state-of-the-art economic valuation method. In particular, I use attitudinal variables on sustainable tourism and on cultural background perceptions of the human-nature relationship in combination with choice experiment (CE) data. To my knowledge, no previously published CE study exists that investigates Chinese domestic tourists or mainland Chinese destinations from a domestic tourism perspective. While the influences of attitudinal and cultural background variables on destination choice have often been investigated internationally for tourists, this has also never been done for Chinese domestic tourists. The combination of these components represents an innovative aspect of this study even at the international scale.

This dissertation is accomplished as a project of Georg-August-Universität Göttingen's Junior Research Group "Valuation of Ecosystem Services" in the environment and resource economics unit within the Faculty of Agricultural Science. For the project, a cooperation agreement between the Institute of Agricultural Economics[1] and the Institute of Geographic Sciences and Natural Resources Research of Chinese Academy of Sciences (CAS-IGSNRR) was established in 2005. One of the overall perspectives of the agreement aims at an improved understanding of the long-term impacts of Chinese domestic tourism within the framework of the IHDP (International Human Dimensions Programme on Global Environmental Change) (Barkmann and Ge, 2005).

As part of this overall project, a master degree thesis (Diplomarbeit) by Anne-Kathrin Zschiegner was accomplished (Zschiegner, 2006). Data of the pretest and precursor study were jointly gathered by Anne-Kathrin Zschiegner and the author of this dissertation. The

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[1] Now: Department of Agricultural Economics and Rural Development.

contribution of Anne-Kathrin Zschiegner is reflected by her co-authorship of those manuscripts (chapter 1, 2 and 3).

## 2    Research framework, objectives and hypotheses

Figure 1 presents the research framework of the study. Using the choice experiment (CE) method, the study estimates preferences of Chinese middle class tourists for different destination attributes with respect to (hypothetical) destination choice (link ①). The individual importance of the investigated destination attributes on choice can be influenced, e.g., by attitudes toward sustainable tourism (link ②) and the socio-demographic characteristics of the respondents (link ③). The attitudes toward sustainable tourism are, in turn, influenced by respondent images of nature, i.e. a cultural background variable (link ④). To obtain a more comprehensive picture of the relationships of the investigated phenomena, I also quantify the influences of socio-demographic variables on attitudes (link ⑤) and on images of nature (link ⑥), as well as potential direct influences of the images of nature on destination attribute preferences (link ⑦).
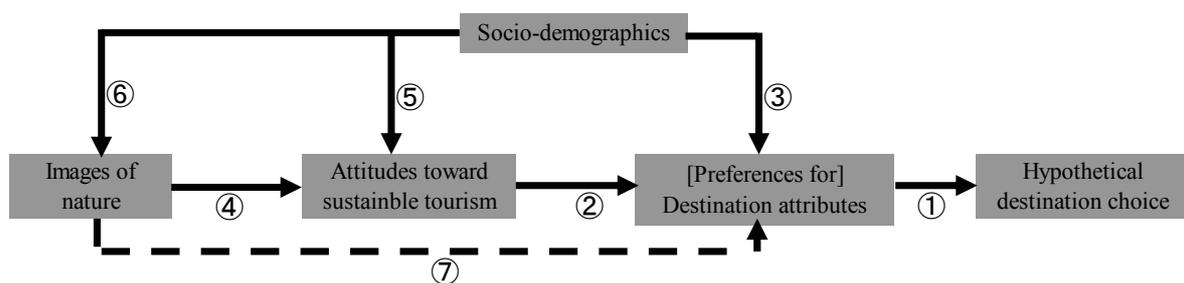
Figure 1. Research framework of the study

Below, seven detailed research objectives are listed. While some of the objectives are largely exploratory, I had explicit *a priori* hypotheses for other objectives.

**Research objective (a):** to quantify Chinese middle class tourist preferences (marginal willingness-to-pay) in regard to the following five destination attributes: transportation and accommodation convenience, visitor numbers and human impacts of the main attraction site[2], cultural attractions, landscape and species attractions, level of sustainable tourism services offered, as well as the on-site cost of a trip to the destination.

**Hypothesis (a)**: above attributes influence domestic middle class tourist (hypothetical) destination choice with regard to southwestern China nature-based destinations. For all attributes except visitor numbers and human impacts and the cost attribute, we expected positive influences on destination choice.

Objective a and hypothesis a relate to link ① in Figure 1.

**Research objective (b):** to quantify the influences of socio-demographic variables on Chinese middle class tourist preferences for destination attributes.

Objective b relates to link ③ in Figure 1.

**Research objective (c):** to portray Chinese middle class tourist attitudes toward sustainable tourism including an analysis of correlations between attitudinal dimensions and respondent socio-demographics (link ⑤).

**Research objective (d)**: To quantify the influences of attitudes toward sustainable tourism on Chinese middle class tourist preferences for destination attributes.

For the precursor study, **the hypothesis (d₁)** is: approving attitudes toward sustainable tourism correlate with higher preference for sustainable tourism services.

After the precursor study, two more specific hypotheses were adapted:

**Hypothesis (d₂)**: "positive" attitude dimensions toward sustainable tourism have low/no influence on tourist preferences.

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[2] Later on, this attribute is called "*tarnished nature experience*".

**Hypothesis (d₃)**: "negative" attitude dimensions toward sustainable tourism result in lower preferences for destination attributes[3].

Objective d and hypotheses $d_1$, $d_2$, and $d_3$ relate to link ② in Figure 1.

**Research objective (e):** to portray Chinese middle class tourist images of nature and correlations between images of nature dimensions and respondent socio-demographics.

**Hypothesis (e)**: As a result of factor analysis, a strong harmony orientation in respondent images of nature is found.

**Hypothesis (e₁)**: One *harmony* dimension including a substantial share of the newly developed harmony items is identified.

**Hypothesis (e₂)**: A substantial share of the newly developed harmony items contribute to the identified images of nature dimensions.

**Hypothesis (e₃)**[4]: Independent from details which items show up in which dimension, a strong harmony orientation is found in the empirically identified dimensions judged by the four traditional aspects of the Chinese harmony concept.

Objective e and hypotheses e relate directly to link ⑥ in Figure 1.

**Research objective (f):** to quantify the influences of images of nature on Chinese middle class tourist preferences for destination attributes. This is a largely exploratory work. From Kroemker's work (Kroemker, 2004), we knew that images of nature can have influences on behaviour intentions. In a non-specified way, I expected some influences to show up in this study, too.

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[3] The "tarnished nature experience" attribute (details of the attribute see Table 1) is a "negative" attribute that predominantly conveys a disutility. I expected the "negative" attitude dimension will result in even higher disutility for respondents with "negative" attitudes toward sustainable tourism.

[4] This hypothesis is prompted by the observation that, when looked from four aspects of traditional Chinese harmony concept, several of the original images of nature items can be interpreted to express harmony perception.

**Hypothesis (f):** Spiritual images of nature result in a higher preference for an untarnished nature experiences.

Objective f and hypothesis f relate to link ⑦ in Figure 1.

**Research objective (g):** to find if/which images of nature dimensions influence the attitudes toward sustainable tourism dimensions.

**Hypothesis (g)**: "some" of the attitudes toward sustainable tourism dimensions are influenced by images of nature dimensions.

Objective g and hypothesis g relate to link ④ in Figure 1.

# 3 Study region

Southwestern China (Figure 1) includes three provinces: Guizhou, Sichuan, Yunnan; one municipality: Chongqing; and the Tibet Autonomous Region. The area is investigated for two reasons. First, it harbours a global biodiversity hotspot (Myers et al., 2000), and is an area with rich cultural and natural tourism resources. The biodiversity hotspot area covers southwestern Sichuan, north Yunnan and southeastern Tibet. There are 5 UNESCO natural heritage sites, 4 UNESCO cultural heritage sites and 1 UNESCO cultural and natural heritage site located in this area (UNESCO, 2007). Thirty six ethnic minorities live in southwestern China, which accounts for around two thirds of the total of 56 minorities in China (CCG, 2007). A study of sustainable tourism development in this area is particularly important for protecting cultural and natural heritages of global significance. Second, southwestern China is an officially designated tourism development area (Ge, 2002). In 2001, the 'National Campaign for the Development of Western China' highlighted tourism as a priority among economic sectors to be developed (Zhu, 2001). The policy encouragement made southwestern China a focus region for (supply side) tourism planning and development research (cf. Cater, 2000; Ge, 2002; Wu, 2001).

The investigation was conducted in two national tourist *source* areas (Figure 2): Beijing (about 14.8 million citizens) representing East Coast agglomerations, and the provincial capital city of Chengdu (Sichuan Province), is one of the biggest urban agglomerations in southwest China (around 10 million citizens).
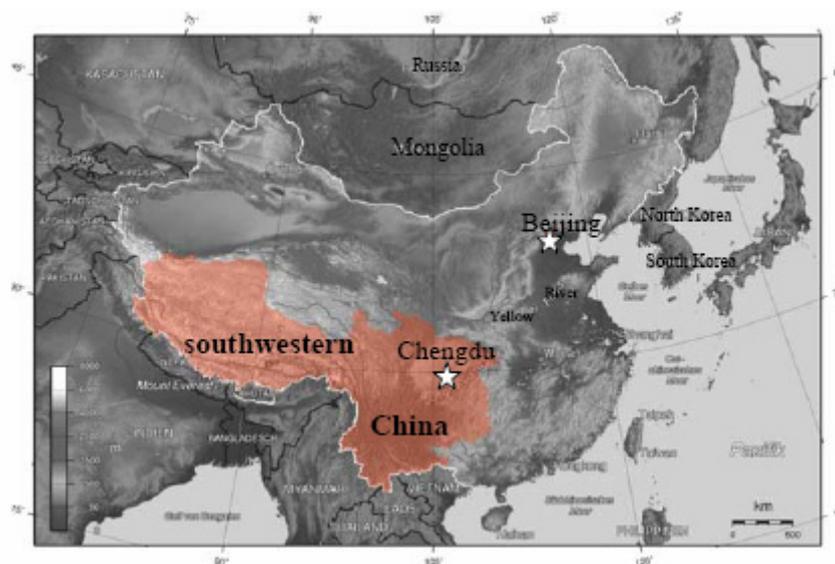


Figure 2. Map of research region and investigation sites

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## 4   Empirical work and time line

The empirical study was conducted in four steps: qualitative in-depth interviews (n=22), pretest study (n=50), precursor study (n=213) and main study (n=616). Figure 3 displays how the single steps relate to the chapters (=manuscripts) that comprise this dissertation.

Qualitative in-depth interviews were conducted in spring (n=13) and autumn (n=9) 2005. Eleven residents of Beijing, nine residents of Chengdu and two tourists in Jiuzhaigou UNESCO world heritage site of Sichuan province were interviewed. The residents were confirmed as interested in travelling to southwestern China and had middle class level

incomes. The qualitative in-depth interview results provided information for the design of CE attributes (see Table 1), attitude and images of nature items. For a more detailed description of CE design, please refer to chapter 4 (methods section); for details on the design of the images of nature items please refer to the methods section of chapter 5. Details of the construction of the attitude items are explained in chapter 6 (methods section).  As a result of the CE design process, a suitable interview frame, attribute explanations as well as the CE "choice sets" were developed. The frame and attribute explanations are included in each interview.

   A pre-test of the survey instrument (n=50) was conducted in October 2005 in Beijing. The immediately following precursor study (n=213) was carried out between October and December 2005 in Beijing and Chengdu. Ten graduate students in Beijing and Chengdu were recruited and trained to carry out face-to-face interviews. In the precursor study, I used 39 images of nature items and 17 attitudinal items, plus CE sets and socio-demographic questions (see Figure 3). Because the entire interview proved to be too long with a total of 56 attitude and images of nature items, a split-sample approach was used. Therefore, two questionnaires were designed. One only included the 39 images of nature items and the other only the 17 attitude items. The CE and socio-demographics sections were identical in both instrument versions. One hundred and twelve respondents received the attitude version, and 101 respondents the images of nature version.

   The main study interviews (n=616) were conducted between August and November, 2006. Twelve graduate students were recruited and trained for face-to-face interviews in Beijing and Chengdu. The images of nature and attitude items were reduced to 25 and 13 respectively based on the precursor study results. The questionnaire included the CE sets, images of nature and attitude items as well as socio-demographic questions. The full questionnaire is publicly available at http://www.uni-goettingen.de/de/sh/47518.html, and included as Appendix 1 in this dissertation.
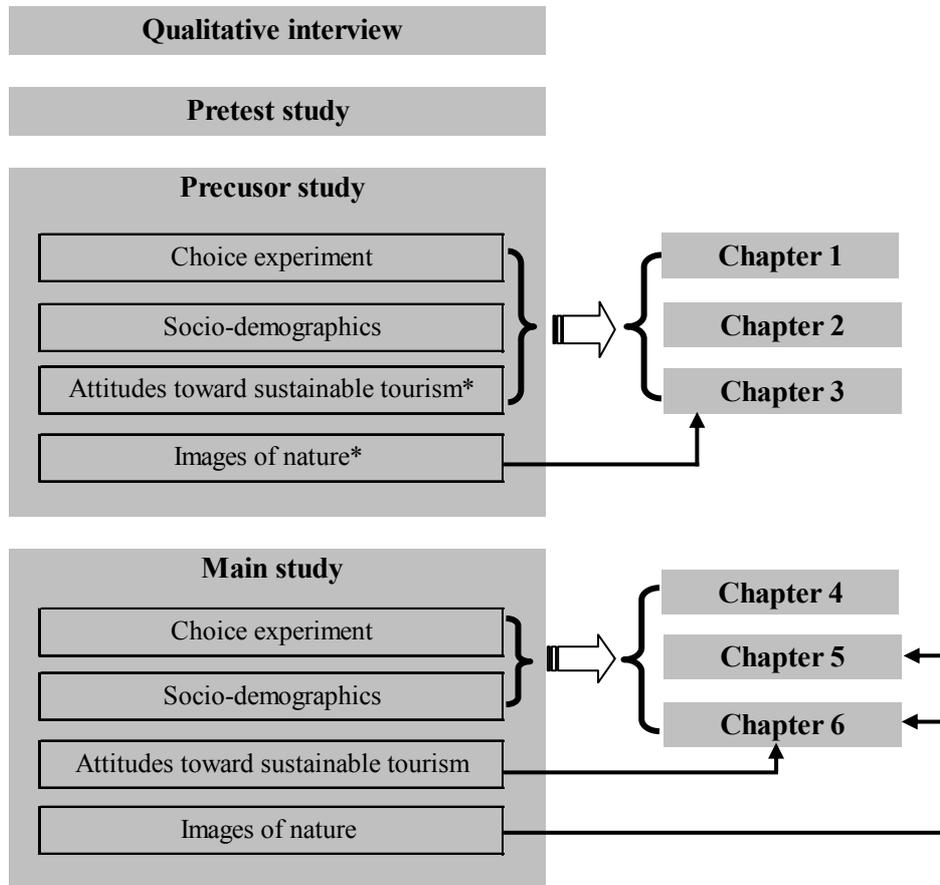
*: split samples.

Figure 3. Structure of the study and dissertation

# 5   Outline of the dissertation

In this section, I briefly outline the main methods used (5.1) and the main results obtained (5.2). The next section (5.3) explains how the single manuscripts of the dissertation are related to the methods and results.

## 5.1   *Methods*

The choice experiment (CE) method is used to assess respondent preferences for destination attributes. The following attributes and levels were designed to characterize nature-based destinations in southwestern China.

Table 1. Destination attributes and levels in choice experiment (Including coding options)

| Destination attribute | Attribute levels | Linear coding[#] | Effect coding[#] |
|---|---|---|---|
| **Convenience at places just outside of attraction site** | 1. No car roads, only trails; no hotels or hostels, tourists need to bring their own food; (*none* level) | 1 | 1, 0, 0, 0 |
| | 2. Difficult motor access; several simple hostels or hotels; (*difficult* level) | 2 | 0, 1, 0, 0 |
| | 3. Old roads; some common hotels and restaurants; (*limited* level) | 3 | 0, 0, 1, 0 |
| | 4. National roads and highways; many hotels from two stars to four or five stars, and many restaurants; (*advanced* level) | 4 | 0, 0, 0, 1 |
| **Tarnished nature experiences (Possibility of experiencing Nature)[§]** | 1. Sense of solitude and tranquillity; no tourism infrastructure; no other visitors; (*virgin land* level) | 1 | 1, 0, 0, 0 |
| | 2. At times, some basic tourism infrastructure (restaurants, stores, toilets) visible; meet other people every hour; (*basic* level) | 2 | 0, 1, 0, 0 |
| | 3. Have big scale tourism infrastructure (cable car, Karaoke), always be aware of "this is a tourism place"; meet other people every minute; (*dispersed* level) | 3 | 0, 0, 1, 0 |
| | 4. Many kinds of tourism infrastructures everywhere; many "artificial" attractions; very crowded; (*packed* level) | 4 | 0, 0, 0, 1 |
| **Cultural attractions** | 1. None; (*none* level) | 1 | 1, 0, 0, 0 |
| | 2. Some traditional old buildings mixed with many modern buildings; no original living culture; (*endangered* level) | 2 | 0, 1, 0, 0 |
| | 3. Several traditional local buildings mixed with many modern houses; one temple without usage any more; modernized local customs and culture; (*modernized* level) | 3 | 0, 0, 1, 0 |
| | 4. Well preserved traditional local buildings; temples with monks playing roles in local people's life; and well preserved original customs and culture; (*original* level) | 4 | 0, 0, 0, 1 |
| **Natural attractions[§]** | 1. Ordinary landscapes; no precious or attractive species; (*none* level) | 1 | 1, 0, 0, 0 |
| | 2. Magnificent awe-inspiring natural landscapes; no precious or attractive species; (*landscape* level) | 2 | 0, 1, 0, 0 |
| | 3. Ordinary landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); (*species* level) | 2 | 0, 0, 1, 0 |
| | 4. Magnificent awe-inspiring natural landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); (*both* level) | 3 | 0, 0, 0, 1 |
| **Sustainable tourism services (STS)** | 1. Freely visit every place; no visitor restriction; no resource saving or recycling; no community involvement; (*no* level) | 1 | 1, 0, 0 |
| | 2. Small conservation program only for core attraction area; litter/trash cans; community based business-restaurants, hostels and small hotels, local specialty stores and horse riding service; (*limited* level) | 2 | 0, 1, 0 |
| | 3. Having buffer zone; scientific conservation program for core area and buffer zone; green buses, bio energy use and waste water treatment; local community participates in decision-making in local development, and local business involvement (see above); (*extensive* level) | 3 | 0, 0, 1 |
| **Cost (local transportation, lodging, food, entrance fee and other expenses)** | 1. 780RMB | 0.78 | 0.78 |
| | 2. 1440RMB | 1.44 | 1.44 |
| | 3. 2400RMB | 2.4 | 2.4 |
| | 4. 4200RMB | 4.2 | 4.2 |
| | 5. 7200RMB | 7.2 | 7.2 |

[#]: base level (opt out option) was coded as 0 in linear coding and -1 in effect coding (Hensher et al., 2005: 121). [$]: the natural attractions level 2 and 3 are coded 2 because there is no "natural" order of the two levels. [§]: the attribute *tarnished nature experience* shows up in the actual choice cards under the more neutral description *possibility of experiencing nature*.

For details of the CE method, please refer to the methods section of the first included manuscript (chapter 1).

For the analysis of the CE data, a set of nested logit (NL) models were calculated with NLOGIT 3.0. NL models do not rely on the independence from irrelevant alternatives (IIA) condition, thus allowing for less restrictive assumptions on respondent choice behaviour. In the NL "base model" presented in Table 2, pseudo-$R^2$ values (constant only model) are between 0.07-0.08. This corresponds to $R^2$ values of 0.22 to 0.24 in an Ordinary Least Square (OLS) model equivalent (Hensher et al.2005:338).

To examine Chinese tourist attitudes toward sustainable tourism services, attitude items were designed based on protection motivation theory (PMT; Rogers and Prentice-Dunn, 1997) because such items were not available from the literature. The items include a broad range of sustainable tourism risks and concerns, including the acceptance of adaptation strategies such as emission-reduced local transportation, or local community involvement in the tourism industry. The images of nature items stem from two sources. Most items were translated from an intercultural study conducted by Kroemker (2004); however, items that represent the strong 'harmony' theme for the relation between humans and nature in Chinese traditional culture were originally designed for this study.

A varimax rotated factor analysis with binary squared Eculidean distance and Ward-linkage was used to generate empirical images of nature and attitudinal dimensions. The analyses were done with SPSS 12.1 (the precursor study) and 15.0 (the main study). For details of images of nature and attitude item construction, please refer to the methods sections of chapters 5 and 6.

## *5.2   Fundamental results*

In this subsection, I describe selected fundamental results that are necessary to understand the following detailed outline of the dissertation (subsection 5.3) as well as the final hypotheses test (section 6).

**Preferences for destination attributes**: Table 2 presents the main study "base model" of preferences for destination attributes. Chinese middle class respondents generally prefer nature-based destinations in southwestern China with improved levels of *convenience*, *cultural and natural attractions*, but less *tarnished nature experience* and *cost*. The *limited sustainable tourism services* are also appreciated by respondents but more *extensive* services are not met by economic appreciation at the current stage. This detail is from effect coding base model (chapter 6, Annex 1). Within the *natural attractions* attribute, *landscape* attraction is much more preferred by respondents than the *species* attractions. This table is included in chapter 4, 5, and 6.

Table 2. Linear coding nested logit model for destination attribute

| Attribute | Coefficient | P |
|---|---|---|
| Convenience | 0.1067*** | 0.0000 |
| Tarnished nature experience | -0.0652** | 0.0031 |
| Sustainable tourism services | -0.0623* | 0.0309 |
| Cultural attractions | 0.1884*** | 0.0000 |
| Natural attractions | 0.4242*** | 0.0000 |
| Cost [1,000RMB] | -0.1958*** | 0.0000 |
| [Non-status quo ASC] | -0.2482* | 0.0346 |
| Log likelihood function | -4933.26 | |
| Pseudo-$R^2$ (constant only) | 0.071 | |
| Inclusive value (IV) | 0.842 | |
| Observations (choices) | 4928 | |

***: significant at p≤0.001; **: significant at p≤0.01; * significant at p≤0.05. The non-status quo ASC is in brackets as it is a NL model predictor of destination choice but not a destination attribute. IV statistic is significantly different from 1; n=616.

**Attitudes toward sustainable tourism**: Factor analysis shows that the attitudes of Chinese middle class tourists toward sustainable tourism are best reflected by two *positive* attitudinal

dimensions and one *negative* dimension. In the main study, the *positive* attitudinal dimensions reflect agreement with statements in line with *conservative* ideas on *sustainable development* (Cronbach's Alpha: 0.685) and in line with a more broad *concern for socio-ecological development* (Cronbach's Alpha: 0.511). The negative attitudinal dimension features a predominantly *sceptical attitude* toward sustainable tourism services (Cronbach's Alpha: 0.441). A total of 43.5% of variance is explained by these three dimensions.

For results on attitudinal dimension influences on preferences, and their correlations with socio-demographics, please refer to the results sections in chapter 1, 2, 3 (precursor study), and 6 (main study).

Table 3. Attitudes toward sustainable tourism items and dimensions (main study)

| Attitude towards sustainable tourism dimensions | Item | Factor loading | Cronbach's Alpha | Mean (raw score) ±SD |
|---|---|---|---|---|
| **Conservative sustainable development** (*positive*) | I would be very sad if local cultures in southwest China would lose some of their originality because of tourism development. | 0.695 | **0.685** | **4.2±0.46** |
| | If I know for sure that the facilities in a tourist site benefit the local environment, I would pay more for such facilities. | 0.651 | | |
| | My friends and family expected me to feel responsible for maintain the attraction of the site. | 0.645 | | |
| | Local government should make sure that growth of tourism in southwest China does not damage natural and cultural heritages. | 0.606 | | |
| | Having garbage cans is important to protect the beauty of the natural and cultural attractions in southwest China. | 0.476 | | |
| **Concern for socio-ecological development** (*positive*) | Making sure the members of local community can run tourism related businesses is essential for harmonious tourism development in southwest China. | 0.72 | **0.511** | **3.9±0.55** |
| | Without a scientific conservation program in place, many natural destinations in southwest China are in danger of losing their natural attractions. | 0.562 | | |
| | It would be a shame if the local people in southwest China would not benefit the most from tourism development in that region. | 0.453 | | |
| | I am really afraid of losing the future opportunity for travel enjoyment in southwest China if the tourism development is not done in a sustainable manner. | 0.415 | | |
| **Sceptical attitude** (*negative*) | In my opinion, extra charge for tourism services such as green buses is just an excuse to charge more (rip off tourist). | 0.69 | **0.441** | **3.0±0.62** |
| | It would be a big financial burden for me to pay more for tourism. | 0.637 | | |
| | In many scenic and historical/cultural sites, restrictions of entering certain area and stepping on/touching objects are a nuisance for me. | 0.593 | | |
| | Putting a lot of members of local communities in charge of tourism businesses can have bad impact on service quality and trip experience. | 0.461 | | |

**Images of nature**: Factor analysis identified five images of nature dimensions of Chinese middle class tourists that either reflect values of a *harmonious human-nature relation* or of

*human domination* of nature. The following images of nature dimensions were identified: *equality and harmony* (Cronbach's Alpha: 0.768), *respect and protection value* (Cronbach's Alpha: 0.668), *consequence and personal connection* (Cronbach's Alpha: 0.642), *spirituality and fragility* (Cronbach's Alpha: 0.506), and *robustness and non-spirituality* (Cronbach's Alpha: 0.596). The first four dimensions can be summarized as representing a *harmonious human-nature relation* while and the *robustness and non-spirituality* dimension is oriented toward *human domination*. A total of 46.8% of variance is explained by these five dimensions.

For results on images of nature dimensions influences on preferences, and their correlations with socio-demographics, please refer to the results sections in chapter 3 (precursor study) and 5 (main study).

Table 4. Images of nature items and dimensions (main study)

| Images of nature dimension | Items | Factor loading | Cronbach's Alpha | Mean (raw score) ±SD |
|---|---|---|---|---|
| **Equality and harmony** (*harmonious human-nature relation*) | In the grand design of the world, humans have the same value with other living beings. | 0.734 | **0.768** | **4.3±0.54** |
| | Human and nature, including animals and plants have the equal right to exist. | 0.706 | | |
| | Human should protect nature because it has a right of existence in itself in the same way that all and everything living does. | 0.699 | | |
| | Humans belong to nature the same way as animals and plants do. | 0.569 | | |
| | As the supreme beings on earth, human should not tarnish nature. | 0.507 | | |
| **Respect and protection value** (*harmonious human-nature relation*) | When human interfere with nature, they should follow the law of proper portion. | 0.74 | **0.668** | **4.3±0.46** |
| | Humans should protect nature because it provides recreation and quietness. | 0.543 | | |
| | Humans must follow the law of nature in order to live in harmony. | 0.511 | | |
| | Humans should protect nature because it enriches our lives by its wonderful magnificence. | 0.471 | | |
| | Nature is sensitive to any kind of interference. Even small interference can lead to big and irreversible damage. | 0.462 | | |
| **Consequence and personal connection** (*harmonious human-nature relation*) | Ignoring the law of nature will eventually bring disaster to humans. | 0.734 | **0.642** | **4.4±0.5** |
| | Humans should protect nature because it is useful and provides a lot of advantages for us. | 0.701 | | |
| | I feel threatened by the ongoing destruction of nature. | 0.53 | | |
| | The Earth is like a spaceship with only limited room and resources. | 0.482 | | |
| **Spirituality and fragility** (*harmonious human-nature relation*) | Nature is sacred because it is created by God. | 0.59 | **0.506** | **3.7±0.63** |
| | Nature has its own right of existence; therefore it is not allowed to destroy nature anywhere for human needs. | 0.497 | | |
| | Nature is sensitive to any kind of interference. Even small interference can lead to big and irreversible damage. | 0.453 | | |
| | The Earth is like a spaceship with only limited room and resources. | 0.429 | | |
| **Robustness and non-spirituality** (*human domination*) | Humans have the right to use natural resources of any kind they want to. | 0.677 | **0.596** | **2.3±0.62** |
| | Nature is important, but neither has a soul nor is sacred. | 0.588 | | |
| | Plants and animals do exist primarily for human use. | 0.581 | | |
| | Nature always recovers (by itself), no matter what humans do. | 0.573 | | |
| | Not humans can protect nature; only God has the power to do so. | 0.486 | | |

### 5.3    Detailed outline of the dissertation

The dissertation has the character of a cumulative dissertation. It consists of six chapters/manuscripts. Three manuscripts (Chapter 1, 2, and 3) report results from the precursor study. Chapter 4, 5 and 6 are based on main study results (Figure 3).

The first manuscript (chapter 1; Yan et al., accepted), "*The Sceptics' Challenge for Sustainable Tourism in the Southwestern China Biodiversity Hotspot: a Choice Experiment Approach*" was accepted for publication by the Journal of China Tourism Research in June 2007. The manuscript is based on precursor study CE results, including influences of individual attitudes on attribute preferences. Three main attitude dimensions, two positive and one negative, emerged from precursor study data. They are *in favour of sustainability*, *concern for losing future opportunities* and *sceptical attitude toward sustainable tourism services*. The two positive dimensions had high approval ratings (4.04 and 4.11 at a 5-point Likert scale). Only *sceptical attitude* significantly and negatively influenced preferences for *sustainable tourism services*. We conclude that the positive attitudes toward sustainable tourism currently do not translate into sustainable tourism consumption and production opportunities. Instead, the preferences for sustainable tourism services appeared to depend on the extent of a *sceptical* attitude.

This manuscript contributes to research objectives a, c and d listed in section 2, above.

A second manuscript (chapter 2) "*Is the Chinese Tourist Ready for Sustainable Tourism? Attitudes and Preferences for Sustainable Tourism Services*" was submitted to the Journal of Chinese Culture and Management in November, 2007. Following up on the results reported in chapter 1, we calculated willingness-to-pay values for tourism development scenarios of two nature-based destinations in western China, Wanglang and Liupan Mountain. Scenario comparison demonstrates high risks of non-sustainable tourism development. Once the

natural and cultural heritage is compromised and the tourism experience is tarnished, improvements in trip convenience may not offset economic losses of tourism value.

This portion of the dissertation also contributes to the research objectives a, c and d listed in section 2.

A third manuscript (chapter 3) "*The Dao of the Sceptic and the Spiritual: Attitudinal and Cultural Influences on Preferences for Sustainable Tourism Services in the Domestic Chinese Tourism Market*" is also based on the precursor study data. This chapter is formatted for submission to the special issue "Progress in Tourism Service and Sustainable Development" of the International Journal of Services Technology and Management. Like in chapter 1 and 2, we start with a base model of preferences for destination attributes, and document influences of attitudes toward sustainable tourism on these preferences. In contrast to chapter 1 and 2, we also use images of nature dimensions to explain preference heterogeneity. In images of nature analysis, the *robustness by divine designer* and the *non-spirituality* dimensions displayed substantial impacts on preference variations. Respondents with higher scores in *robustness by divine designer dimension* prefer a more *tarnished nature experience* and more *cultural attractions*. The more spiritual the image of nature of a Chinese middle class tourist, the more s/he prefers trips featuring more *natural attractions* and more *sustainable tourism services*.

This portion of the dissertation contributes to the research objectives a, d, e and f listed in section 2, of this introduction.

A fourth manuscript (chapter 4) "*Assessing Domestic Tourist Preferences for Nature Based Destinations in Southwestern China-A Choice Modelling Analysis*" reports choice experiment results from main study data. Part of the results was presented at the 37th annual conference of the Ecological Society of Germany, Austria and Switzerland (Yan et al., 2007a). A preliminary version of the manuscript was published as a discussion paper of the Department of Agricultural Economics and Rural Development, at http://www.uni-

goettingen.de/de/sh/47518.html (Yan et al., 2007b). It is formatted for submission to the Journal of Tourism Management.

The manuscript is based on CE results and includes influences of socio-demographic variables on preferences. Linear and effect coding (Table 1) were used for NL model analysis. Linear coding results reveal that respondents generally prefer destinations with improved levels of *convenience*, *cultural and natural attractions*, but less *tarnished nature experiences*, *sustainable tourism services* and *cost*. The *natural attractions* attribute is the most influential attribute regarding destination choice. It includes a *species* as well as a *landscape* component. The *landscape* is much more important to respondents than the *species* component. *Cost* is the second most influential attribute, followed by *cultural attractions* and *convenience*.

Additional details are revealed by effect coding analysis. Respondents generally prefer less *tarnished nature experiences*, but the most preferred level actually is the *basic* level instead of the *virgin land* level. Although the *sustainable tourism services* negatively impacts the destination choice in general, the destination utility still increases with the second (*limited*) level of sustainable tourism services.

This portion of the dissertation contributes to the research objectives a and b listed in section 2, above.

A fifth manuscript (chapter 5) "*Harmony vs. Domination: Chinese Tourist Images of Nature and Their Influences on Preferences for Nature-based Destinations in Southwestern China*" is also based on CE results, which are combined with images of nature as well as socio-demographic main study data. This chapter is formatted for submission to the Journal of Society and Natural Resources. Empirical analysis shows dimensions with a *harmonious human-nature relation* orientation as well as a *human domination* dimension shape contemporary Chinese middle class images of nature. The traditional harmony with nature values still play a leading role. Average Chinese middle class respondents agree strongly with items depicting a *harmonious human-nature relation*. However, *human domination* also

emerged as an images of nature dimension (the *robustness and non-spirituality* dimension). This can be interpreted as an influence from the "conquering nature" practices applied in China since 1949. In regard to destination choice, respondents who hold strong *human domination* images of nature favour more *tarnished nature experience*, particularly, and lower trip *costs*. In contrast, the *harmonious human-nature relation* dimensions only generate stable influences regarding the *convenience* attribute. In spite of high scores that average respondents reached for the *harmonious human-nature relation* dimensions, none of the dimensions positively influences preferences for *sustainable tourism services*. This gap indicates that the strongly *harmonious* images of nature do currently not support demand for sustainable tourism services.

This portion of the dissertation contributes to the research objectives e and f listed in section 2, above.

Finally, chapter 6, "*Sustainable Tourism Development in Southwestern China: Attitude-Intention Gap in Domestic Tourists*" is the last manuscript derived from the main study data. The manuscript is based on CE data, attitudes toward sustainable tourism, images of nature and socio-demographic analysis results. Factor analysis of the main study items identified three attitudinal dimensions: two *positive* (*conservative sustainable development* and *concern for socio-ecological development*) and one *negative* (*sceptical attitude*). *Positive* attitudinal dimensions are strongly correlated with *harmonious human-nature relation* images of nature. The *negative* attitudinal dimension is strongly correlated with *human domination* images of nature.

Respondents who are more supportive of either *positive* or *negative* attitudinal dimensions demonstrate different socio-demographic characteristics, for example, respondents with better education and higher self-perceived social status have higher agreement with *positive* attitudinal dimensions. Respondents with lower education and lower self-perceived social status have higher agreement with the *sceptical attitude*.

The *positive* altitudinal dimensions only generate positive influences regarding trip *convenience*; and contribute substantially to the attribute willingness-to-pay. The *sceptical* attitude dimension demonstrates strong influences concerning several destination choice attributes. Higher scores result in decreased preferences for *cultural and natural attractions*. None of the attitudinal dimension influences preferences for *sustainable tourism services*. The study results suggest that though strong *positive* attitudes toward sustainable tourism are emerging, the attitudes do not translate into actual consumption behaviour at present. Instead, a *sceptical* attitude plays a stronger role in moderating attribute influences on destination choices. With differences in the detailed results, the main findings of the precursor study (chapter 1, 2, and 3) are confirmed by the main study results.

This portion of the dissertation contributes to the research objectives c, d and e listed in section 2, above.

## 6   Test of hypotheses

Hypothesis a, $d_1$, $d_2$, $d_3$ and f are tested by significance or non-significance of coefficients of destination attributes/interaction terms in NL models. Hypothesis e ($e_1$, $e_2$ and $e_3$) is tested by factor analysis results of images of nature items. Hypothesis g is test by standard correlation analysis results of attitudinal dimensions and images of nature dimensions.

**Hypothesis (a)**: CE attributes influence domestic middle class tourist (hypothetical) destination choice with regard to southwestern China nature-based destinations. For all attributes except for human impacts and visitor number of destination (*tarnished nature experience*) and *cost*, we expected positive influences on destination choice.

In the precursor study, the hypothesis was tested in Chapter 1, Table 3 (*convenience*: p=0.0011; *tarnished nature experience*: p<0.001; *sustainable tourism services*: p=0.6778; *cultural attractions*: p<0.001; *natural attractions:* p<0.001; cost: p<0.001). The *sustainable tourism services* was the only non-significant attribute. Positive influences on destination

choice are observed from all attributes except for the *tarnished nature experience* and *cost* attribute which display the expected negative influence.

In main study, the hypothesis was tested in Chapter 4, Table 3 (*convenience*: $p < 0.001$; *tarnished nature experience*: $p = 0.0031$; *sustainable tourism services*: $p = 0.0309$; *cultural attractions*: $p < 0.001$; *natural attractions:* $p < 0.001$; *cost*: $p < 0.001$). All attributes become significant. *Tarnished nature experience*, *sustainable tourism services* and *cost* have negative influences on destination choice.

In sum, the hypothesis is supported by both study result regarding four destination attributes and the cost attribute. The hypothesis of a generally positive influence of the tested *sustainable tourism services* on destination choice is clearly falsified by main study results.

**Hypothesis (d$_1$)**: Approving attitudes toward sustainable tourism correlate with higher preference for sustainable tourism services (precursor study hypothesis).

In the precursor study, the hypothesis was tested in Chapter 1, Table 4. Two positive (approving) attitudinal dimensions toward sustainable tourism were singled out: *in favour of sustainability* and *concern for losing future opportunities*. None of the dimensions influence preference for *sustainable tourism services* attribute. The hypothesis is falsified.

**Hypothesis (d$_2$)**: "Positive" attitude dimensions toward sustainable tourism have low/no influence on tourist preferences (main study hypothesis).

In the main study, the hypothesis was tested in Chapter 6, Table 8. Two *positive* attitude dimensions were singled out: *conservative sustainable development* dimension and *concern for socio-ecological development* dimension. Both dimensions only have significant influences on the *convenience* attribute (*conservative sustainable development*: $p < 0.001$; *concern for socio-ecological development*: $p < 0.001$). Compared to the influence of the "negative" dimension (see hypothesis d$_3$), the hypothesis is supported by the results.

**Hypothesis (d₃)**: "Negative" attitude dimension toward sustainable tourism results in lower preferences for destination attributes[5] (main study hypothesis).

In the main study, the hypothesis was tested in Chapter 6, Table 8. One *negative* attitudinal dimension, *sceptical attitude* was generated by factor analysis. The *sceptical attitude* dimension has negative impacts on the *cultural attractions* ($p=0.03$) and *natural attractions* ($p=0.02$) attributes, and the *cost* attribute ($p=0.002$). Compared to the influences of the two "positive" dimensions, a stronger influence is apparent. The hypothesis is partly supported by the results.

**Hypothesis (e)**: As a result of factor analysis, a strong harmony orientation in respondent images of nature is found. This hypothesis is tested by three sub-hypotheses ($e_1$-$e_3$).

**Hypothesis (e₁)**: One harmony dimension including a substantial share of the newly developed harmony items is identified.

In the main study, the hypothesis was tested in Chapter 5, Table 3. Five images of nature dimensions emerged from factor analysis. They are *equality and harmony* (Cronbach's Alpha: 0.768), *respect and protection value* (Cronbach's Alpha: 0.668), *consequence and personal connection* (Cronbach's Alpha: 0.642), *robustness and non-spirituality* (Cronbach's Alpha: 0.596) and *spirituality and fragility* (Cronbach's Alpha: 0.506). To the five items of the *equality and harmony* dimension, the newly developed harmony items contribute four items.

Thus, hypothesis $e_1$ is supported by main study results.

**Hypothesis (e₂)**: A substantial share of the newly developed harmony items contribute to the identified images of nature dimensions.

In the main study, 16 images of nature items (64%) are taken from Kroemker's work (Kroemker 2004) and 9 (36%) are self-designed harmony items. In all, five dimensions

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[5] The "tarnished nature experience" attribute (details of the attribute see Table 1) is a "negative" attribute that predominantly conveys a disutility. I expected the "negative" attitude dimension will result in even higher disutility for respondents with "negative" attitudes toward sustainable tourism.

including 23 items were singled out by factor analysis. Of these 23 items, 7 stem from the self-designed harmony items.

Hypothesis $e_2$ is supported by the results.

**Hypothesis ($e_3$)**: Independent from details which items show up in which dimension, a strong harmony orientation is found in the empirically identified dimensions judged by the four traditional aspect of harmony concept.

In the precursor study, the hypothesis was tested in Chapter 3, section 3.2. Four images of nature dimensions, *nature needs and deserves to be protected* (Cronbach's Alpha: 0.80), *robustness by divine designer* (Cronbach's Alpha: 0.76), *respect* (Cronbach's Alpha: 0.55) and *non-spirituality* (single item dimension), were identified from factor analysis. Two of the dimensions (*nature needs and deserves to be protected* and *respect*) are close to traditional harmony aspect.

In the main study, the hypothesis was tested in Chapter 5, Table 3. Four of five images of nature dimensions are harmony orientated. They are *equality and harmony* (Cronbach's Alpha: 0.768), *respect and protection value* (Cronbach's Alpha: 0.668), *consequence and personal connection* (Cronbach's Alpha: 0.642) and *spirituality and fragility* (Cronbach's Alpha: 0.506).

The hypothesis is supported by both study results.

Based on the test of hypothesis $e_1$, $e_2$ and $e_3$, hypothesis e is supported and a strong harmony orientation in respondent images of nature is identified from factor analysis.

**Hypothesis (f):** Spiritual images of nature results in a higher preference for an untarnished nature experiences.

In the precursor study, the hypothesis was test in chapter 3, Table 8. Spiritual images of nature emerged in the *robustness by divine designer* and *non-spirituality* dimensions. The *robustness by divine designer* dimension positively influences preference for the *tarnished*

*nature experience*. The *non-spirituality* dimension has no influence at all in regard to this attribute.

In the main study, the hypothesis was tested in chapter 5, Table 6. Spiritual images of nature are directly represented in the *spirituality and fragility* dimension, and the opposite aspect of non-spirituality emerges in the *robustness and non-spirituality* dimension. The *spirituality and fragility* dimension has no influence with regard to *tarnished nature experience*, while *robustness and non-spirituality* dimension positively influence preference for this attribute. It indicates that respondents with lower agreement with the *robustness and non-spirituality* dimension prefer untarnished nature experience; expressed positively, respondents with less non-spiritual images of nature have higher preference for untarnished nature experience.

Hypothesis f is weakly supported by main study results.

**Hypothesis (g)**: "Some" of the attitudes toward sustainable tourism dimensions are influenced by images of nature dimensions.

In the main study, the hypothesis was tested in Chapter 6, Table 5. Two *positive* attitudinal dimensions are strongly correlated with *harmonious human-nature relation* dimensions; while *sceptical attitude* has the strong correlation with the *human domination* dimension.

Tested in the weak form ("some" of the attitudes toward sustainable tourism dimensions are influenced by images of nature dimensions), the hypothesis is supported by the results.

## References

Bao, J., Zheng, H. and Dai, G. (2002). The evolvement of spatial structure and the significance of Guilin's domestic tourist origins. ACTA Geographica Sinica (in Chinese), 57(1), 96-106.

Barkmann, J. and Ge, Q. (2005). An interdisciplinary approach to the analysis of the influence of lifestyle dynamics to tourist destination choice of the emerging Chinese middle-class.

The conference book for the 6th open meeting of the Human Dimensions of Global Environmental Change research community. pp: 145.

Cater, E. A. (2000). Tourism in the Yunnan great rivers national parks system project: prospects for sustainability. Tourism Geographies, 2(4), 472-489.

China Central Government (CCG) (2007). Minorities living in China. Online document at URL http://www.gov.cn/test/2006-04/17/content_255861.htm. Accessed July 3rd, 2007.

China National Tourism Administration (CNTA, 1985-2005). Yearbook of China tourism statistics. China Tourism Publishing House, Beijing.

China National Tourism Administration (CNTA) (2006). Major statistics of China domestic tourism 2006. Online document at URL

http://www.cnta.gov.cn/news_detail/newsshow.asp?id=A2007361050143901487.

Accessed June 19th, 2007.

Ge, Q. S. (2002). Strategy of exploring tourism in western China (in Chinese). China Tourism Press, Beijing.

Hensher, D. A., Rose, J. M. and Greene, W. (2005). Applied choice analysis: a primer, Cambridge University Press, Cambridge (UK).

Huang, A. & Xiao, H. (2000). Leisure-based tourist behaviour: a case study of Changchun. International Journal of Contemporary Hospitality Management, 12(3), 210-214.

Kroemker, D. (2004). Naturbilder, Klimaschutz und Kultur: Psychologie Forschung aktuell, Weinheim, Basel, Berlin.

Li, Y. &. Cai, Y (2004). A study on ecotourists' behavioural characteristics in Beijing: a case study in Baihuashan nature reserve. Geographical Research, 23(6), 863-874, (in Chinsese).

Mao, D., Zhang, J. & Bao, H. (2005). A tourist destination choice model based on Lancasterian characteristics theory and destination image theory: theoretical analysis and case study. Geographical Research, (in Chinese), 24(6), 992-999.

Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B. & Kent, J. (2000). Biodiversity hotspots for conservation priorities. Nature, 403, 853-858.

Nianyong, H. and Zhuge, R. (2001). Ecotourism in China's nature reserves: opportunities and challenges. Journal of Sustainable Tourism, 9(3), 228-242.

Rogers, R. and Prentice-Dunn, S. (1997). Protection motivation theory, in D. Gochman (eds.) Handbook of Health Behaviour Research: Vol. 1. Determinants of Health Behaviour: Personal and Social, Plenum, New York.

Zhang, G. (2003). Tourism research in China. In A. A. Lew, L. Yu, J. Ap & G. Zhang (Eds.), *Tourism in China*, The Haworth Hospitality Press, New York, London, Oxford, pp. 67-81.

Zhang, J., Du, J.K., Zhou, Y.K. & Gan, M. Y. (1999). The travel distance and travel patterns of tourists to national parks in China. Asia Pacific Journal of Tourism Research, 4(2), 27-34.

Zhou, L., Cheng, X. & Zhou, T. (2006). A research on the willingness to pay for certificated ecotourism product-the empirical analysis based on the tourists of Zhejiang's four scenic spots. Economic Geography, 26(1), 141-144, (in Chinese).

Zhu, R. (2001). Report on the 10th Five-year plan for the national economy and social development of China central government. People's Daily, March 17, 2001, Beijing, (in Chinese).

United Nations Educational, Scientific and Cultural Organizations (UNESCO) (2007). China's UNESCO world heritage. Online document at URL http://whc.unesco.org/en/list. Accessed June 26, 2007.

Wen, J. (1998). Evaluation of tourism and tourist resources in China. International Journal of Social Economics, 25, 467-485.

Wu, B. (1997). A study on destination choice behaviour of Chinese urban residents. Acta Geographica Sinica, 52(2), 97-103, (in Chinese).

Wu, B. (2001) Comments on master plan of Sichuan province tourism development. Urban Design & Planning, 4, 21-25, (in Chinese).

Wu, B. & Cai, L. (2005). Spatial modelling-suburban leisure in Shanghai. Annals of Tourism Research, 33 (1), 179-198.

World Travel and Tourism Council (WTTC) (2006). China, China Hongkong SAR and China Macau SAR: the impact of travel and tourism on jobs and the economy. Online document at URL http://www.wttc.org/publications/pdf/FINAL%20WTTC_China%20English.pdf. Accessed December 20, 2006.

Yan, J., Barkmann, J. and Marggraf, R. (2007a). Domestic tourist preferences for charismatic umbrella species in southwestern China? Proceedings of GfÖ, 37, 508, Verlag Die Werkstatt, Göttingen.

Yan, J., Barkmann,J., Zschiegner, A. and Marggraf, R. (accepted). The sceptics' challenge for sustainable tourism in the Southwestern China biodiversity hotspot: a choice experiment approach. China Tourism Research.

Yan, J., Barkmann, J., R and Marggraf, R. (2007b). Chinese tourist preferences for nature-based destinations: a choice experiment approach. Discussion paper of Department of Agricultural Economics and Rural Development: 0706. Online document at http://www.uni-goettingen.de/de/sh/47518.html

# Chapter 1

## The Sceptics' Challenge for Sustainable Tourism in the Southwestern China Biodiversity Hotspot: a Choice Experiment Approach[1]

Jiong Yan, Jan Barkmann, Ann-Kathrin Zschiegner, Rainer Marggraf

**Abstract**: To identify opportunities and challenges for sustainable tourism in southwest China, this study investigated domestic consumer attitudes and economic preferences on sustainable tourism services regarding destinations in the southwestern China mountains, one of 25 global biodiversity hotspots, and a focus area of Chinese tourism development. Factor analysis revealed three main attitude dimensions: in favour of sustainability, concern for losing tourism opportunities and sceptical attitude toward sustainable tourism services. Only sceptical attitude was (negatively) correlated with preferences for sustainable tourism services (P=0.001). The supportive attitudes toward sustainable tourism currently do not translate into sustainable consumption and production opportunities, as sceptical notions regarding the effectiveness of sustainable tourism services prevail. Carefully targeted marketing strategies may be called for that address the scepticism regarding sustainable tourism services.

Keywords: sustainable tourism, attitude toward sustainable tourism, choice experiment, destination choice, willingness to pay, southwestern China.

China has rapidly developed into one of the biggest domestic tourism markets in the world. In 2005, the number of domestic travellers in China was 1.212 billion person trips, increasing by 10% from 2004. Tourism expenditure was 528.6 billion RMB (~52.86 billion Euro), an increase of 12.2% over 2004 (CNBT, 2006). The main driving force is the growing wealth of Chinese citizens. GDP per capita in China has exceeded US$1,000 (CNBS, 2005); Chinese top and middle income earners consider travel a "birthright" (WTTC, 2006: 15). However, the booming tourism industry causes increased energy and resource consumption in China, and threatens ecologically sensitive areas (Li et al., 2005; Nianyong & Zhuge, 2001). These issues are particularly crucial in southwestern China, which harbours one of 25 global biodiversity hotspots (Myers et al., 2000), and is a popular tourism region in China. This paper aims at achieving a better understanding of attitudinal factors that influence economic preferences of Chinese domestic tourists with regard to sustainable tourism services. In spite of the tremendous environmental effects, tourism research about China has largely ignored demand-side factors such as attitudes toward and preferences for sustainable tourism services.

Chinese tourism research and planning is traditionally conducted from a supply-side perspective (Bao et al., 2002; cf. Zhang, 2003). Regional tourism planning and development as well as tourism impacts are the main focus since the 1990s (Zhang, 2003). In 2001 the national campaign for the development of western China highlighted tourism as a priority among industrial sectors (Zhu, 2001). The policy encouragement made southwestern China a focus region for tourism planning and development research (cf. Cater, 2000; Ge, 2002; Wu, 2001). Lately, the supply-side of "ecotourism" has received some attention in addition to the supply-side of tourism in general (Fang, 2002; Li, 2004; Wen 2001).

Starting from the first studies in the 1990s (Wu 1997; Zhang et al., 1999), most current demand-side contributions continue to focus on aspects such as the relationship between destination choice and travel distance or spatial structures of the tourist source area (e.g., Bao et al., 2002; Wu & Cai, 2005). The importance of tourist motivations and preferences has only

recently been acknowledged (e.g., Mao et al., 2005; Li & Cai, 2004). To our knowledge, no study has yet been conducted in mainland China that specially targets sustainable tourism aspects from an economic preference perspective. In particular, we report on results from a welfare-economic choice experiment study that relates destination-related preferences of Chinese middle-class tourists to their attitudes on sustainable tourism.

# 1    Literature review

In this review section we focus on background information regarding sustainable tourism, attitude research based on Protection Motivation Theory, and on the econometric basis of the applied Nested Logit model for the analysis of choice experiment (CE) data.

## 1.1    *Sustainable tourism*

Sustainable tourism is as precisely defined as the sustainable development concept to which a specific definition refers. Following Shaw and Williams (2002) we define sustainable tourism as a form of tourism in which the economic interests of the tourism industry are embedded in a frame of a broader sustainable development of economic, cultural and social issues as well as a careful utilisation of the natural resource base (cf. also WTO, 2004). A related concept is 'ecotourism'. For ecotourism, two main concepts are put forward: one is compatible with the sustainable tourism definition cited above. The second concept exploits the growing public interest in sustainable development issues by using the label "ecotourism" as a mere selling proposition for a specific tourism product ("Eco-Sell"; Wight, 1993). Ecotourism products and services of this second type may not even be intended to promote the aims of sustainable tourism.

## 1.2    *Attitudes toward sustainable tourism*

Attitudes are evaluative judgments that integrate and summarize cognitive, affective and behavioural reactions (Crano & Prislin, 2006). Attitude has been shown to influence specific

pro-environmental behaviours such as consumption (Chan, 2001) or conservation behaviours (Guagnano et al., 1995; Steel, 1996), general pro-environmental behaviour (Grenstad & Wollebaek, 1998), leisure choice (Ajzen & Driver, 1992*a*), and choice of travel mode (Verplanken et al., 1994). In turn, tourist destination experiences have the potential to shape tourist attitudes (Lee & Moscardo, 2005). The relationship between attitudes as described by socio-psychological theory on the one hand, and behaviour or behavioural intentions on the other led to interest in environmental attitudes as predictors for environment action. In particular, willingness-to-pay as elicited by stated preference methods such as contingent valuation or choice experiment can be interpreted as a behavioural intention (Ajzen & Driver, 1992*b*; Kotchen & Reiling, 2000).

To our knowledge, no published set of questionnaire items exists that specifically assesses attitudes toward sustainable tourism. Many environmental attitudinal items are based on the rather general New Ecological Paradigm (NEP) (Dunlap et al., 2000). NEP scales have been used to segment (Zografos & Allcroft, 2007) and profile (Luzar et al., 1998) target groups for 'ecotourism' or nature based tourism. This approach was also used by Li and Cai (2004) for visitors to Baihuashan Nature Reserve near Beijing, and Li (2005) for visitors of Taibai National Park (Shanxi Province). Because of the general scope of NEP, these studies do not specifically investigate tourist attitudes toward sustainable tourism; neither do they focus on behavioural intentions with regard to sustainable tourism services (for a similar approach, see Tao et al., 2004).

'Attitudinal' variables derived from socio-psychological theory are included in stated preference surveys – such as those using the CE method - as a standard (Batemann et al. 2002). One suitable socio-psychological theory is Protection Motivation Theory (PMT) which belongs to the rational choice approaches in psychology. Central to PMT are variables that operationalise perceived threat and coping appraisals (Rogers & Prentice-Dunn 1997). It is postulated that a higher level of perceived threat as well as a higher coping appraisal are likely

to result in higher intentions for a suitable "adaptive" action. For environmental applications, perceived threat consists of three cognitive dimensions: the individual values affected, the frequency or likelihood with which a risk may materialize, and the severity of the threat if it materializes. The coping appraisal consists of beliefs in the general suitability of a risk mitigation strategy, and beliefs in the individual's own ability to apply such a strategy. Additionally, costs and situational barriers may influence the formation of a behavioural intention.

PMT was originally developed to foster individual health-related behaviours (Floyd et al. 2000) but it was quickly adapted for the investigation of pro-environmental behaviour (e.g., Hass et al., 1975; Martens & Rost, 1998), for which it is a prime methodological choice (Homburg & Stollwerk, 2006). PMT is also used in marketing and recreation contexts (Graefe, 1998; Gramann et al., 1995; Tanner et al., 1991). For example, Gramann et al. (1995) documented by a laboratory study that the awareness of possible sanctions ('threat appraisal') was the strongest attitudinal predictor for intentions to obey rules on outdoor recreation. Similarly, the perceived threat because of personal security issues was a better predictor for travel intentions than previous visits to a region (Graefe, 1998).

With regard to economic valuation studies, PMT items have been used, e.g., to explain economic preferences for species conservation in the Amazonian rainforests (Menzel, 2003), for soil conservation measures by Chilean small holders (Huenchuleo et al., *in preparation*), for additional tourism infrastructure in southern Patagonia (Cerda et al., 2006), or for village-based resource conservation programs in rural Indonesia (Barkmann et al., *in preparation*).

## 1.3   *A destination choice experiment (CE)*

Choice experiment surveys are used in marketing research to elicit economic preferences for product characteristics. For tourism research applications, it allows for the quantitative investigation of tourist destination choices by the econometric estimation of destination

choice models based on destination or trip characteristics (Eymann & Ronning, 1997; Mao et al., 2005). Choice experiments (Hanley et al., 2002, Hensher et al., 2005) have proven to be a versatile stated preference method. The method conforms to the requirements of the U.S. National Oceanic and Atmospheric Administration (NOAA; Arrow et al., 1993) for methods that generate preference data to be used in U.S. courts of justice for environmental damage assessment. Answers to hypothetical destination choice questions have been shown to reflect actual destination choice well (Haener et al., 2001). Compared to conditional logit models, nested logit models as well as mixed and random parameter logit models are increasingly used for econometric estimation because they (i) allow for less restrictive assumptions on the structure of respondent preferences, (ii) account better for preference heterogeneity, and (iii) often result in improved model fit (Hensher et al., 2005: 530). For recent reviews and manuals on a state-of-the-art application of the CE methods refer, e.g., to Bateman et al. (2002), Louviere et al. (2000), or Hensher et al. (2005).

Examples for choice experiment studies include studies on biodiversity and ecosystem service impacts of village development and conservation programs (Barkmann et al., 2007; Glenk et al., 2006), or the evaluation of rainforest conservation options in global biodiversity hotspots (Naidoo & Adamowicz, 2005). Several CE studies included a focus on tourism related attributes. For example, the method was used for the investigation of pricing alternatives regarding Australian destinations (Morley, 1994), climate change effects on destination choice (Braun et al., 1999), ecotourism development in Costa Rica (Hearne and Salinas, 2002), recreation demand in Scotland (Hanley et al., 2002), or local preferences for additional tourism infrastructure (Cerda et al., 2006). A first detailed, CE-based assessment of tourist responses to pro-environmental destination characteristics and/or sustainable tourism services planning options was recently published (Kelly et al., 2007).

# 2    Methods used in this study

## 2.1    *Attitudinal items*

The items we designed refer to four aspects of sustainable tourism: pro-environmental behavioural restrictions, nature and resource conservation programs, local community involvement, and cost of the offered sustainable tourism services (for examples, see Table 1). In all, 17 items on attitudes toward sustainable tourism were included. We used a closed answer format with a 5-point Likert scale (1: totally disagree to 5: totally agree). For details of item construction, please refer to Zschiegner (2006).

Table  1. Examples of attitudes toward sustainable tourism items

- In my opinion, extra fees for tourism services, such as green buses, are just an excuse to charge more and rip-off tourists. (the *sceptical attitude* dimension)[§]
- I am really afraid of losing the future opportunity for travel enjoyment in southwestern China if the tourism development is not done in a sustainable manner. (the *concern of loosing future opportunity* dimension)
- Making sure that the members of a local community can run tourism-related businesses is essential for harmonious tourism development in southwestern China. (the *in favour of sustainability* dimension)
- Green buses really contribute to keeping the air of destinations clean, and keeping the place quiet. (the *in favour of sustainability* dimension)

[§]: Phrase in parenthesis identifies the sustainable tourism attitude dimension to which the item was assigned by factor analysis (see results section).

## 2.2    *Preparation of the Choice Experiment survey*

The destination area chosen for the CE is mountainous southwestern China, a global biodiversity hotspot (Myers et al., 2000) and officially designated tourism development area (Ge, 2002). First, we identified attributes that characterize southwestern China destinations. To optimize this step, the first author conducted 13 qualitative in-depth interviews with Chinese middle class consumers interested in travelling to southwestern China in spring 2005. From lists of factors that tourists paid most attention to when making their decisions to take a trip, the following attributes were identified to describe nature- and landscape-related trips

(Table 2). Sustainable tourism services is the only attribute designed by researchers due to research interests.

Table 2. Destination attributes and attributes levels used in choice experiment

| Destination Attribute | Attribute levels |
|---|---|
| **Convenience at places just outside of attraction site** | 1. No car roads, only trails; no hotels or hostels, tourists need to bring their own food;<br>2. Difficult motor access; several simple hostels or hotels;<br>3. Old roads; some common hotels and restaurants;<br>4. National roads and highways; many hotels from two stars to four or five stars, and many restaurants; |
| **Possibility of experiencing Nature**<br><br>**"Tarnished nature experience"**[§] | 1. Sense of solitude and tranquillity; no tourism infrastructure; no other visitors;<br>2. At times, some basic tourism infrastructure (restaurants, stores, toilets) visible; meet other people every hour;<br>3. Have big scale tourism infrastructure (cable car, Karaoke), always be aware of "this is a tourism place"; meet other people every minute;<br>4. Many kinds of tourism infrastructures everywhere; many "artificial" attractions; very crowded; |
| **Cultural attractions** | 1. None;<br>2. Some traditional old buildings mixed with many modern buildings; no original living culture;<br>3. Several traditional local architectures mixed with many modern houses; one temple without usage any more; modernized local customs and culture;<br>4. Well preserved traditional local architectures; temples with monks and play roles in local people's life; and well preserved original customs and culture; |
| **Natural attractions** | 1. Ordinary landscapes; no precious or attractive species;<br>2. Magnificent awe-inspiring natural landscapes; no precious or attractive species;<br>3. Ordinary landscapes, many precious species and very abundant/rich species-rich biodiversity (Panda, Golden Monkey);<br>4. Magnificent awe-inspiring natural landscapes, many precious species and very abundant/rich species-rich biodiversity (Panda, Golden Monkey); |
| **Sustainable tourism services** | 1. Freely visit every place; no visitor restriction; no resource saving or recycling; no community involvement;<br>2. Small conservation program only for core area; total amount of visitors restricted; litter/trash cans; community based business-restaurants, hostels and small hotels, local specialty stores and horse riding service;<br>3. Having buffer zone; scientific conservation program for core area and buffer zone; green buses, bio energy use and waste water treatment; local community participates in decision making in local development, and local business involvement(see above); |
| **Cost (local transportation, lodging, food, entrance fee and other expenses)** | 1. 780 RMB;<br>2. 1440 RMB;<br>3. 2400 RMB;<br>4. 4200 RMB;<br>5. 7200 RMB |

[§]: The attribute "possibility of experiencing nature (Tarnished nature experience)" has two names. In the choice cards we use the neutral name of "possibility of experiencing nature" to avoid bias caused by wording. In analysis, we used the name "tarnished nature experience" to better reflect the contents of the attribute.

For each attribute, three to five levels were identified based on representative conditions of tourism attraction sites in southwestern China. The level of the cost attribute was designed based on published information on expenses of modest backpackers, self-organized travellers, and costs for commercially organized group-trips, as well as for luxury trips including renting vehicles with drivers.

A CE study on ecotourism development in Costa Rica (Hearne & Salinas, 2002) also used a travel convenience attribute as well as access restrictions on certain trails at the destination site. That survey included an open question on attitudes toward site congestion; no attribute similar to our tarnished nature experience was included in the CE, though. With regard to the sustainable tourism services attribute, Kelly et al. (2007) included environmental friendly transportation options, the amount of protected area as well as resource saving options (renewable energy use and waste recycling) as independent attributes in their CE.

From the attributes and attribute levels, 3,840 ($4^4*3*5$) single choice scenarios can be generated. An orthogonalisation procedure was used to recover a main effects design, consisting of 24 pair-wise comparisons of destination scenarios. The scenarios were randomly blocked into three groups, each with eight choice sets. In face-to-face interviews, each respondent was presented with eight choice sets. An example of a choice set is shown in Figure 1. The CE instrument was iteratively improved by qualitative pre-test interviews, and a pilot study in Beijing (n=50) in autumn 2005.

| Place A | |
| --- | --- |
| Convenience at place just outside of attraction site | – Old roads;<br>– Some hotels/ restaurants |
| Possibility of experiencing nature | – Big scale tourism infrastructure (cable car, Karaoke);<br>– Always be aware of "this is a tourism place";<br>– Meet other people every minute |
| Sustainable tourism services | – Freely visit every place;<br>– No resource saving;<br>– No community involvement |
| Cultural attractions | – Well preserved traditional buildings;<br>– Temples (alive);<br>– Original customs and culture |
| Natural attractions | – Ordinary landscapes;<br>– Many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 2400RMB |

| Place B | |
| --- | --- |
| Convenience at place just outside of attraction site | – Old roads;<br>– Some hotels/ restaurants |
| Possibility of experiencing nature | – Sense of solitude and tranquility;<br>– No tourism infrastructure;<br>– No other visitors |
| Sustainable tourism services | – Small conservation program only in core zone (e.g. wild animal monitoring and protection, etc);<br>– Community based restaurant/ hostel/small hotel;<br>– local specialty stores |
| Cultural attractions | – Some traditional old buildings/ modern houses;<br>– No original culture alive |
| Natural attractions | – Magnificent awe-inspiring natural landscapes;<br>– No precious or nice species; |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 4200RMB |

Opt out: I would rather like to spend my money on a better trip offered, and have my vacation enjoyment on another trip.

Figure 1. Example of a choice set cards (English text version)[2]

## 2.3   Administration of the CE survey

The CE (n=213 middle class respondents) was conducted in two national tourist source areas: Beijing (about 14.8 million citizens) representing East Coast agglomerations, and the provincial capital city of Chengdu (Sichuan Province), one of the biggest urban agglomerations in southwest China (around 10 million citizens). The investigation was conducted in two source areas to prevent self-selection bias of tourists at the destination site. As interviewers, we employed and carefully trained local university graduate students. Eight city sub-districts in Beijing and Chengdu were randomly selected from twelve suitable sub-districts each. The 24 districts were identified by the following two criteria:

· typical price range of apartments for middle class customers;

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[2] The Chinese version and English version choice sets with visual aids are available at: http://www.uni-goettingen.de/de/sh/47518.html.

· availability of public spaces or accessible semi-public spaces inside gated residential compounds to contact respondents;

The public and semi-public spaces included shopping malls, supermarkets, outdoor markets, parks, restaurants and tea houses, gardens and other open compound spaces.

A quota sampling procedure provided the best way to interview the middle class target group. Three sampling criteria (quota) were applied: (i) equally distributed genders; (ii) age range 20 to 60; (iii) even recruitment of respondents in 16 selected sub-districts. The starting level income was set at a monthly income above 1,500 RMB in Beijing and 1,250 RMB in Chengdu.

All respondents confirmed that they like travelling before the formal interview started. After explaining the purpose of the study, each respondent was asked eight times to choose from the prepared choice sets. Each choice set consisted of two different "scenarios" representing tourism trips to southwestern China (Cards A and B), and an opt out/buy nothing option (see Figure 1). In a final section of the interview, socio-demographic questions were asked. A sub-sample of respondents (n=112) was also asked attitude questions based on Protection Motivation Theory (PMT). Overall, a total of 1,704 choices were observed from 213 respondents.

## 2.4    *Statistical and econometric analysis*

A varimax rotated factor analysis with binary squared Euclidean distance and Ward-linkage (Kroemker, 2004) was employed to generate empirical dimensions of attitudes toward sustainable tourism. To calculate the individual values of the dimensions, we used those items per dimension that had a factor loading in excess of 0.4. Factor analyses as well as parametric standard procedures (bivariate Pearson correlation) were conducted with SPSS 12.1.

For the analysis of the CE data, a set of Nested Logit models (NL) was calculated with NLOGIT 3.0. Preliminary analyses indicated the risk of violations of the independence from

irrelevant alternatives (IIA) condition necessary for the application of (the simpler) conditional logit analysis. Because NL does not rely on the IIA assumption, an eligible NL tree structure was identified, and the corresponding models estimated. In effect, we did not use the NL model to actually approximate a 'nested' choice process (e.g., first decide if the "buy nothing" option is better than the offered trips; if not, choose among the offered trips). Instead, we used the NL procedure to account for systematically differing error variances between the choice cards that can lead to IIA violations (see Hensher et al. 2005: 418). The inclusive value was set to 1.0 for the degenerated branch, and the model initiated with starting values obtained from a non-nested NL model (Hensher et al. 2005: 536). All scale parameters were normalized at the lowest level (RU1).

A NL model was compared with a conditional logit model in CE study on recreation demand in Scotland (Hanley et al., 2002). Although the IIA condition was violated, willingness-to-pay estimations between both models differed only slightly.

To test for the influences of attitude toward sustainable tourism dimensions on preferences, interaction terms between attributes and dimensions were generated. These interaction terms were included one-by-one as single terms into a NL base model. All models include an alternative specific constant (ASC) coded 1 for the generic choices A and B, and 0 for the "opt out/buy nothing" option. The ASC expresses a fundamental propensity to make (or not to make) a trip to southwestern China beyond the information given during the CE.

With NL procedures, we estimated an additive utility function of the form

$$U = b_1 * \text{attribute}_1 + \ldots + b_6 * \text{attribute}_6 + b_i * \text{interaction}_i + b_{asc} * \text{ASC}$$

with

$b_1 \ldots b_6$: estimated coefficients of the respective attributes up to and including the cost
attribute $b_6$;

$b_i$: estimated coefficient of an interaction term between attribute values and attitudinal variable$_i$;

$b_{asc}$: estimated coefficient of the Alternative Specific Constant.

Because the coefficients of the interaction terms $b_i$ are estimated with individually varying attitudinal variables, these coefficients represent some of the preference heterogeneity within the sample. Marginal willingness-to-pay values for the sustainable tourism services attribute are calculated as the ratio of the coefficient $b_3$ of the sustainable tourism services attribute and the negative value of the cost attribute coefficient $b_6$. The marginal unit in this analysis represents a 1 level change between adjacent attribute levels. In Figure 2, marginal WTP values calculated with the interaction term between the sustainable tourism services attribute and one specific attitudinal dimension are plotted against an ordered list of respondents to illustrate preference heterogeneity.

## 3  Results

The average age of the respondents was 35.6 years. A gender ratio of 56.3% male and 43.7% female was achieved. In Beijing, respondent mean monthly income was ~3,440 RMB (~344 €); in Chengdu it was ~2,380 RMB (~238 €). The overall average income was ~2,890 RMB (~289 €) which corresponds to the upper middle class income category according to official Chinese income statistics (CNBS, 2005). Sixty-nine percent (69%) of the respondents had an educational background equivalent to a bachelor degree or above.

Factor analysis singled out five dimensions generated from the attitudes toward sustainable tourism items, of which the three strongest were selected according to their satisfactory inter-item correlations. The three dimensions are (item mean±SD; Cronbach's Alpha): *in favour of sustainability* (4.04±0.40; 0.84), *concern for losing opportunities* (4.11±0.51; 0.70), and *sceptical attitude on sustainable tourism services* (3.52±0.49; 0.58). While the *in favour of sustainability* dimension explains over one quarter of factor analysis variance (26.3%), the

*concern for losing opportunities* dimension explains 11.1%, and the *sceptical attitude* dimension 7.2%. A total of 44.6% of variance was explained by these three attitudinal dimensions.

Tests of bivariate Pearson correlations between socio-demographic variables and the sustainable tourism attitudinal dimensions showed that only education ($p<0.001$) significantly influences the *concern for losing future opportunities*. Income ($p=0.076$) has a tendency toward statistical significance on the *concern for losing future opportunities.*

In the base NL model (Table 3), all attributes emerged as significant determinants of destination choice except *sustainable tourism services* ($p=0.6778$). *Tarnished nature experience*, *cultural attractions, natural attractions* and the *cost* attribute were most highly significant ($p<0.001$), convenience was highly significant at $p<0.01$. The ASC was also significant ($p<0.05$) indicating a general positive propensity to choose a trip to southwestern China.

Table 3. Nested Multinomial Logit Model Result for destination attributes

| Attribute | Coefficient |
|---|---|
| Convenience | 0.1153** |
| Tarnished nature experience | -0.2175*** |
| Sustainable tourism services | 0.0197 |
| Cultural attractions | 0.1352*** |
| Natural attractions | 0.2787*** |
| Cost[1000RMB] | -0.1537*** |
| [Non-status quo ASC] | 0.4129* |
| Log Likelihood function | -1635.8 |
| P(Chi$^2$); DF | <0.0001; 8 |
| Pseudo R$^2$ (constant only) | 0.076 |
| Inclusive value (IV) | 0.9072 |

***: significant at $p\leq0.001$; **: significant at $p\leq0.01$; *: significant at $p\leq0.05$; no indication: not significant. The non-status quo ASC in brackets as it is a NL model predictor of destination choice but not a destination attribute. DF: degree of freedom; Pseudo R$^2$ values in reference to a constant only model: values between 0.07-0.08 correspond to R$^2$ values of 0.22 to 0.24 in for the linear model equivalent (Hensher et al.2005:338). IV statistic is highly different from 1; n=213.

All three sustainable tourism dimensions yielded significant interaction terms with attributes when included one-by-one in addition to the attribute terms of the base model, although at highly differing frequencies (Table 4). The *in favour of sustainability* dimension only influenced the importance of the *cost* attribute (p=0.037). The *concern for losing opportunities* revealed negative statistical significance if interacted with the *convenience* attribute (p=0.046). This dimension also had a weak tendency to influence the *sustainable tourism services* attribute negatively (p=0.0918, data not shown). The *sceptical attitude toward sustainable tourism* dimension influenced the importance of all destination attributes on choices. All signs of the interaction term coefficients are negative. For the *cost* attribute, the interaction was so strong that the non-interacted original attribute lost its significant influence on choices.

Table 4. Summary of influences of attitude toward sustainable tourism dimensions on destination choice (p<0.1; each line represents results from an independent NL model that expands the base model by the interaction term)

| Attitudes toward sustainable tourism dimension | Interacted with destination choice attribute | Coefficient of attribute term | Coefficient of interaction term |
|---|---|---|---|
| *In favour of sustainability* | Cost | -0.4162*** | 0.0214* |
| *Concern for losing opportunities* | Convenience | 0.4461* | -0.0432* |
| *Sceptical attitude on sustainable tourism services* | Sustainable tourism services | 0.6546*** | -0.106*** |
| | Convenience | 0.6281** | -0.0931*** |
| | Tarnished nature experience | 0.3996* | -0.0998*** |
| | Cultural attractions | 0.4627** | -0.0632* |
| | Natural attractions | 0.5758*** | -0.0524* |
| | Cost | 0.0748 | -0.041** |
| | [Non-status quo ASC][§] | 2.55*** | -0.334*** |

***: p≤0.001; **: p≤0.01; *: p≤0.05; no indication: not significant; [§]the ASC in brackets as it is a NL model predictor of destination choice but not a destination attribute. n=112.

In particular, if the interaction term of the *sceptical attitude* with the *sustainable tourism services* attribute was included, the non-interacted *sustainable tourism services* attribute

(coefficient value: 0.6546; p<0.001) as well as the interaction term both become significant (coefficient value: -0.106; p=0.001). The opposite sign of the coefficients point at a counterbalancing, negative effect of the *sceptical attitude* dimension in relation to the generally positive preferences for sustainable tourism services as expressed by the positive sign of the coefficient of the non-interacted attribute. The positive coefficient of the non-interacted attribute term indicates a constant utility improvement of 0.655 for each successive ('marginal') improvement of the *sustainable tourism service*s level. This effect was counterbalanced for each of the improvements, however, by a disutility of -0.106 times the *sceptical attitude* score. In sum, respondents who were more *sceptical* tended to view better developed sustainable tourism services less positively.
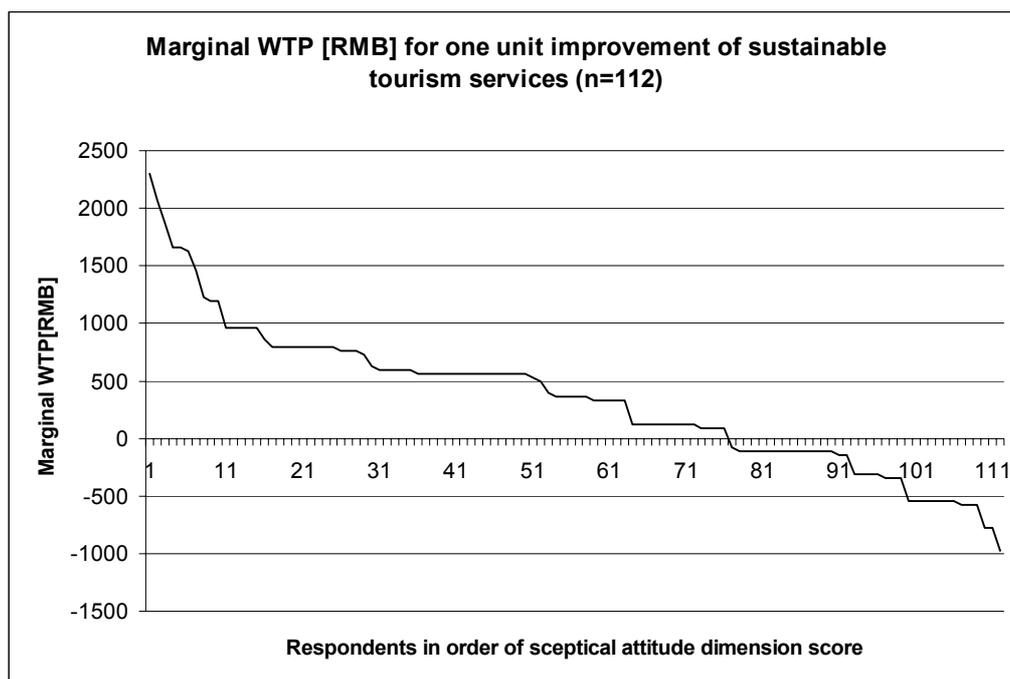


Figure 2. Marginal WTP for one unit improvement of *sustainable tourism services*

The average willingness-to-pay (WTP) of the respondents was 342 RMB (~34 €) per marginal unit of the sustainable tourism services attribute. Figure 2 shows the overview of the marginal WTP for one unit of improvement of the *sustainable tourism services* attribute for

all attitudinal questionnaire respondents (n=112). Respondents are ordered along the horizontal axis according to their *sceptical attitude* scores, which become more negative from left to right with the vertical axis denoting WTP. WTP declines persistently as respondent attitude gets more sceptical. For the 36 most sceptical respondents (32% of sub-sample), WTP becomes negative.

## 4    Discussion and conclusion

We employed a destination choice experiment to analyze preference patterns of quota-sampled Chinese domestic middle class consumers from Beijing and Chengdu. *Convenience, tarnished nature experience, cultural and natural attraction*s and *cost* emerged as significant predictors of destination choice. Ranging from -979 RMB (~98 €) to 2,300 RMB (~230 €), preferences for *sustainable tourism services* were not generally positive. Because the quota-sampling approach cannot guarantee representativeness of the sample for the entire population of Chinese middle class consumers, the reported data on absolute willingness-to-pay values should be treated with caution; there are no indications in the sample, however, that the discussed influences on WTP are actually biased.

In a study on preferences for ecotourism development in Costa Rica (Hearne & Salinas, 2001), travel convenience also emerged as a highly significant predictor of destination choice. While measures that avoid visitor congestion were positively valued by foreign tourists, this attribute became only weakly significant (p=0.068) for domestic tourists. In contrast, our results indicate that Chinese domestic tourists highly appreciate an untarnished nature experience that is characterised, for example, by the absence of visitor congestion. Costa Rican tourists are reportedly indifferent to congestion effects. Kelly et al. (2007) report that Canadian mountain resort visitors have positive preferences for pro-environmental transportation options, medium-sized protected areas as well as efforts in renewable energy use and waste recycling. For accessibility with automobiles as well as for the amount of

protected area, an inversely U-shaped utility function indicates, however, that severe access restrictions are not appreciated.

For the remainder of the discussion, we focus on the *sustainable tourism services* attribute. On average, the surveyed middle class respondents displayed, at face value, a supportive attitude for sustainable tourism services (mean score of ~4.0 for the *in favour of sustainability* dimension). However, this dimension did not significantly influence any of the investigated non-monetary aspects of destination choice. Consequently, high scores in this dimension are not predicted to result in any increased WTP for sustainable tourism services that one may have expected. This result indicates a gap between stated attitudes toward sustainable tourism services and the stated intention to actually buy the respective services as expressed in the CE. Similarly, Chinese domestic tourists appeared to be afraid that valuable tourism resources could get lost (mean score of ~4.1 for the *concern for losing opportunities* dimension). Also in this case, we could not detect positive influence of this dimension on WTP for sustainable tourism services.

A number of other empirical studies document a gap between pro-environmental attitudes and pro-environmental behaviour (e.g., Nordlund & Garvill, 2002). There are different arguments to explain this gap. Hashimoto (2000) reports that tourism industry employees in China believe that government or society are responsible for solving environmental problems. Consequently, the individual respondents assumed only little responsibility in relation to the environment (Hashimoto, 2000: 142-143). If this pattern of an external attribution of responsibility is also valid for Chinese domestic tourists at large, it could explain the coexistence of positive attitudes on sustainable tourism services but low actual economic commitment. Another perspective is provided by social psychology research on self-efficacy (Bandura, 1997). If a single tourist does not think that s/he can actually accomplish anything to improve the environmental situation, very low intentions to act in accordance with sustainable tourism goals are predicted. Free-rider behaviour (Cornes & Sandler, 1996) could

also play a role. Respondents may reject the idea of spending their *private* money on such services - while hoping to enjoy the *public* benefits generated by someone else's spending.

In our study, the results of the interaction analysis with the *sceptical attitude* dimension provide the most specific explanation. In contrast to the other attitude dimensions, the degree of scepticism expressed toward sustainable tourism services does form a statistically and materially significant interaction term with the *sustainable tourism services* attribute. Thus, destination choice *does* depend on the level of offered sustainable tourism services. The influence, however, depends on the extent to which respondents refrain from subscribing to popular sceptical notions such as "sustainable tourism is just another way of charging a higher price". According to our NL model, a highly *sceptical attitude* prevents 32% of respondents from expressing any economic appreciation of sustainable tourism services. The choice model even predicts that highly sceptical attitudes can decrease the probability of choosing "more sustainable" trips compared to other trips at the same price. Even if this detail turns out to be an artefact of the specific functional form of the utility function used in estimating the NL model, the fact remains that only two thirds of respondents with a below-average scepticism score were positively influenced by sustainable tourism services offers. On the other hand, there is a real possibility that a substantial fraction of respondents genuinely does not appreciate the more extensive sustainable tourism services levels. Reasons could be fear for worsening general tourism services in case of strong local community participation as well as strong preferences for free access to all parts of the attraction site (cf. results from Kelly et al. 2007). As we used a comprehensive *sustainable tourism services* attribute (see Table 2), we can not test for the influences of the different components of this attribute. In any case, the remaining third poses what we call the sceptics' challenge to sustainable tourism in the Chinese domestic tourism market.

The sceptics' challenge may retard the adoption of more sustainable modes of tourism development in southwestern China. Most significantly, there appears a substantial risk that

even if trips with improved sustainable tourism services are increasingly offered, these more sustainable business practices are not rewarded in the market place. Early sustainable tourism initiatives are certainly desirable; wide-spread economic failure of premature initiatives would be counter-productive, however.

As discussed earlier in this paper, existing research on improving the conditions for sustainable tourism in China focuses on supply side factors, such as administration structure, policy, financial shortage and staff skills (e.g., Fang, 2002; Nianyong & Zhuge, 2001). In the face of uncertain demand, a supply side (or administrative planning) approach has its merits as it may define minimum levels of resource protection. Two thirds of respondents positively inclined toward sustainable tourism services make a substantial point, though, for taking a closer look also at demand side strategies to safeguard the environmental and cultural integrity of southwestern China destinations.

Our study was not designed to generate solutions to the challenge posed by the restricted appreciation of sustainable tourism services. The investigated correlations between socio-economic and attitudinal factors give only limited guidance here. Respondents with a higher formal education are more concerned about losing future opportunities. The same holds for the tendency of respondent income to influence individual *losing future opportunities* dimension scores. This attitude dimension reduces preferences for travel and accommodation convenience; however, it does not appear to influence WTP for sustainable tourism services in a desirable direction. Regarding tourists in Australia, Lee & Moscardo (2005:563) suggest that positive tourism experiences may strengthen pro-environmental attitudes. Consequently, tourist interests in future 'ecotourism' experiences are raised. As Chinese domestic tourists have little occasion to positively experience sustainable tourism services today because of limited supply, such experiences may be necessary to gradually overcome prevalently sceptical attitudes. Carefully targeted marketing strategies may be called for that address the scepticism regarding sustainable tourism services. One promising approach would focus on

providing and communicating sustainable tourism services that are clearly important and demonstrably effective. Access restriction to the most sensitive areas may be indicated ecologically but need to be communicated particularly carefully.

A second, immediately promising approach would focus on customer segmentation specifically addressing less sceptical consumers. Customer segmentation between overnight visitors and day visitors in the study by Kelly et al. (2007) generated substantially differing preference pattern for a number of investigated sustainable tourism options. Because two thirds of our respondents react favourably to the proposition to pay more for improved sustainable tourism services, there appears to exist an economic potential for such a strategy.

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## References

Ajzen, I., and Driver, B. L. (1992a). Application of the theory of planned behaviour to leisure choice. Journal of Leisure Research, 24 (3), 207-224.

Ajzen, I., and Driver, B. L. (1992b). Contingent value measurement: on the nature and meaning of willingness-to-pay. Journal of Consumer Psychology, 1, 297-316.

Arrow, K., Robert, S., Portney, P.R., Leamer, E.E., Radner, R.and Schuman, H. (1993). Report of the NOAA panel on contingent valuation. Federal Register, 58(10), 4602-4614.

Bandura, A. (1997). Self-efficacy: the exercise of control, Freeman Press, New York.

Bao, J., Zheng, H. and Dai, G. (2002). The evolvement of spatial structure and the significance of Guilin's domestic tourist origins. ACTA Geographica Sinica, 57(1), 96-106.

Barkmann, J., De Vries, K., Dietrich, N., Glenk, K., Keil, A., Leemhuis, C. and Marggraf, R. (in preparation). Confronting unfamiliarity with ecosystem functions: the case for an ecosystem service approach to environmental valuation with stated preference methods.

Barkmann, J., Glenk, K., Handi, H., Sundawati, L., Witte, J.-P. and Marggraf, R. (2007). Assessing economic preferences for biological diversity and ecosystem services at the central Sulawesi rainforest margin - a choice experiment approach, in T. Tscharntke, , C. Leuschner, M.Zeller, E. Guhardja and A. Bidin, (eds. pp. 181-208), The stability of tropical rainforest margins – linking ecological, economic and social constraints of land use and conservation, Springer, Berlin.

Bateman, I.J., Carson, R.T., Day, B., Hanemann, M., Hanley, N., Hett, T., Jones-Lee, M., Loomes, G., Mourato, S., Ozdemiroglu, E., Pearce, D.W., Sugden, R. and Swanson, J. (2002). Economic valuation with stated preference techniques – a manual. Edward Elgar Publishing Limited, Cheltenham.

Braun, O., Lohmann, M., Maksimovic, O., Meyer, M., Merkovic, A., Messerschmidt, E., Riedel, A. and Turner, M. (1999). Potential impact of climate change effects on preferences for tourism destinations: a psychological pilot study. Climate Research, 11(3), 247-254.

Cater, E. A. (2000). Tourism in the Yunnan great rivers national parks system project: prospects for sustainability. Tourism Geographies, 2(4), 472-489.

Cerda, C., Barkmann, J. and Marggraf, R. (2006). Economic non-market valuation of biological diversity of Navarino Island, Patagonia (Chile) in the context of the CBD ecosystem approach, in C. Cerda, (doctoral dissertation), Valuing biological diversity in Navarino Island, Cape Horn Archipelago, Chile-A Choice Experiment Approach (pp. 94-133), Georg-August-Universität Göttingen, Germany.

Chan, R. (2001). Determinants of Chinese consumers' green purchase behaviour. Psychology & Marketing, 18, 389-413.

CNBT (China National Bureau of Tourism) (2006). Major statistics of Chinese tourism 2005, online document at URL http://www.cnto.org/chinastats.asp#5, accessed February 2, 2007.

CNBS (China National Bureau of Statistics) (2005). China statistical yearbook 2005, China Statistics Press, Beijing.

Cornes, R. and Sandler, T. (1996). The theory of externalities, public goods and club goods, (2nd ed.), Cambridge University Press, Cambridge (UK).

Crano, W. and Prislin, R. (2006). Attitudes and persuasion. Annual Review of Psychology, 57(1), 345-374.

Dunlap, R.E., Van Liere, K.D., Mertig, A.G.and Jones, R.E. (2000). Measuring endorsement of the new ecological paradigm: a revised NEP scale. Journal of Social Issues, 56, 425-442.

Eymann, A. and Ronning, G. (1997). Microeconometric models of tourists' destination choice. Regional Science & Urban Economics, 27, 735-761.

Fang, Y. (2002). Development ecotourism in Western Sichuan, China: replacing the forestry-based economy. Mountain Research and Development, 22(2), 113-115.

Floyd, D. L., Steven, P. D. and Rogers, R.W. (2000). A Meta-analysis of research on protection motivation theory. Health Education & Behaviour, 27(5), 591-615.

Ge, Q. S. (2002). Strategy of exploring tourism in Western China. Chinese Tourism Press, Beijing.

Glenk, K., Barkmann, J. and Marggraf, R. (2006). Unveiling regional preferences for biological diversity in central Sulawesi: a choice experiment approach. STORMA discussion series, online document at URL http://ufgb989.uni-forst.gwdg.de/DPS/index.htm, accessed March 2, 2007.

Graefe, A.R. (1998). Determining future travel behaviour from past travel experience and perceptions of risk and safety. Journal of Travel Research, 37(2), 171-177.

Gramann, J.H., Bonifield, R.L. and Kim, Y. (1995). Effect of personality and situational factors on intentions to obey rules in outdoor recreation areas. Journal of Leisure Research, 27(4), 326-343.

Grendstad, G. and Wollebaek, D. (1998). Greener still? An empirical examination of Eckersley's ecocentric Approach. Environment and Behaviour, 30, 653-675.

Guagnano, G. A., Stern, P. C. and Dietz, T. (1995). Influences of attitude-behaviour relationships: a natural experiment with curbside recycling. Environment and Behaviour, 27, 699-718.

Haener, M., Boxall, P. and Adamowicz, W. (2001). Modelling recreation site choice: do hypothetical choices reflect actual behaviour? American Journal of Agricultural Economics, 83, 629-642.

Hanley, N., Wright, R.E. and Koop, G. (2002) Modelling recreation demand using choice experiments: climbing in Scotland. Environmental and Resource Economics, 22(3), 449-466.

Hashimoto, A. (2000). Environmental perception and sense of responsibility of the tourism industry in Mainland China, Taiwan and Japan. Journal of Sustainable Tourism, 8(2), 131- 146.

Hass, J.W., Bagley, G.S. and Rogers, R.W. (1975). Coping with the energy crisis: effects of fear appeals upon attitudes toward energy consumption. Journal of Applied Psychology, 60 (6), 754-756.

Hearne, R. and Salinas, Z.M. (2002). The use of choice experiments in the analysis of tourist preferences for ecotourism development in Costa Rica. Journal of Environmental Management, 65, 153-163.

Hensher, D. A., Rose, J. M. and Greene, W. (2005). Applied choice analysis: a primer, Cambridge University Press, Cambridge (UK).

Homburg, A. and Stolberg, A. (2006). Explaining pro-environmental behaviour with a cognitive theory of stress. Journal of Environmental Psychology, 26 (1), 1-14.

Huenchuleo, C., Barkmann, J., Marggraf, R. and Villalobos, P. (in preparation). Social psychology predictors (PMT) for the adoption of soil conservation measures in central Chile.

Kelly, J., Haider, W., Williams, P. W. and Englund, K. (2007). Stated preferences of tourist for eco-efficient destination planning options. Tourism Management, 28(2), 377-390.

Kotchen, M.J. and Reiling, S. D. (2000). Environmental attitudes, motivation, and contingent valuation of nonuse values: a case study involving endangered species. Ecological Economics, 32, 93-107.

Kroemker, D. (2004). Naturbilder, Klimaschutz und Kultur: Psychologie Forschung aktuell, Weinheim, Basel, Berlin.

Lee, W.H. and Moscardo, G. (2005). Understanding the impact of ecotourism resort experiences on tourists' environmental attitudes and behavioural intentions. Journal of Sustainable Tourism, 13(6), 546-565.

Li, W., Ge, X. and Liu, C. (2005). Hiking trails and tourism impact assessment in protected area: Jiuzhaigou biosphere reserve, China. Environmental Monitoring and Assessment, 108, 279-293.

Li, Y., and Cai, Y. (2004). A study on ecotourists' behavioural characteristics in Beijing: a case study in Baihuashan nature reserve. Geographical Research (地理研究), 23(6), 863-874.

Li, J. (2005). On Chinese ecotourist characteristics and motivational factors: making the Shanxi Taibai national park as an example. Economic Geography（经济地理）, 25(5), 720-727.

Li, W. (2004). Environmental management indicators for ecotourism in China's nature reserves: a case study in Tianmushan nature reserve. Tourism Management, 25(5), 559-564.

Louviere, J., Hensher, D. A. and Swait, J. D. (2000). Stated choice methods: analysis and application, Cambridge University Press, Cambridge (UK).

Luzar, E.J., Diagne, A., Ecgan, C. and Henning, B.R. (1998). Profiling the nature-based tourist: a multinomial logit approach. Journal of Travel Research, 37, 48-55.

Mao, D., Zhang, J. and Bao, H. (2005). A tourist destination choice model based on Lancasterian characteristics theory and destination image theory: theoretical analysis and case study. Geographical Research (地理研究), 24(6), 992-999.

Martens, T. and Rost, J. (1998). The relationship between the perceived threat of environmental problems and the formation of action intention. Zeitschrift fur Experimentelle Psychologie, 45(4), 345-364.

Menzel, S. (2003). Der Beitrag der Protection Motivation Theory für die Zahlungsbereitschaftsäusserungen zur Erhaltung biologischer Vielfalt. Umweltpsychologie, 7, 92-112.

Morley, C. (1994). Experimental destination choice analysis. Annals of Tourism Research, 21(4), 780-791.

Myers, N., Mittermeier, R. A.,  Mittermeier, C. G., da Fonseca, G. A. B. and Kent, J. (2000). Biodiversity hotspots for conservation priorities. Nature, 403, 853-858.

Naidoo, R. and Adamowicz, W. L. (2005). Biodiversity and nature based tourism at forest reserve in Uganda. Environment and Development Economics, 10, 159-178.

Nianyong, H. and Zhuge, R. (2001). Ecotourism in China's nature reserves: opportunities and challenges. Journal of Sustainable Tourism, 9(3), 228-242.

Nordlund, A.M. and Garvill, J. (2002). Value structures behind pro-environmental behaviour. Environment and Behaviour, 34, 740-756.

Rogers, R. and Prentice-Dunn, S. (1997). Protection motivation theory, in D. Gochman (eds.) Handbook of Health Behaviour Research: Vol. 1. Determinants of Health Behaviour: Personal and Social, Plenum, New York.

Shaw, G. and Williams, A. M.  (2002). Critical issues in tourism: a geographical perspective. (2nd ed.), Blackwell Publisher, Oxford.

Steel, B. S. (1996). Thinking globally and acting locally? Environmental attitudes, behaviour and activism. Journal of Environmental Management, 47, 27-36.

Tanner, J. F., Hunt, J.B. and Eppright, D. R. (1991). The protection motivation model: a normative model of fear appeals. Journal of Marketing, 55, 36-45.

Tao, C. H., Eagles, P.F.J.  and Smith, S.L.J.  (2004). Profiling Taiwanese ecotourists using a self-definition approach. Journal of Sustainable Tourism, 12(2), 149-168.

Verplanken, B., Aarts, H.,  Vanknippenberg, A. and Vanknippenberg, C. (1994). Attitude versus general habit-antecedents of travel mode choice. Journal of Applied Social Psychology, 24(4), 285-300.

Wen, J. (2001). Tourism and China's development - policies, regional economic growth and ecotourism, World Scientific, Singapore.

Wight, P. (1993) Ecotourism: ethics or eco-sell? Journal of Travel Research, 31(3), 3-9.

WTO (World Tourism Organisation) (2004). Sustainable development of tourism conceptual definition: World Tourism Organization, online document at URL: http://www.world-tourism.org/sustainable/concepts.htm, accessed September 2, 2006.

WTTC (World Travel and Tourism Council) (2006). China, China Hongkong SAR and China Macau SAR: the impact of travel and tourism on jobs and the economy, online document at URL:

http://www.wttc.org/publications/pdf/FINAL%20WTTC_China%20English.pdf, accessed December 20, 2006.

Wu, B. (1997). A Study on destination choice behaviour of Chinese urban residents. Acta Geographica Sinica, 52(2), 97-103.

Wu, B. and Cai, L. (2005). Spatial modelling - suburban leisure in Shanghai. Annals of Tourism Research, 33 (1), 179-198.

Wu, B. (2001). Comments on master plan of Sichuan province tourism development. Urban Design & Planning (城市规划), 4, 21-25.

Zhang, G. (2003). Tourism research in China, in A. A. Lew, L. Yu, J. Ap and G. Zhang, (eds.), Tourism in China (pp. 67-81), The Haworth Hospitality Press, New York, London, Oxford.

Zhang, J., Du, J., Zhou, Y.and Gan, M. (1999). The travel patterns and travel distance of tourists to national parks in China. Asia Pacific Journal of Tourism Research, 4(2), 27-34.

Zhu, R. (2001). Report on the 10th Five-year plan for the national economy and social development of China central government, People's Daily (人民日报), March 17, 2001, Beijing.

Zografos, C. and Allcroft, D. (2007). The environmental values of potential ecotourists: a segmentation study. Journal of Sustainable Tourism, 15(1), 44-66.

Zschiegner, A. K. (2006). Influences of 'harmony'-based Chinese tourists' images of nature on attitudes toward sustainable tourism and on destination choice. Diploma Thesis, Institute of Geography, Georg-August Universität Göttingen, Göttingen (Germany)

# Chapter 2

## Is the Chinese Tourist Ready for Sustainable Tourism? Attitudes and Preferences for Sustainable Tourism Services[1]

Jiong Yan, Ann-Kathrin Zschiegner, Jianchao, Xi, Jan Barkmann, Rainer Marggraf

**Abstract**: The identification of attitudes has been shown to enhance the prediction of consumer behaviour. Chinese tourist attitudes toward sustainable tourism services received little attention, however, as most scientific studies on Chinese sustainable tourism are conducted from a supply side perspective. Here we report results from a study (n=213) conducted in Beijing and Chengdu on the influence of attitudes on sustainable tourism on the economic preferences (willingness-to-pay/WTP) for such services. Two "positive" attitude dimensions received very high agreement ratings, but did not increase WTP. In contrast, the "negative" *sceptical* attitude had a negative effect. For illustration, we apply calculated WTP values to tourism development scenarios of two nature- and landscape-oriented destinations in western China. Scenario comparison demonstrates high risks of non-sustainable tourism development. Once the natural and cultural heritage is compromised and the tourism experience is tarnished, improvements in trip convenience may not offset economic losses of tourism value.

Key words: Sustainable tourism, preferences, attitudes, choice experiment, willingness-to-pay

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# 1   Introduction

The number of registered mainland Chinese domestic tourist trips rose from about 200 million in 1984 (He et al. 1999) to 1,212 million tourists in 2005 (CNBT 2005). Income from domestic tourism in 2005 was 528.6 billion RMB (∼52.86 billion Euro) − which is an increase of 12.2% over 2004 (CNBT 2005). The booming tourism industry in the Peoples Republic of China causes increased energy and resource consumption, and burdens ecologically sensitive areas (Wen 1998, Nianyong & Zhuge 2001). These threats are particularly problematic in southwestern China, which harbours one of 25 global biodiversity hotspots (Myers et al. 2000), and which is a popular tourism region.

Chinese tourism research and planning is traditionally conducted from a supply-side perspective (Bao et al. 2002; cf. Zhang 2003). Regional tourism planning and development as well as tourism impacts are the main research foci since the 1990s (Zhang 2003). The policy encouragement made southwestern China a prevailing region for tourism planning and development research (cf. Cater 2000; Ge 2002; Wu 2001). Lately, the supply-side of ecotourism started to receive some attention (Fang 2002; Li 2004; Wen 1998). In addition to a few demand-side studies initiated in the early 1990s, studies focus on travel distance and relations between tourist source and destination areas (e.g., Bao et al. 2002; Wu & Cai 2005; Wu 1997; Zhang et al. 1999). The importance of demand-side factors such as tourist attitudes and preferences has only recently been acknowledged (e.g., Mao et al. 2005; Zhang & Lu 2004). To our knowledge, no study has yet been conducted that specially targets sustainable tourism aspects from a demand-side perspective in China.

In our paper, we first describe briefly the construction of the sustainable tourism attitude dimensions, and how they influence domestic Chinese tourist destination choice and willingness-to-pay (WTP; see also Yan et al. *accepted*). Finally, we apply the valuation

results to tourism development scenarios for two western Chine destinations using a benefit transfer technique.

# 2    Background and methods

## 2.1    *Attitudes toward sustainable tourism*

Following Shaw and Williams (2002) we define sustainable tourism as a form of tourism, in which the economic interests of the tourism industry are embedded in a frame of a broader sustainable development of economic, cultural and social issues as well as a careful utilisation of the natural resource base (cf. also WTO, 2004).

Attitudes are evaluative judgements that integrate and summarize cognitive, affective and behavioural reactions with respect to a certain mental representation (Arnould et al. 2002). The identification and quantification of attitudes can pragmatically enhance the prediction of consumer behaviour (Bagozzi 1988). Attitude has been shown to influence specific pro-environmental behaviours such as consumption (Chan 2001) or conservation behaviours (Guagnano et al. 1995; Kotchen & Reiling 2000), general pro-environmental behaviour (Grenstad & Wollebaek 1998), and choice of travel mode (Nordlund & Garvill 2002). In turn, tourist destination experiences have the potential to shape tourist attitudes (Lee & Moscardo 2005).

Including a questionnaire used to investigate the self-identification of Taiwanese eco-tourists (Tao et al. 2004), we are not aware of any social science survey instrument that assess tourist attitudes toward sustainable tourism in any detail. Thus, we designed and tested a set of attitude items on sustainable tourism based on variables of the Protection Motivation Theory, a social psychology action theory (PMT, Rogers & Prentice-Dunn 1997).

Table 1. Full list of 17 attitudinal items with assignment to attitudinal dimensions

(see section 3.3)

| Attitudinal dimension (explained variance) | Item | Factor loading |
|---|---|---|
| **In favour of sustainability (26.3%)** | Making sure the members of local community can run tourism related businesses is essential for harmonious tourism development in southwest China. | 0.751 |
| | Having garbage cans is important to protect the beauty of the natural and cultural attractions in southwest China. | 0.746 |
| | My friends and family expected me to feel responsible for maintain the attraction of the site. | 0.714 |
| | It would be a shame if the local people in southwest China would not benefit the most from tourism development in that region. | 0.702 |
| | Every single time when I visit a tourism attraction, I deeply feel that it is my duty to keep the place clean and not to damage anything. | 0.694 |
| | Green buses really contribute to keep the air of destinations clean and keep the place quiet. | 0.639 |
| | It is very important to me that natural heritage in southwest China is preserved. | 0.606 |
| | Involvement of local community into the tourism development planning is a necessary condition to improve the quality of life for the local communities in southwest China. | 0.511 |
| **Concern for losing future opportunities (11.1%)** | I am really afraid of loosing the future opportunity for travel enjoyment in southwest China if the tourism development is not done in a sustainable manner. | 0.748 |
| | I would be very sad if local cultures in southwest China would lose some of their originality because of tourism development. | 0.66 |
| | Without a scientific conservation program in place, many natural destinations in southwest China are in danger of losing their natural attractions. | 0.611 |
| **Sceptical attitude (7.2%)** | It would be a big financial burden for me to pay more for tourism. | 0.795 |
| | If access of visitors to some of most popular attractions in southwest China is not restricted, the attractions may soon be damaged. | 0.744 |
| | In my opinion, extra charge for tourism services such as green buses is just an excuse to charge more (rip off tourist). | 0.434 |
| | Putting a lot of members of local communities in charge of tourism businesses can have bad impact on service quality and trip experience. | 0.427 |
| **Items not included in the dimensions[$]** | I think it is the responsibility of government and tourism operator in southwest China to keep the attraction in the good conditions. | 0.361 |
| | Restrictions of access to popular natural and cultural places in southwest China would greatly reduce their attractiveness to me. | 0.248 |

[$]Items whose factor loading is lower than 0.4 in all three dimensions are not included.

Against the background of the environmental and socio-cultural risks of non-sustainable tourism development, the items refer to four aspects of sustainable tourism: pro-environmental behavioural restrictions, nature and resource conservation programs, local community involvement, and cost of the offered sustainable tourism services. In all, 17 items on attitudes toward sustainable tourism were included (Table 1). We used a closed answer

format with a 5-point Likert scale (1: totally disagree to 5: totally agree). From these items, we constructed attitudinal dimensions based on the results of a factor analysis (see sections 2.4 and 3.3; for further details of item construction, please refer to Zschiegner (2006).

## 2.2   *A destination choice experiment*

For the quantitative investigation of tourist destination choice, destination choice models (Eymann & Ronning 1997) can be constructed, for example, conducted as choice experiments (Hensher et al. 2005; Louviere et al. 2000). Answers to hypothetical destination choice questions have been shown to reflect actual destination choice well (Haener et al. 2001). For recent reviews and manuals on a state-of-the-art application of the CE methods refer, e.g., to Bateman et al. (2002), Hensher et al. (2005), Louviere et al. (2000).

The destination area used for the CE is mountainous southwestern (SW) China, a global biodiversity hotspot and officially designated tourism development area (Ge 2002). From lists of factors that tourists reported to pay most attention to when making a decisions for a trip, the attributes listed in Table 2 were identified. Sustainable tourism services is the only attribute not spontaneously mentioned by interviewees, but included due to research interests. For each attribute, three to five levels were identified based on an analysis of tourism attraction sites in southwestern China. For this paper, the *sustainable tourism services* attribute is of particular interest.

Using a main effects design, 24 pair-wise comparisons of destination scenarios were created, and combined into eight choice sets (see Figure 1). In face-to-face interviews, respondents were presented with eight choice sets each.

Table 2. Destination attributes and attributes levels used in SW China destination choice

experiment

| Destination Attribute | Attribute levels (coding) |
|---|---|
| **Convenience at places just outside of attraction site** | 1. No car roads, only trails; no hotels or hostels, tourists need to bring their own food; (1)<br>2. Difficult motor access; several simple hostels or hotels; (2)<br>3. Old roads; some common hotels and restaurants; (3)<br>4. National roads and highways; many hotels from two stars to four or five stars, and many restaurants; (4) |
| **Possibility of experiencing Nature**<br><br>**"Tarnished nature experience"[§]** | 1. Sense of solitude and tranquillity; no tourism infrastructure; no other visitors; (1)<br>2. At times, some basic tourism infrastructure (restaurants, stores, toilets) visible; meet other people every hour; (2)<br>3. Have big scale tourism infrastructure (cable car, Karaoke), always be aware of "this is a tourism place"; meet other people every minute; (3)<br>4. Many kinds of tourism infrastructures everywhere; many "artificial" attractions; very crowded; (4) |
| **Cultural attractions** | 1. None; (1)<br>2. Some traditional old buildings mixed with many modern buildings; no original living culture; (2)<br>3. Several traditional local architectures mixed with many modern houses; one temple without usage any more; modernized local customs and culture; (3)<br>4. Well preserved traditional local architectures; temples with monks and play roles in local people's life; and well preserved original customs and culture; (4) |
| **Natural attractions[$]** | 1. Ordinary landscapes; no precious or attractive species; (1)<br>2. Magnificent awe-inspiring natural landscapes; no precious or attractive species; (2)<br>3. Ordinary landscapes, many precious species and very abundant/rich species-rich biodiversity (Panda, Golden Monkey); (2)<br>4. Magnificent awe-inspiring natural landscapes, many precious species and very abundant/rich species-rich biodiversity (Panda, Golden Monkey); (3) |
| **Sustainable tourism services** | 1. Freely visit every place; no visitor restriction; no resource saving or recycling; no community involvement; (1)<br>2. Small conservation program only for core area; total amount of visitors restricted; litter/trash cans; community based business-restaurants, hostels and small hotels, local specialty stores and horse riding service; (2)<br>3. Having buffer zone; scientific conservation program for core area and buffer zone; green buses, bio energy use and waste water treatment; local community participates in decision making in local development, and local business involvement(see above); (3) |
| **Cost (local transportation, lodging, food, entrance fee and other expenses)** | 1. 780 RMB;<br>2. 1440 RMB;<br>3. 2400 RMB;<br>4. 4200 RMB;<br>5. 7200 RMB |

[§]The attribute tarnished nature experience shows up in the actual choice cards (Figure 1) under the more neutral description possibility of experiencing nature. [$]the natural attractions level 2 and 3 are coded "2" because there is no "natural" order of the two levels. Base level (opt out option) was coded as 0.

| Place A | | |
| --- | --- | --- |
| Convenience at place just outside of attraction site | – | Old roads; |
| | – | Some hotels/ restaurants |
| Possibility of experiencing nature | – | Big scale tourism infrastructure (cable car, Karaoke); |
| | – | Always be aware of "this is a tourism place"; |
| | – | Meet other people every minute |
| Sustainable tourism services | – | Freely visit every place; |
| | – | No resource saving; |
| | – | No community involvement |
| Cultural attractions | – | Well preserved traditional buildings; |
| | – | Temples (alive); |
| | – | Original customs and culture |
| Natural attractions | – | Ordinary landscapes; |
| | – | Many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 2400RMB | |

| Place B | | |
| --- | --- | --- |
| Convenience at place just outside of attraction site | – | Old roads; |
| | – | Some hotels/ restaurants |
| Possibility of experiencing nature | – | Sense of solitude and tranquility; |
| | – | No tourism infrastructure; |
| | – | No other visitors |
| Sustainable tourism services | – | Small conservation program only in core zone (e.g. wild animal monitoring and protection, etc); |
| | – | Community based restaurant/ hostel/small hotel; |
| | – | local specialty stores |
| Cultural attractions | – | Some traditional old buildings/ modern houses; |
| | – | No original culture alive |
| Natural attractions | – | Magnificent awe-inspiring natural landscapes; |
| | – | No precious or nice species; |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 4200RMB | |

Opt out: I would rather like to spend my money on a better trip offered, and have my vacation enjoyment on another trip.

Figure 1. Example of choice set cards in the text-only version[2]

## 2.3   Administration of the survey

The CE (n=213 middle class respondents) was conducted in Beijing and Chengdu (capital of Sichuan Province). We sampled two tourist *source* areas to prevent bias from respondent self-selection. As interviewers, we employed carefully trained university graduate students. Suitable city sub-districts were randomly selected by two criteria:

- typical price range of apartments for middle class customers; and

- availability of public spaces or accessible semi-public spaces inside gated residential compounds to contact respondents;

A quota sampling procedure provided the best way to interview the middle class target group. Three sampling criteria (quota) were followed: equally distributed genders; age range 20 to 60; even recruitment of respondents with respect to the selected 16 sub-districts. To target middle class respondents, the starting income level was set at a monthly income of 1500 RMB in Beijing and 1250 RMB in Chengdu (CNBS, 2005).

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[2] The Chinese version and English version choice sets with visual aids are available at: http://www.uni-goettingen.de/de/sh/47518.html.

After explaining the purpose of the study, each respondent was confronted with eight choice sets each including two choice cards representing tourism trips to southwestern China (Cards A and B), and an opt out/buy nothing option (see Figure 1). A total of 1,704 choices were observed. Half of the respondents (n=112) were asked to make statements on the attitudinal items. In a final section of the interview, socio-demographic information was gathered.

## 2.4    *Statistical and econometric analysis*

A varimax rotated factor analysis with binary squared Euclidean distance and Ward-linkage (Kroemker, 2004) was employed to generate empirical dimensions of attitudes toward sustainable tourism. For each dimension, we included the items with a factor loading higher than 0.4. Factor analyses as well as parametric standard procedures (bivariate Pearson correlation) were conducted with SPSS 12.1.

For analysis of the choice experiment data, a set of Nested Logit models (NL) was calculated with NLOGIT 3.0. NL model analysis follows the methodological suggestions by Hensher et al. (2005). The calculated utility function is linear in parameters, i.e. for each attribute (see Table 2), a utility coefficient is estimated. The NL models treat destination choice as a utility maximising task in which the respondent is assumed to choose that choice card with the highest overall utility to her/him. Overall utility is treated as the sum of the utility contributions characterised by the attribute levels of the choice cards.

Based on statistically significant estimates of attribute coefficients, implicit prices for the attributes can be calculated. The maximum willingness-to-pay (WTP) for a 1 unit change of trip attribute $S_d$ ("marginal" WTP) equals the ratio of the respective coefficient $b_d$ and the negative value of the monetary attribute coefficient $b_y$:

$$mWTP(S_d) = -\frac{b_d}{b_y}$$

To asses the influence the attitude dimensions as well as socio-demographic variables, we constructed interaction terms that were introduced in a NL based model. All models include an alternative specific constant (ASC) coded as a dummy variable with ASC=1 for the offered trips, and 0 for the *buy nothing/no trip* option. In the tables presenting the NL models, we include pseudo-$R^2$ values, results from log likelihood function (LL) ratio-test, and the inclusive value (IV) where applicable. The parsimonious models of Table 5 were generated stepwise by initially including all significant interaction terms from the single interaction models (Table 3 and 4), and then deleting non-significant interaction terms successively.

### 2.5    *WTP and scenario analysis*

In scenario analysis, WTP for a trip $T^1$ to a certain destination is compared to a trip $T^2$ to a destination with a different set of characteristics (attribute levels) $S_d$ according to WTP equation. For the scenario analysis presented in Tables 7 and 8, current levels of $S_d$ and the respective WTP values were estimated for the two western China protected areas Wanglang and Liupan Mountain. Wanglang is located in the southwestern China Minshan Mountains in some of China's most important Giant Panda (*Ailuropoda melanoleuca*) habitat. It is one of the four earliest panda reserves in China. Located in a biodiversity hotspot area, about 30 wild giant pandas are estimated to live in Wanglang (Wanglang natural reserve 2001). The reserve also has one of the best primary forests in Sichuan Province. The region is home of the Tibetan Baima people. In cooperation with the World Wide Fund for Nature, Wanglang is being promoted as a leading national nature reserve in terms of ecotourism development (WWF 2002).

Liupan Mountain is a national forest park located at northwestern China. Liupan Mountain is a rare forest oasis in the loess plateau with more than 40,000 hectares of naturally regenerated secondary forest. Three rivers emerge from the mountains supplying water to northwestern China. In 2000, the China National Bureau of Tourism chose the area as the first

site in China for a poverty alleviation program including a local tourism component. Liupan Mountain has become a popular tourism destination in Ningxia Province. In 2006, the number of tourists visiting Liupan Mountain reached 380,000 (Ningxia Tourism Information Center 2006).

For each site, an improved scenario in accordance with more 'sustainable' tourism development and a 'deterioration' scenario are calculated. Compared to simple forms of benefit transfer, both applications constitute a case the more reliable benefit *transfer function* approach (Kirchhoff et al. 1997, Rosenberger & Loomis 2001).

In the previous paragraphs, we assumed that scenario WTP was calculated for an *average* respondent. The employed Model 3 (Table 5) includes two significant interaction terms of CE attributes with two attitudinal dimensions, however. Thus we can exploit this dependency of respondent preferences on attitudes also in scenario analysis. This can be done by calculating WTP for a hypothetical sample of tourists that differs in their attitudes from the actual sample. In the example used here, we assume that the scores of the *sceptic attitude* dimension and *in favour of sustainability* dimension are shifted toward a 'more sustainable' direction. This shift in attitudes could be a result of a self-selection effect of tourists that are more attracted to sustainable tourism than the average respondent sampled. In detail, we assume a dimension score of 5.4 instead of 5.8 for the *sceptical attitude* dimension (33-percentile instead of mean), and for the *in favour of sustainability* dimension of 13.1 instead of 12.0 (66-percentile instead of mean).

## 3   Results

### 3.1   *Socio-demographics*

Average age of respondents was 35.6 years. A gender ratio of 56.3% male and 43.7% female was achieved. In Beijing, respondent average income was ~3,440 RMB (~344 €) and ~2,380 RMB (~238 €) in Chengdu. The overall average of ~2,890 RMB (~289 €) corresponds

to the upper middle class income category of official Chinese statistics (CNBS, 2005). 69% of

respondents hold at least a bachelor degree.

### *3.2    Base Nested Logit (NL) model*

Table 3. Nested logit model result for destination attributes with significant interaction

terms with socio-demographics

| Attribute | Coefficient |
|---|---|
| Convenience | 0.1245*** |
| Tarnished nature experience | -0.2093*** |
| Sustainable tourism services | 0.0404 |
| Cultural attractions | 0.1495*** |
| Natural attractions | 0.2945*** |
| Cost [1000RMB] | -0.5432*** |
| Log(income)*cost [1000RMB] | 0.0502* |
| Sex*Non-status quo ASC | 0.4542*** |
| Log Likelihood function | -1626.7 |
| $P(Chi^2)$; DF | <0.0001; 9 |
| Pseudo $R^2$ | 0.082 |
| Inclusive value (IV) | 0.9024 |

***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; no indication: no significance.
The non-status quo ASC in brackets as it is a NL model predictor of destination choice but not a destination
attribute. DF: degree of freedom. Pseudo-$R^2$ values in reference to a constant only model: values between
0.08-0.1 correspond to $R^2$ values of 0.24 to 0.28 in the linear model equivalent (Hensher et al.2005:339); IV
statistic is highly difference from 1; n=213.

Table 3 shows the base NL model with all attributes, and with significant interaction terms

with socio-demographic variables. Five out of six attributes of the NL model are at least

highly significant determinants of destination choice. *Sustainable tourism services* is the only

attribute which does not get significant (P=0.353). A positive sign is obtained for the attribute

coefficients of *convenience*, *sustainable tourism services*, *cultural attractions* and *natural*

*attractions*. The coefficients of *tarnished nature experience* and *cost* are negative and highly

significant indicating that people prefer fewer visitors and tourism infrastructures, as well as

lower trip cost. Mainly, gender has a highly significant influence on the influence of the ASC,

and log (income) on the influence of *cost*. The positive sign of the interaction term with log

(income) indicates that respondents with a higher income receive a smaller disutility from higher costs.

### 3.3   *Attitudinal dimensions*

Factor analysis singled out five dimensions from attitudes toward sustainable tourism items, of which the three strongest were selected according to their strong inter-item correlation. The three dimensions are (item mean±SD, Cronbach's Alpha): *in favour of sustainability* (4.04±0.40; 0.84), *concern for losing opportunities* (4.11±0.51; 0.70), and *sceptical attitude on sustainable tourism services* (3.52±0.49; 0.58). Among the dimensions, the *in favour of sustainability* dimension explains over one quarter of the variance (26.3%), *the concern for losing opportunities* dimension explains 11.1% and the *sceptical attitude* dimension 7.2%. A total of 44.6% of variance is explained by the three attitudinal dimensions.

Tests of bivariate Pearson correlations between socio-demographic variables and the attitudes toward sustainable tourism show that only education ($p<0.001$) significantly influenced the *concern for losing future opportunities*. Income has a tendency toward statistical significance on the *concern for losing future opportunities* ($p=0.076$; data not shown).

### 3.4   *Influences of attitudinal dimensions on destination choice*

All three sustainable tourism attitude dimensions yield significant interaction terms although at highly differing frequencies (Table 4). The *in favour of sustainability* only influences the importance of the *cost* attribute ($p=0.037$). The *cost* increase of a trip to southwestern China is less influential for respondents who have higher scores in this dimension. The *concern for losing opportunities* reveals a negative influence on choices if interacted with the *convenience* attribute ($p=0.046$), a tendency toward statistical significance on the *sustainable tourism services* attribute ($p=0.092$) and on ASC ($p=0.071$). This indicates that people who are more concerned of losing future opportunities care less for destination

*convenience*. However, they also care less for *sustainable tourism services,* and are less interested in taking trips to southwestern China.

Table 4. NL Model of interaction with attitudes toward sustainable tourism

| Dimension | | | | | | | | [Non-status quo ASC] |
|---|---|---|---|---|---|---|---|---|
| | | | | Attribute | | | | |
| Attitudes toward sustainable tourism | Coefficient | Convenience | Tarnished nature experience | Sustainable tourism services | Cultural attractions | Natural attractions | Cost [1000RMB] | |
| In favor of sustainability | attribute§ | | | | | | -0.4162*** | |
| | interaction$ | | | | | | 0.0214* | |
| | LL& | | | | | | * | |
| Concern of losing future opportunity | attribute | 0.4461* | | 0.4031+ | | | | 1.593* |
| | interaction | -0.0432* | | -0.0434+ | | | | -0.247+ |
| | LL | * | | + | | | | + |
| Sceptical attitude | attribute | 0.6281*** | 0.3996* | 0.6546*** | 0.4627** | 0.5758*** | 0.0748 | 2.55*** |
| | interaction | -0.0931*** | -0.0998*** | -0.106*** | -0.0632* | -0.0524* | -0.041** | -0.334*** |
| | LL | *** | *** | *** | ** | * | ** | *** |

***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; +: tendency at p≤0.1.
§coefficient of attribute without interaction; $coefficient of interaction term with attribute; &LL-Log Likelihood ratio test if model with interaction term fit better than the base model. n=112.

The *sceptical attitude* dimension has an influence on *all* attributes of the survey. The *sceptical attitude* dimension has a negative influence on the *convenience* attribute (p<0.001), and on the *tarnished nature experience* attribute (p<0.001). The sign of the interaction coefficients reveals that respondents who have a more *sceptical attitude,* have smaller preferences for convenience, and are more negatively affected by a tarnished nature experience. The *sustainable tourism services* attribute turns to be highly significant (p=0.001) when interacted with the *sceptical attitude*. Respondents, who are more *sceptical*, tend to view better developed ecotourism/sustainable tourism services less positively. The positive coefficient of the non-interacted attribute term indicates a constant utility improvement of 0.655 for each successive ('marginal') improvement of the *sustainable tourism services* level.

This effect is counterbalanced, however, by a disutility of -0.106 times the *sceptical attitude* score of a respondent.

The *sceptical attitude* dimension also has a significant negative influence on both the *cultural attractions* (p=0.011) attribute and the *natural attractions* attribute (p=0.03). Respondents who are more sceptical receive a smaller utility from *cultural attractions* and *natural attractions*. The *sceptical attitude* has a significant negative influence on the cost attribute (p=0.01). Respondents stating an increasingly *sceptical attitude*, receive a high disutility from higher costs regarding any trips offered to southwestern China. If interacted with the ASC, the *sceptical attitude* forms a strongly significant interaction term with a negative coefficient sign (p<0.001). More sceptical respondents obtain generally less economic benefits from trips to southwestern China.

## 3.5   *Parsimonious models*

Table 5 shows three parsimonious models. Parsimonious model 1 is the best model we could obtain with four interaction terms. Among the ten predictors for destination choice, seven are significant. Neither the *sustainable tourism services* attribute nor its interaction term with the *sceptical attitude* dimension emerge as significant predictors of choice. The *in favour of sustainability* dimension reduces the disutility associated with the *cost* attribute. Comparing models 1 to 3, the main feature is the relative instability of the significance statistics depending on with which attribute the *sceptical attitude* dimension is interacted. If the interaction with the *sustainable tourism services* attribute is omitted, the significance of the *tarnished nature experience* attribute and its interaction with the *sceptical attitude* improves markedly – and vice versa. This instability is a result of the multicollinearity that is necessarily introduced when two interaction terms with the same variable are entered into a single NL model.

Because of primary research interests in the effects of the interaction term with the *sustainable tourism services* attribute, we decided to use model 3 as the parsimonious model for further analysis of WTP and benefit transfer (see next subsection). We did so although the Log Likelihood Function of model 3 was only -845.7, i.e. slightly worse than that of model 2.

Table 5. Parsimonious models

| Dimension/variable | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| Convenience | 0.1037* | 0.1025* | 0.1037* |
| Tarnished nature experience | 0.2567 | 0.4372** | -0.16** |
| Sceptical attitude * Tarnished nature experience | -0.0721* | -0.1037*** | |
| Sustainable tourism services | 0.4084 | 0.0763 | 0.7153*** |
| Sceptical attitude * Sustainable tourism services | -0.0577 | | -0.111*** |
| Cultural attractions | 0.1281*** | 0.1287*** | 0.1241*** |
| Natural attractions | 0.2963*** | 0.2955*** | 0.2973*** |
| Cost [1000RMB] | -0.477*** | -0.4655*** | -0.4683*** |
| In favor of sustainability*Cost | 0.0264* | 0.0254* | 0.0258* |
| Sex*[Non-status quo ASC] | 0.5794*** | 0.5749*** | 0.5773*** |
| Log Likelihood Function | -843.8 | -844.7 | -845.7 |
| $P(Chi^2)$; DF | <0.0001; 11 | <0.0001; 10 | <0.0001; 10 |
| Pseudo $R^2$ | 0.089 | 0.088 | 0.0868 |
| Inclusive value (IV) | 0.989 | 0.9856 | 0.9857 |

***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; no indication: no significance. DF: degree of freedom; Pseudo-$R^2$ values in reference to a constant only model: values between 0.08-0.1 correspond to $R^2$ values of 0.24 to 0.28 in the linear model equivalent (Hensher et al.2005:339); IV statistics are highly difference from 1. n=112.

## 3.6   *WTP and scenario analysis*

In Table 6, marginal WTP for one level of "marginal" improvement of the attributes were calculated using the coefficients from parsimonious model 3. The coefficient of the *sustainable tourism services* attribute term is 0.72, but the interaction term with the *sceptic attitude* reduces the aggregated coefficient considerably by 0.64 to only 0.072 for an average respondent.

On average, respondents are prepared to pay a maximum of 650 RMB (∼65 €) for a one level improvement of *convenience*, around ~450 RMB (∼45 €) for a one level improvement of *sustainable tourism services*, and around ~780 (∼78 €) RMB for improvements in *cultural attractions* and ~1860 RMB (∼186 €) for *natural attractions*. In contrast, respondent marginal WTP is reduced by 1005 RMB (∼100 €) if a one level deterioration of the *tarnished nature experience* attribute occurs.

Table 6. Marginal WTP for one level improvement of the attributes for a 7-day-trip to southwestern China

| Variable | Coefficient | Aggregated coefficient for WTP calculation | Marginal WTP (RMB) |
|---|---|---|---|
| Convenience | 0.1037 | 0.1037 | 650 |
| Tarnished nature experience | -0.1604 | -0.1604 | -1005 |
| Sustainable tourism services | 0.7153 | | |
| Sceptical attitude*Sustainable tourism services[&] | -0.6431 | 0.0722[§] | 452 |
| Cultural attractions | 0.1241 | 0.1241 | 777 |
| Natural attractions | 0.2973 | 0.2973 | 1862 |
| Cost [1000RMB] | -0.4683 | | |
| In favor of sustainability *Cost[&] [1000RMB] | 0.3087 | -0.1596[$] | |
| Sex* [Non-status quo ASC] | 0.5773 | 0.5773 | |

[&]the attitudinal interaction term coefficients were calculated by the coefficients in parsimonious model 3 * sample mean of the dimension score; [§]coefficient of *sustainable tourism services* + coefficient of sceptical attitude**sustainable tourism services*; [$]coefficient of *cost* + coefficient of in favour of sustainability**cost*.

We conduct scenario analyses for Wanglang and Liupan Mountain by calculating WTP for a trip to these destinations based on the present situation, a more 'sustainable' scenario and a more deteriorated scenario. For Wanglang, the present situation is characterised by a *convenience* level of two (difficult motor vehicle access, some simple hostels and hotels; see Table 7). A level between one and two can be identified for the *tarnished nature experience* because a sense of solitude and tranquillity can be found at Wanglang but one sometimes meets other people, and there also is some basic tourism infrastructure. With the existing

conservation program for the core area and the buffer zone, local Baima community's participation of tourism business, e.g., hostel and horse riding service, as well as the restriction of the total amount of visitors in some areas, Wanglang has a *sustainable tourism services* level between two and three. For *cultural attractions*, a level between two and three represents the modernized traditional culture, and many new buildings in the local Baima village. The *natural attractions* in Wanglang is a mixture between ordinary and magnificent natural landscape, and many precious species - but little opportunities for tourists to see them (level 1.5).

Similarly, access to the Liupan mountain site is difficult. It features simple hotels (*convenience* level 2; see Table 8). There are some large scale tourism infrastructures, and quite a lot of visitors (level 2.5 of *tarnished nature experience*). Virtually no sustainable tourism services are available although local community involvement in business development is planed (level 1 of *sustainable tourism services*). Many non-traditional buildings around the Liupan Mountain can be found, and only remnants of traditional culture (level 1.5 of *cultural attractions*). Liupan Mountain also has a mixture between ordinary and magnificent natural landscape, and some precious species but little chances for tourists to see them (level 1.5 of *natural attractions*).

Table 7. Three scenario analysis of the WTP for a 7-day-trip to Wanglang natural reserve

| Variable | Present situation | | 'Sustainable' scenario | | Deterioated scenario | |
|---|---|---|---|---|---|---|
| | Coding | WTP | Coding | WTP | Coding | WTP |
| Convenience | 2 | 1299 | 3 | 1949 | 4 | 2599 |
| Tarnished nature experience | 1.5 | -1508 | 2 | -2010 | 3 | -3015 |
| Sustainable tourism services Sceptical attitude*Sustainable tourism services | 2.5 | 1130 | 3 | 1356 | 1.5 | 678 |
| Cultural attractions | 2.5 | 1943 | 3 | 2332 | 2 | 1555 |
| Natural attractions | 1.5 | 2793 | 1.5 | 2793 | 1 | 1862 |
| WTP (RMB) for the scenario | | 5657 | | 6420 | | 3679 |
| WTP (EURO) for the scenario | | 566 | | 642 | | 368 |

1 Euro ≈ 10 RMB.

Table 7 and 8 show the presumed maximum WTP of Chinese tourists for a one week trip either to Wanglang or Liupan Mountain. Respondent WTP is 566 € for the present situation at Wanglang, and 642 € if several improvements toward more sustainable tourism development would happen (Table 7). If the present situation is going to be deteriorated, respondents WTP would decrease to 368 € per trip.

Table 8. Three scenario analysis of the WTP for a 7-day-trip to Liupan Mountain

| Variable | Present situation | | 'Sustainable' scenario | | Deterioated scenario | |
|---|---|---|---|---|---|---|
| | Coding | WTP | Coding | WTP | Coding | WTP |
| Convenience | 2 | 1299 | 3 | 1949 | 4 | 2599 |
| Tarnished nature experience | 2.5 | -2513 | 2 | -2010 | 3 | -3015 |
| Sustainable tourism services | | | | | | |
| Sceptical attitude*Sustainable tourism services | 1 | 452 | 2 | 904 | 1 | 452 |
| Cultural attractions | 1.5 | 1166 | 2 | 1555 | 1 | 777 |
| Natural attractions | 1.5 | 2793 | 1.5 | 2793 | 1 | 1862 |
| WTP (RMB) for the scenario | | 3197 | | 5191 | | 2675 |
| WTP (EURO) for the scenario | | 320 | | 519 | | 268 |

1 Euro ≈ 10 RMB.

Likewise at the present situation in Liupan mountain, the respondents would be willing to pay a maximum of 320 € for a one week trip. If the more sustainable development model takes place, respondents would like to pay 519 € for a trip. However, if the situation gets worse, respondents would only pay 268 € for a trip. A summary of the overall results of scenario analysis is shown in Figure 2 (triangle marked lines).

Figure 2 also exemplifies the potential impact of attitudes on the results of scenario analysis. For tourists with a more positive attitude *in favour of sustainability* (66-percentile instead of mean dimension score) and with a less *sceptical attitude* (33-percentile instead of mean), total WTP is appreciable higher. For example, WTP for a trip to Wanglang rises from 642 € to 892 € for the "sustainable development" scenario (SD scenario). Of this improvement, about half can be attributed to the improved WTP for sustainable tourism services alone.
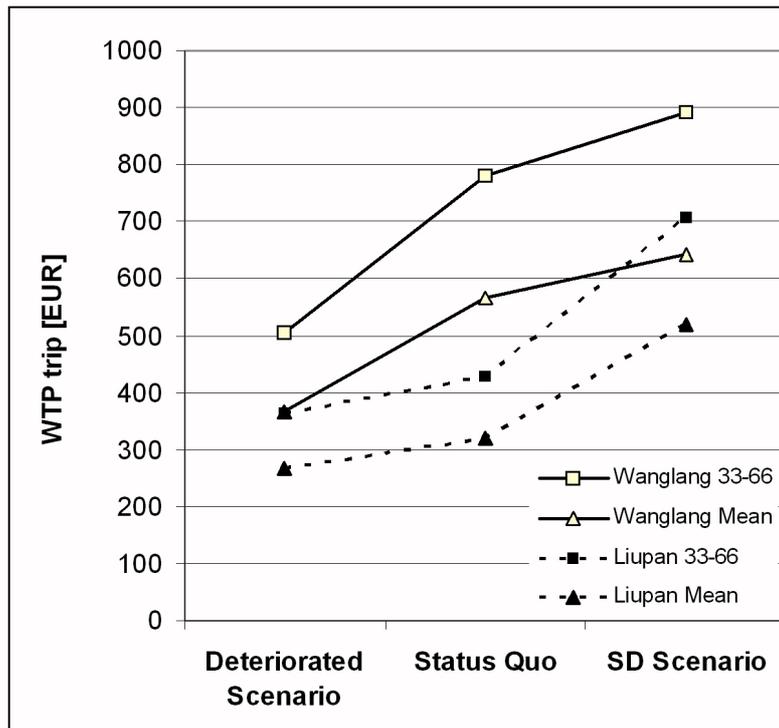
SD scenario: sustainable development scenario

Figure 2. Overall results of benefit function-based scenario analysis for Wanglang and

Liupan Mountain; the square-marked lines indicate changes of scenario WTP based on 'more

sustainable' attitudes (for details see text).

## 4    Discussion and conclusion

### 4.1    *Influences of attitudinal dimensions on economic preference.*

On average, the surveyed middle class respondents displayed, at face value, a supportive

attitude for sustainable tourism services (mean raw score of ~4.0 *in favour of sustainability*

dimension). However, this dimension did not significantly influence any of the investigated

non-monetary aspects of destination choice. Likewise, high scores in this dimension are not

predicted to result in any increased WTP for *sustainable tourism services* that one may have

expected. This result indicates a gap between stated attitudes toward sustainable tourism

services and the stated intention to actually buy the respective services as expressed in the CE

(Table 4, Table 5). This dimension does impact the extent, however, to which higher trip prices influence destination choice.

Similarly, Chinese domestic tourists may be afraid that valuable tourism resources could get lost (mean raw score of ~4.1 for *the concern for losing opportunities* dimension). Also in this case, we could not conclusively detect an influence of this dimension on WTP for sustainable tourism services (Table 4). This result is mirrored by the clear non-significance of the *sustainable tourism services* attribute in the NL base model (Table 3): The average respondent apparently did not care to which degree sustainable tourism services were offered.

The results of the interaction analysis with the *sceptical attitude* dimension provide a specific explanation for the gap. In contrast to the previously discussed attitude dimensions, the degree of scepticism expressed toward sustainable tourism services does form a statistically and materially significant interaction term with the *sustainable tourism services* attribute. The influence depends on the extent to which respondents refrain from subscribing to popular sceptical notions such as "sustainable tourism is just another way of charging a higher price". Parsimonious model 3 also indicates an influential role of the *sceptic attitude*. While WTP for one marginal level improvement of *sustainable tourism services* is 452 RMB (∼45 €) for an average sceptical respondent, already on 1-point reduction in the *sceptical attitude* dimension score would result in a marginal value ~700 RMB (∼70 €) higher.

From a sustainable tourism development perspective, the rather uniformly significant interaction of the *sceptical attitude* dimension with the *tarnished nature experience* attribute is nearly as interesting as the interaction with the *sustainable tourism services* attribute: a 1-point change results in ~650 RMB (∼65 €) higher marginal WTP for the opportunity for less tarnished nature experiences. The comparisons of the three parsimonious models of Table 5 suggest that the interaction with the *tarnished nature experience* may even be the most decisive interaction (better Pseudo-$R^2$ and better Log-Likelihood function value).

## 4.2   *WTP, benefit transfer and attitude impacts*

The scenario analysis shows that if the modelled destinations take steps toward more sustainable tourism development, respondent WTP may increase for a trip to that destination – for example by 13.5% (76 €) for the respective scenario improvement for Wanglang. Respondent WTP for sustainable development sustainable scenario in Liupan is even 62.4% (199 €) higher than for the present situation. Correspondingly, if the present situation deteriorates, respondent WTP drops by 35% (198 €) for Wanglang and by 16% (52 €) for Liupan mountain. The positive development can be expected to be much more pronounced if current attitudes toward sustainable tourism development become more positive and less sceptical (Figure 2). For the most "green" third of tourists, maximum WTP may already currently be much higher than the average respondent scenarios indicate.

With ~3,200 RMB (∼320 €) for Liupan mountain and ~5,700 RMB (∼570 €) for Wanglang, the maximum estimated WTP for the respective trips are much higher than the prices regularly paid in the China domestic tourism market. Commercially offered 7-day-trips from Beijing to southwestern China, e.g., cost around 3,000 RMB (∼ 300 €) including an estimated 1000 RMB for air fare. The rather limited sample size of the CE study and a higher "generosity" in making hypothetical versus real destination choices could explain why values appear unrealistically high. The possibility should also be considered, however, that the investigated *maximum* WTP values are correct. In consequence, consumers who are actually able to take a cheaper trip to the investigated destinations reap a substantial consumer surplus. In a market with fierce price and supply competition, consumers may be able to purchase goods much below their maximum WTP to actually obtain the good. This is the case in the Chinese domestic tourism market.

## *4.3    Conclusion*

The academic demand-side analysis of the Chinese domestic tourism market is still at its infancy. Against the background of an extreme mismatch of current knowledge and absolute size and growth rates of the market (as well as its environmental impact), we explored the influence of attitudes toward sustainable tourism on hypothetical destination choices with the choice experiment method. The most prominent feature of the attitudinal analysis is the importance of the *sceptical attitude* dimension that much more powerfully explains destination choices than differences in the agreement with the general ideas of sustainable tourism.

For illustrative purposes, we applied the calculated WTP values of changes in the destination choice attributes to two nature- and landscape-oriented destinations in southwestern and northwestern China that are particularly interesting from a sustainable tourism development perspective. The high calculated WTP values suggest that (i) absolute WTP values may be somewhat inflated but that, nevertheless, (ii) a considerable potential exist for more expensive – potentially more sustainable – tourism offers if suppliers are able to escape the competitive pressure of the mass market. One example is a niche market strategy that targets those potential customers who hold less sceptical and more favourable attitudes with regard to sustainable tourism services.

The scenario analysis comparisons imply, furthermore, that there is a high downside risk of non-sustainable modes of tourism development. Once the natural and cultural heritage is compromised and the tourism experience is tarnished, improvements in trip convenience may not be sufficient to offset the loss of aggregated tourism value. This effect is most pronounced for our Wanglang example that starts out with a more positive status quo – i.e. which has more to lose. Wanglang and the surrounding minority area in Sichuan province as well as the Liupan mountain area belong to the traditionally disadvantaged rural part of western China.

Our results indicate that sustainable tourism development in the region has the potential to improve local tourism income. A detailed analysis if additional tourism income can be used effectively for the alleviation of rural poverty has not been investigated in our study. The loss of tourism revenue indicated by the "deteriorated scenario" is likely to jeoparadize any progress here, though.

From a methodological perspective, our study highlights the usefulness of combining CE observations with attitudinal data to identify and quantify influences on domestic China tourist preferences regarding nature-and landscape-related destination attributes. While our study was not designed to test the reliability of the benefit transfer function approach, our results suggests that CEs provide a flexible tool for the generation of valuation data that can successfully be used for informing demand-side studies on the Chinese domestic tourism market (cf. also Kirchhoff et al. 1997, Rosenberger and Loomis 2001).

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## References

Arnould, E. J., Price, L. L. and Zinkham, G. M. (2002). Consumers, McGraw-Hill, Boston.

Bao, J., Zheng, H. and Dai, G. (2002). The evolvement of spatial structure and the significance of Guilin's domestic tourist origins, ACTA Geographica Sinica, 57(1), 96-106 (in Chinese).

Bagozzi, R.P. (1988). The rebirth of attitude research in marketing. Journal of the Market Research Society, 30(2), 163-195.

Bateman, I.J., Carson, R.T., Day, B., Hanemann, M., Hanley, N., Hett, T., Jones-Lee, M., Loomis, G., Mourato, S., Ozdemiroglu, E., Pearce, D.W., Sugden, R. and Swanson, J. (2002). Economic valuation with stated preference techniques – a manual, Edward Elgar Publishing Limited, Cheltenham, Narthampton.

Cater, E. A. (2000). Tourism in the Yunnan great rivers national parks system project: prospects for sustainability. Tourism Geographies, 2(4), 472-489.

Chan, R. (2001). Determinants of Chinese consumers' green purchase behaviour. Psychology & Marketing, 18, 389-413.

CNBS (China National Bureau of Statistics) (2005). China statistical yearbook 2005. China Statistics Press, Beijing.

CNBT (China National Bureau of Tourism) (2006). Major statistics of Chinese tourism 2005. Online document at URL http://www.cnto.org/chinastats.asp#5. Accessed February 2, 2007.

Eymann, A. and Ronning, G. (1997). Microeconometric models of tourists' destination choice. Regional Science & Urban Economics, 27, 735-761.

Fang, Y. (2002). Development - Ecotourism in western Sichuan, China: replacing the forestry-based economy. Mountain Research and Development, 22(2), 113-115.

Ge, Q. S. (2002). Strategy of exploring tourism in western China, Chinese Tourism Press, Beijing.

Grendstad, G. and Wollebaek, D. (1998). Greener still? An empirical examination of Eckersley's ecocentric approach. Environment and Behaviour, 30, 653-675.

Guagnano, G. A., Stern, P. C. and Dietz, T. (1995). Influences of attitude-behaviour relationships: a natural experiment with curbside recycling. Environment and Behaviour, 27, 699-718.

Haener, M.,, Boxall, P. and Adamowicz, W. (2001). Modelling recreation site choice: do hypothetical choices reflect actual behaviour? American Journal of Agricultural Economics, 83, 629-642.

He, G. & Sun, G. & Zhang, X. & Chen, Y. & Dong, H. (1999). Fifty years of China tourism industry. China Tourism Press, Beijing.

Hensher, D. A., Rose, J. M. & Greene, W. (2005). Applied choice analysis: a primer, Cambridge University Press. Cambridge (UK).

Kirchhoff, S., Colby, B. and LaFrance, J. (1997). Evaluating the performance of benefit transfer: an empirical inquiry. Journal of Environmental Economics and Management, 33, 75-93.

Kotchen, M.J. and Reiling, S. D. (2000). Environmental attitudes, motivation, and contingent valuation of nonuse value: a case study involving endangered species. Ecological Economics, 32, 93-107.

Kroemker, D. (2004). Naturbilder, Klimaschutz und Kultur: Psychologie Forschung aktuell, Weinheim, Basel, Berlin.

Lee, W.H. and Moscardo, G. (2005). Understanding the impact of ecotourism resort experiences on tourists' environmental attitudes and behavioural intentions. Journal of Sustainable Tourism, 13(6), 546-565.

Li, W. (2004). Environmental management indicators for ecotourism in China's nature reserves: a case study in Tianmushan nature reserve. Tourism Management, 25(5), 559-564.

Louviere, J., Hensher, D. A. & Swait, J. D. (2000). Stated choice methods: analysis and application, Cambridge University Press, Cambridge (UK).

Mao, D., Zhang, J., and Bao, H. (2005). A tourist destination choice model based on Lancasterian characteristics theory and destination image theory: theoretical analysis and case study. Geographical Research (in Chinese), 24(6), 992-999.

Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B. and Kent, J. (2000). Biodiversity hotspots for conservation priorities. Nature, 403, 853-858.

Nianyong, H. and Zhuge, R. (2001). Ecotourism in China's nature reserves: opportunities and challenges. Journal of Sustainable Tourism, 9(3), 228-242.

Ningxia Tourism Information Center (2006). Farmers in Guyuan county learn mandarin for better tourism business opportunities. Online document at URL: http://www.cnta.gov.cn/news_detail/newsshow.asp?id=A20061220816412980156. Accessed at Feb. 20th, 2007.

Nordlund, A. M. and Garvill, J. (2002). Value structures behind proenvironmental behaviour. Environment and Behaviour, 34, 740-756.

Rogers, R. and Prentice-Dunn, S. (1997). Protection motivation theory. In Gochman, D. (Eds.) Handbook of health behaviour research: Vol. 1. Determinants of health behaviour: Personal and social, Plenum, New York.

Rosenberger, R. and Loomis, J. (2001). Benefit transfer of outdoor recreation use values. Online document at URL: http://www.fs.fed.us/rm/pubs/rmrs_gtr72.pdf. Accessed at Feb. 16th, 2007.

Shaw, G. and Williams, A. M. (2002). Critical issue in tourism: a geographical perspective. (2nd Edition), Blackwell Publisher, Oxford.

Tao, C. H., Eagles, P.F.J and Smith, S.L.J. (2004). Profiling Taiwanese ecotourists using a self-definition approach. Journal of Sustainable Tourism, 12(2), 149-168.

Wanglang natural reserve (2001). Visitor Information. Online document at URL: http://www.slack.net/~rd/wanglang/home.htm. Accessed Feb. 20th, 2007.

Wen, J. (1998). Evaluation of tourism and tourist resources in China. International Journal of Social Economics, 25, 467-485.

WTO (World Tourism Organization) (2004). Sustainable development of tourism conceptual definition: World Tourism Organization. Online document at URL: http://www.world-tourism.org/sustainable/concepts.htm. Accessed September 2, 2006.

Wu, B. and Cai, L. (2005). Spatial modelling - suburban leisure in Shanghai. Annals of Tourism Research, 33 (1), 179-198.

Wu, B. (2001). Comments on master plan of Sichuan province tourism development. Urban Design & Planning (in Chinese) ,4, 21-25.

Wu, B. (1997). A Study on destination choice behaviour of Chinese urban residents. Acta Geographica Sinica (in Chinese), 52(2), 97-103.

WWF (World Wide Fund for nature) (2002). Panda conservation in the Minshan landscape (Minshan Project). Online document at URL: http://www.wwfchina.org/english/sub_print.php?loca=26 . Accessed Feb.19th, 2007.

Yan, J., Barkmann,J., Zschiegner, A. and Marggraf, R. (accepted). The sceptics' challenge for sustainable tourism in the Southwestern China biodiversity hotspot: a choice experiment approach. China Tourism Research.

Zhang, H. & Lu, L. (2004). Tourist motivations of urban residents of Wanjiang city and the demographic relationship. Tourism Science (in Chinese), 18 (4), 22-27.

Zhang, G. (2003). Tourism research in China, in Lew, A. A., Yu, L., Ap, J. and Zhang, G. (eds.), Tourism in China (pp.67-81), The Haworth Hospitality Press, New York, London, Oxford.

Zhang, J., Du, J., Zhou, Y. and Gan, M. (1999). The travel patterns and travel distance of tourists to national parks in China. Asia Pacific Journal of Tourism Research, 4(2), 27-34.

Zhu, R. (2001). Report on the 10th five-year plan for the national economy and social development of China central government. People's daily (in Chinese), March 17, 2001, Beijing.

Zschiegner, A. K. (2006). Influences of 'harmony'-based Chinese tourists' images of nature on attitudes toward Sustainable tourism and on destination choice. Diploma Thesis, Institute of Geography, Georg-August Universität Göttingen, Göttingen (Germany).

<div align="right">**Chapter 3**</div>

# The Dao of the Sceptic and the Spiritual: Attitudinal and Cultural Influences on Preferences for Sustainable Tourism Services in the Domestic Chinese Tourism Market[1]

Jan Barkmann, Jiong Yan, Anne-Kathrin Zschiegner, Rainer Marggraf

**Abstract**: We assessed influences on Chinese domestic tourist destination choice relevant to sustainable tourism development in southwestern China. First, influences of attitudes on sustainable tourism services were analysed. In the second step, attitudinal influences were supplemented by an analysis of indirect, cultural influences expressed by tourist images of nature. Technically, we utilised a choice experiment to assess the importance of destination attributes – including sustainable tourism services -, of attitudes and of images of nature on destination choice. Data were collected from 213 middle class respondents in Beijing and Chengdu. Factor analysis singled out two 'positive' attitudinal dimensions (*in favor of sustainability, concern for losing opportunities*) and one 'negative' dimension (*sceptical attitude on sustainable tourism*). Only the *sceptical* attitude significantly influenced the destination choice, substantially reducing willingness-to-pay for sustainable tourism services. In images of nature analysis, the *robustness by divine designer* and the *non-spirituality* dimensions displayed substantial impacts on preference variations. The more spiritual the images of nature of a Chinese middle class tourist, the more s/he prefers – and is willing to pay for – trips featuring more natural attractions and more sustainable tourism services.

Keywords: Attitudes toward sustainable tourism, destination choice, images of nature, preferences, domestic Chinese tourist

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# 1 Introduction

The development of the Chinese tourism industry is increasingly recognised as a major factor with respect to the sustainable development of the entire industry (Bramwell & Lane, 2004). The number of registered Chinese domestic tourist trips rose from about 200 million in 1984 to 1.212 billion in 2005 (CNBT, 2006; He et al., 1999). Increasing 12.2% over 2004, income from domestic tourism in 2005 was 528.6 billion RMB (~52.86 billion Euro) (CNBT, 2006). Chinese tourism industry causes increased resource consumption, and threatens ecologically sensitive areas (Deng et al., 2003; Nianyong & Zhuge, 2001). These issues are particularly crucial in southwestern China, which harbours one of 25 global biodiversity hotspots (Myers et al., 2000).

Chinese tourism research and planning is mostly conducted from a supply side perspective (Bao et al., 2002: 97). Recent examples address the supply side from an economic development perspective with southwestern China as an important regional focus (Cater, 2000; Ge, 2002; Wu, 2001). Also, the supply side of ecotourism has received some attention (Li, 2004; Wen & Tisdell, 2001). The importance of demand-side factors such as the investigation of tourist motivations and preferences has only recently been acknowledged (Cai et al., 2001; Mao et al., 2005; Wu & Cai, 2005). Recent studies for example, use attitudinal items of the New Ecological Paradigm (NEP) to identify and characterize 'eco-tourists' (Li & Cai, 2004; Li, 2005).

In spite of its potential contribution to the knowledge base for sustainable tourism, the potential of attitude research (Ajzen, 2005) for economic demand-side analyses is not being realized in China to date. The identification of attitudes can pragmatically enhance prediction of consumer behaviours (Bagozzi, 1988). Attitudes influence pro-environmental behaviours (Nordlund & Garvill, 2002), for example, consumption (Chan, 2001) or conservation behaviours (Steel, 1996).

At a more fundamental, cultural level, tourist "images of nature" may influence destination choices. Images of nature analyses have been conducted in several social science disciplines including ethnology (de Castro, 1996), geographical planning sciences (Eisel, 2004), and tourism research (Stamou & Paraskevopoulos, 2004). While ecotourism offers can positively influence tourist attitudes (Lee & Moscardo, 2005), more culturally fundamental images of nature are difficult to change-even with respect to a visited natural reserve (Stamou & Paraskevopoulos,2004). Kroemker (2004, 2005) presents empirical evidence from a study with US-American, German, Peruvian, and Indian respondents that images of nature dimensions can be operationlised in an intercultural context, and contribute to the explanation of pro-environmental behaviour.

The traditional images of nature in China is based on Confucianism, Buddhism und Daoism (Jacobsen, 1997; Lafargue, 2001; Tu, 1998a), i.e., based on the main philosophical foundations of traditional Chinese culture (Barnhart, 1997). A core concept of Chinese traditional philosophy is the pursuit of harmony with nature (He), and the "unity of human and heaven/nature" (*"Tian Ren He Yi"*; Tu 1998b). Rooted in the harmony and "the unity of human and heaven" ideas, the Chinese vision of nature always includes the human-nature relationship (Tu, 1998a). Although theoretical studies on the relation of the Chinese philosophical tradition to environmental protection (Weller & Bol, 1998) and environmental philosophy (Callicott & Ames, 1989) proliferate, empirical studies on the current images of nature of Chinese citizens/consumers only get little attention.

## 2   Methods

The study applied a split sample approach. Half respondents (n=112) were interviewed with attitudes toward sustainable tourism services items and half (n=101) were interviewed with images of nature items. Identical choice experiment excises and socio-demographic questions were used for all respondents (n=213).

## *2.1    Attitude toward sustainable tourism*

Following Shaw and Williams (2002), we define sustainable tourism as a form of tourism, in which the economic interests of the tourism industry are embedded in a frame of a broader sustainable development of economic, cultural and social issues as well as of a careful utilisation of the natural resource base (WTO, 2004). We intended to specifically address attitudes toward sustainable tourism measures as potentially implemented by southwestern China destinations. These measures include provision of transportation by 'green', emission-reduced buses, protected areas to assure the natural attractiveness of the destination, local biological conservation programs, and local community involvement in the tourism business. To our knowledge, no published set of questionnaire items exists that specifically assesses attitudes toward these typical ingredients of sustainable tourism concepts. For example, Luzar et al. (1998), Li and Cai (2004) or Tao et al. (2004) used much more general attitudinal items originating from NEP for an attitudinal characterization of eco-tourists.

We designed and tested a set of attitude items on sustainable tourism based on variables of the Protection Motivation Theory, a socio-psychology action theory focusing on behavior in the face of environmental risks (PMT, Rogers & Prentice-Dunn, 1997). Threat and coping appraisal represent two main features of PMT, determining an individual's response to a threat (Rogers & Prentice-Dunn, 1997). In addition to the measures mentioned above, items refer to the cost of the offered sustainable tourism services (for item specimens, see Table 1). We used a closed answer format with a 5-point Likert scale (1: totally disagree to 5: totally agree). In all, 17 items were sampled.

Table 1. Examples of attitudes toward sustainable tourism items

- In my opinion, extra fees for tourism services, such as green buses, are just an excuse to charge more and rip-off tourists. (the *sceptical attitude* dimension)[§]
- I am really afraid of losing the future opportunity for travel enjoyment in southwestern China if the tourism development is not done in a sustainable manner. (the *concern of losing future opportunity* dimension)
- Making sure that the members of a local community can run tourism-related businesses is essential for harmonious tourism development in southwestern China. (the *in favour of sustainability* dimension)
- Green buses really contribute to keeping the air of destinations clean, and keeping the place quiet. (the *in favour of sustainability* dimension)

[§]phrase in parenthesis identifies the sustainable tourism attitude dimension to which the item was assigned by factor analysis (see results section).

## 2.2   *Images of nature*

  For applications in environmental and tourism economics, a working definition of "images of nature" was developed that focuses on the applied needs of environmental valuation. Images of nature was defined *as comprehensive, pre-theoretic patterns of the perception and valuation of nature and the human-nature relation, while regularly encompass descriptive and evaluative components* (Barkmann et al., 2005). By including the human-nature relation, this definition takes into account the traditional Chinese concept of nature. The images of nature items used in our study stem from two sources: the dissertation of Kroemker (2004) and original self-designed items operationalising a "harmony" dimension. Starting from the original English and German language versions, the second author translated and tested twenty seven images of nature-items developed by Kroemker (2004). In order to compare results with Kroemker's study (2004), reported images of nature dimensions in this manuscript exclusively rely on items from Kroemker.  For examples of included items, see Table 2.

Table 2. Examples of images of nature items

- Humans should protect nature because it is useful and provides a lot of advantages for us. *(Nature needs & deserves to be protected)*[§]
- Nature has its own right of existence; therefore it is not allowed to destroy nature anywhere for human needs. *(Respect)*
- Nature always recovers (by itself), no matter what humans do. *(Robustness by divine designer)*
- Nature is important, but neither has a soul nor is sacred. *(Non-spirituality)*

[§]phrase in parenthesis identifies the images of nature dimension to which the item was assigned by factor analysis (see results section).

## 2.3   *A destination choice experiment (CE)*

For the quantitative investigation of tourist destination choice, microeconomic destination choice models (Eymann & Ronning, 1997) can be constructed based on discrete choice surveys. Answers to hypothetical destination choice questions have been shown to reflect actual destination choice well (Haener et al., 2001). For recent reviews and manuals on a state-of-the-art application of the so-called choice experiment method (CE), refer to Louviere et al. (2000), or Hensher et al. (2005). CE applications in a tourism context include, e.g., Hearne and Salinas (2002) or Naidoo and Adamowicz (2005).

The destination area chosen is mountainous southwestern China, a global biodiversity hotspot and officially designated tourism development area (Ge, 2002). First, we identified the attributes that characterize southwestern China destinations. To optimize this step, the second author conducted 13 qualitative in-depth interviews with Chinese middle class consumers interested in travelling to southwestern China in spring 2005. From a lists of factors that tourists reported they paid most attention to when making destination choices, five attributes were distilled (Table 3). *Sustainable tourism services* is the only attribute designed by researchers due to research interests. Attribute levels reflect typical destination characteristics in southwestern China. Because of the limited availability of sustainable tourism services in China to date, the extensive levels of the *sustainable tourism services* attribute reflect potential developments rather than current practices.

Table 3. Destination attributes and attribute levels used in choice experiment

| Destination attribute | Attribute levels | Coding[#] |
|---|---|---|
| **Convenience at places just outside of attraction site** | 1. No car roads, only trails; no hotels or hostels, tourists need to bring their own food; | 1 |
| | 2. Difficult motor access; several simple hostels or hotels; | 2 |
| | 3. Old roads; some common hotels and restaurants; | 3 |
| | 4. National roads and highways; many hotels from two stars to four or five stars, and many restaurants; | 4 |
| **Tarnished nature Experiences (Possibility of experiencing Nature)[§]** | 1. Sense of solitude and tranquillity; no tourism infrastructure; no other visitors; | 1 |
| | 2. At times, some basic tourism infrastructure (restaurants, stores, toilets) visible; meet other people every hour; | 2 |
| | 3. Have big scale tourism infrastructure (cable car, Karaoke), always be aware of "this is a tourism place"; meet other people every minute; | 3 |
| | 4. Many kinds of tourism infrastructures everywhere; many "artificial" attractions; very crowded; | 4 |
| **Cultural attractions** | 1. None; | 1 |
| | 2. Some traditional old buildings mixed with many modern buildings; no original living culture; | 2 |
| | 3. Several traditional local buildings mixed with many modern houses; one temple without usage any more; modernized local customs and culture; | 3 |
| | 4. Well preserved traditional local buildings; temples with monks playing roles in local people's life; and well preserved original customs and culture; | 4 |
| **Natural attractions[$]** | 1. Ordinary landscapes; no precious or attractive species; | 1 |
| | 2. Magnificent awe-inspiring natural landscapes; no precious or attractive species; | 2 |
| | 3. Ordinary landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); | 2 |
| | 4. Magnificent awe-inspiring natural landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); | 3 |
| **Sustainable tourism services** | 1. Freely visit every place; no visitor restriction; no resource saving or recycling; no community involvement; | 1 |
| | 2. Small conservation program only for core attraction area; litter/trash cans; community based business-restaurants, hostels and small hotels, local specialty stores and horse riding service; | 2 |
| | 3. Having buffer zone; scientific conservation program for core area and buffer zone; green buses, bio energy use and waste water treatment; local community participates in decision-making in local development, and local business involvement (see above); | 3 |
| **Cost (local transportation, lodging, food, entrance fee and other expenses)** | 1. 780RMB | 780 |
| | 2. 1440RMB | 1440 |
| | 3. 2400RMB | 2400 |
| | 4. 4200RMB | 4200 |
| | 5. 7200RMB | 7200 |

[#]base level (opt out option) was coded as 0. [§]the attribute to which *Tarnished nature experience* refers shows up in the actual choice cards (Figure 1) under the more neutral description "Possibility of experiencing Nature". [$]the natural attractions level 2 and 3 are coded "2" because there is no "natural" order of the two levels.

Levels of the *cost* attribute were identified based on public information on trip cost for modest backpackers, commercially organized package tours and 'luxury' trips involving rental of vehicles with drivers.

From the sets of attributes, a total of 3,840 ($4^4*3*5$) destination scenarios can be generated. An orthogonalisation procedure was used to recover a main effects design consisting of 24 pair-wise comparisons of destination scenarios. The scenarios were randomly blocked into three groups, each with eight choice sets. In face-to-face interviews, each respondent was presented with eight choice sets. An example of a choice set is shown in Figure 1.

| Place A | |
|---|---|
| Convenience at place just outside of attraction site | – Old roads;<br>– Some hotels/ restaurants |
| Possibility of experiencing nature | – Big scale tourism infrastructure (cable car, Karaoke);<br>– Always be aware of "this is a tourism place";<br>– Meet other people every minute |
| Sustainable tourism services | – Freely visit every place;<br>– No resource saving;<br>– No community involvement |
| Cultural attractions | – Well preserved traditional buildings;<br>– Temples (alive);<br>– Original customs and culture |
| Natural attractions | – Ordinary landscapes;<br>– Many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 2400RMB |

| Place B | |
|---|---|
| Convenience at place just outside of attraction site | – Old roads;<br>– Some hotels/ restaurants |
| Possibility of experiencing nature | – Sense of solitude and tranquility;<br>– No tourism infrastructure;<br>– No other visitors |
| Sustainable tourism services | – Small conservation program only in core zone (e.g. wild animal monitoring and protection, etc);<br>– Community based restaurant/ hostel/small hotel;<br>– local specialty stores |
| Cultural attractions | – Some traditional old buildings/ modern houses;<br>– No original culture alive |
| Natural attractions | – Magnificent awe-inspiring natural landscapes;<br>– No precious or nice species; |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 4200RMB |

Opt out: I would rather like to spend my money on a better trip offered, and have my vacation enjoyment on another trip.

Figure 1. Example of a set of choice cards ('scenarios'; English language version)[2]

The CE instrument was iteratively improved by qualitative pre-test interviews, and a pilot study in Beijing (n=50) in autumn 2005.

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[2] The Chinese version and English version choice sets with visual aids are available at: http://www.uni-goettingen.de/de/sh/47518.html.

## *2.4    Administration of the survey*

The CE (n=213 middle class respondents) was conducted in two national tourist *source areas*: Beijing (about 14.8 million citizens) representing East Cost agglomerations, and the provincial capital city of Chengdu (Sichuan Province; ~10 million citizens). Sixteen city sub-districts in Beijing and Chengdu were randomly selected from a list of suitable sub-districts that were identified by the following two criteria:

- price range of offered apartments typical for middle class citizens;

- availability of public spaces or accessible semi-public spaces inside gated residential compounds to contact respondents;

The public and semi-public spaces included shopping malls, supermarkets, outdoor markets, parks, restaurants and tea houses, gardens and other open compound spaces.

Local university graduate students were carefully trained and employed as interviewers. A quota sampling procedure was used to recruit respondents of the middle class target group. Three quota sampling criteria (quota) were employed: equally distributed genders; evenly distributed age in the range 20 to 60 years; even recruitment of respondents with respect to the selected 16 sub-districts. Corresponding to the official Chinese statistics definition of middle class citizens (CNBS, 2005), we required that the monthly income of a respondent was above 1,500 RMB in Beijing and above 1,250 RMB in Chengdu. Interviews were terminated if a potential respondent declared that s/he did not like travelling.

All respondents were confirmed that they like travelling before the formal interview started. After explaining the purpose of the study, each respondent was asked eight times to choose from the prepared choice sets. Each choice set consisted of two different "scenarios" representing tourism trips to southwestern China (Cards A and B), and an opt out/buy nothing option (see Figure 1). In a final section of the interview, additional socio-demographic

questions (n=213), and attitudinal (n=112) or images of nature questions (n=101) were asked. Overall, a total of 1,704 choices were observed from 213 respondents.

## 2.5   *Statistical and econometric analysis*

A varimax rotated factor analysis with binary squared Euclidean distance and Ward-linkage was employed to generate empirical dimensions of attitudes toward sustainable tourism and images of nature dimensions (Kroemker, 2004). Factor analysis generated five attitudes toward sustainable tourism dimensions (total explained variance: 63.2%). The first three dimensions alone explained 49.3% of the variance. From the images of nature items, four dimensions were singled out by factor analysis.

For interaction analysis, all items $i$ of each dimension $d$ with a factor loading $l$ above 0.4 were used to calculate the dimension score $V$ of the respective dimension for each respondent $n$:

$$V(d,n) = \sum_{i} l * Q$$

       with $Q$: Likert score of $i$

The dimension score are used for econometric analysis, we also report mean (raw score) of each dimension to facilitate a more intuitive understanding with reference to the original 1-5 likert scale. For all eight dimensions, a descriptive label was chosen that reflects contents and wording of the underlying items. Factor analysis, reliability tests as well as parametric standard procedures (bivariate Pearson correlation) were conducted with SPSS 12.1.

In Nested Logit (NL) analysis of the CE data, an eligible NL tree structure was identified, and the corresponding model estimated with NLOGIT 3.0. The inclusive value was set to 1.0 for the degenerated branch, and the model initiated with starting values obtained from a non-nested NL model (Hensher et al. 2005:536). All scale parameters were normalized at the lowest level (RU1). The base model includes an alternative specific constant (ASC) coded 1 for the generic choices A and B, and 0 for the "opt out/buy nothing" option. The ASC

captures a fundamental propensity to make a trip to southwestern China beyond the information given by the choice cards A and B. Where applicable, pseudo $R^2$ ('constants only' value) and inclusive values (IV) are reported as diagnostic statistics. Pseudo $R^2$ values in reference to a constant only model are much more conservative than the $R^2$ value of ordinary least squares (OLS), for example, values between 0.07-0.1 correspond to $R^2$ values of 0.22 to 0.28 value in OLS model equivalent (Hensher et al., 2005: 338). All NL models from which results are presented are overall most highly significant (p-value of Chi²-Test < 0.001). Log Likelihood function ratio tests are used to compare if a NL model with more predictors improves prediction with respect to the underlying base model taking into account the higher number of predictors.

First we calculated a base model only with the destination attributes and the ASC (Table 5). Next, influences of socio-economic variables (Table 6), of attitudes toward sustainable tourism (Table 7), and of respondent images of nature (Table 8) were tested by including interaction terms of the respective variables with destination choice attributes and/or the ASC. Interaction terms were included one-by-one as single terms into the NL base model. Predictors with P<0.1 are included to highlight the influence of variables that display a tendency for significance at conventional significance levels (Table 5-9).

By combining promising interaction terms of socio-demographic and attitudes on sustainable tourism variables, we constructed a parsimonious NL model. After including all interaction terms simultaneously, non-significant interaction terms were successively discarded to recover the most influential dimensions (Table 9).

The estimation of statistically significant attribute coefficients allows for the calculation of welfare measures. The maximum willingness-to-pay for a 1 unit change of a trip attribute ("marginal" WTP) equals the ratio of the respective attribute coefficient and the negative value of the cost attribute coefficient (Table 9).

# 3    Results

## 3.1    *Socio-demographic characteristics*

Average respondent age was 35.6 years (Table 4). A gender ratio of 56.3% male to 43.7% female was achieved. With differences between Beijing and Chengdu, average income per respondent was 2,887 RMB (~289 €) corresponding to the upper middle class income category (CNBS, 2005). 69% of respondents hold a formal educational degree equivalent to a bachelor degree or above. This is much higher than the Chinese average of 5.8% (CNBS, 2005).

Table 4. Social demographics of the sample

| Variable | | Mean value | Number | Percent(%) |
|---|---|---|---|---|
| Age | | 35.6 | | |
| Sex | Female | | 93 | 43.7 |
| | Male | | 120 | 56.3 |
| Income | | 2887RMB | | |
| City | Beijing | 3441RMB | 111 | 52.1 |
| | Chengdu | 2378RMB | 102 | 47.9 |
| Education | Lower than Bachelor | | 66 | 31 |
| | Bachelor | | 112 | 52.6 |
| | Master | | 29 | 13.6 |
| | PhD and above | | 6 | 2.8 |

1 Euro ≈ 10 RMB. n=213

## 3.2    *Factor analysis*

### 3.2.1    Attitude toward sustainable tourism

Three sustainable tourism attitude dimensions were selected according to their Cronbach's alpha (mean ± standard deviation, Cronbach's Alpha):

- *In favour of sustainability* (4.04±0.40; 0.84): supportive attitude for the proposed measures of sustainable tourism development.

- *Concern for losing future opportunities* (4.11±0.51; 0.70): concerned attitude regarding a risk of losing future opportunities provided by the tourism resources of southwestern China.

- *Sceptical attitude on sustainable tourism services* (3.52±0.49; 0.58): sceptical attitude toward the included sustainable tourism services.

While the *in favour of sustainability* dimension explains over one quarter of the factor analysis variance (26.3%), the *concern for losing opportunities* dimension explains 11.1%, and the *sceptical attitude* dimension 7.2%. A total of 44.6% of variance is explained by these attitudinal dimensions.

### 3.2.2   Images of nature

Four images of nature dimensions were identified (mean ± standard deviation, Cronbach's Alpha):

- *Nature needs & deserves to be protected* (4.10±0.47; 0.80): Nature should be protected because it enriches our lives by wonderful magnificence.

- *Respect* (3.89±0.6; 0.55): Nature has its own right of existence; it is not allowed to destroy nature anywhere for human needs. Even small interferences can lead to big and irreversible damages.

- *Robustness by divine designer* (2.19±0.71; 0.76): Nature is not that fragile; humans can use it as they want. It is a creation of God.

- *Non-spirituality* (3.04±0.96, single-item dimension): Nature is important, but neither has a soul nor is sacred.

The *Nature needs & deserves to be protected* explains 24.5% of the variance, the *Robustness by divine designer* 16.6%, 8.2% the *Respect* dimension and 7.1% for the *Non-spirituality* dimension. In total, 56.4% of variance is explained by these four dimensions.

## 3.3 Correlation of attitudinal and images of nature dimensions with socio-demographic variables

Correlation analysis between social demographics and attitudinal dimensions shows that only education significantly correlates with the *concern of losing future opportunity* dimension (r=0.333; p<0.001). The more educated respondents are more concerned of *losing future* opportunity. Among the images of nature dimensions, the *needs and deserve to be protected* dimension (r=-0.202; p=0.043) and the *non-spirituality* dimension (r=-0.165; p=0.098) have a tendency of significant correlation with the education. More educated respondents have lower scores in these two dimensions. The *robustness by divine designer* dimension is positively correlated with age (r=0.21; p=0.035).

## 3.4 Base NL Model

Table 5. Nested logit model result for destination attributes

| Attribute | Coefficient |
|---|---|
| Convenience | 0.1153** |
| Tarnished nature experience | -0.2175*** |
| Sustainable tourism services | 0.0197 |
| Cultural attractions | 0.1352*** |
| Natural attractions | 0.2787*** |
| Cost[1000RMB] | -0.1537*** |
| [Non-status quo ASC] | 0.4129* |
| Log Likelihood function | -1635.8 |
| P(Chi$^2$); DF | <0.0001; 8 |
| Pseudo R$^2$ (constant only) | 0.076 |
| Inclusive value (IV) | 0.9072 |

***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; no indication: no significance. The non-status quo ASC in brackets as it is a NL model predictor of destination choice but not a destination attribute. DF: degree of freedom; Pseudo-R$^2$ values in reference to a constant only model: values between 0.07-0.08 correspond to R$^2$ values of 0.22 to 0.24 in the linear model equivalent (Hensher et al.2005:339); IV statistic is highly difference from 1. n=213.

Five out of six attributes of the NL model are highly significant determinants of destination choice (see Table 5). *Sustainable tourism services* is the only non-significant attribute (P=0.6778). A positive sign is displayed for the *convenience*, *cultural attractions* and *natural*

*attractions* attributes. *Ceteris paribus*, this indicates that a trip with "more" of the respective attribute is preferred by respondents. The positive sign for the ASC suggests that respondents associate an additional positive effect with choosing Card A or Card B – i.e. a trip to southwestern China of the type offered – above what can be explained by the explicit destination attributes. *Tarnished nature experience* and *cost* have negative signs indicating that respondents prefer less visitors and tourism infrastructure around, and value a sense of solitude and tranquillity. Cheaper trip cost is more favoured by the respondents.

### 3.5    *Influence of socio demographic characteristics on choice*

The NL models with interactions between socio demographics and attributes show that sex (1=male) has a highly significant positive influence on ASC, and Log (income) has a significant positive influence on the importance of the cost attribute (Table 6).

Table 6. Nested logit models of interaction with socio demographics

| Variable | | Attribute | |
|---|---|---|---|
| Social demographics | | Cost[1000RMB] | [Non-status quo ASC] |
| Sex | ASC | | 0.1791 |
| | Sex*ASC | | 0.449*** |
| | Pseudo-$R^2$ (constant only) | | 0.08 |
| | LL[&] | | *** |
| Log (income) | Cost | -0.6184*** | |
| | Log (income) *Cost[1000RMB] | 0.06** | |
| | Pseudo-$R^2$ (constant only) | 0.079 | |
| | LL | ** | |

[***]: significant at $p \leqslant 0.001$; [**]: significant at $p \leqslant 0.01$; [*]: significant at $p \leqslant 0.05$; no indication: no significance. [&]LL-log likelihood ratio test. n=213.

### 3.6    *Influences of attitudes toward sustainable tourism on preferences*

Table 7 shows results from models that include interactions with attitude toward sustainable tourism.

- Attitudes *In favour of sustainability* reduce the negative influence of the cost attribute (p=0.037).

- The *concern for losing future opportunities* dimension influences preferences expressed by the *convenience* attribute (p=0.046), the *sustainable tourism services* attribute (p=0.092), and by ASC (p=0.071).

- The *sceptical attitude* dimension has an influence on *all* attributes. The signs of the interaction coefficients reveal that respondents with a stronger *sceptical attitude* prefer less *convenience* (p<0.001), and are more negatively affected by *tarnished nature experience* (p<0.001).

  In spite of its insignificance in the base model, the *sustainable tourism services* attribute itself is highly significant (p=0.001) in the interaction model with the *sceptical attitude*. The negative sign indicates that respondents, who are more sceptical, tend to view better developed ecotourism/sustainable tourism services less positively.

  The *sceptical attitude* dimension also has negative influences on both the importance of *cultural attractions* (p=0.011) and *natural attractions* attributes (p=0.03). Respondents, who are more sceptical, perceive less economic benefits from *cultural* and *natural attractions*.

  The *sceptical attitude* dimension also has a negative influence on the impact of the *cost* attribute (p=0.01). Respondents, who have an increasingly *sceptical attitude*, are more sensitive to higher costs regarding trips offered to southwestern China. Also, more sceptical respondents are less interested in travelling to southwestern China (interaction with ASC: p<0.001).

Table 7. Nested logit models of interactions with attitudes toward sustainable tourism

| Dimension | Attribute | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Attitudes toward sustainable tourism | Coefficient | Convenience | Tarnished nature experience | Sustainable tourism services | Cultural attractions | Natural attractions | Cost [1000RMB] | [Non-status quo ASC] |
| In favor of sustainability | attribute§ | | | | | | -0.4162*** | |
| | interaction§ | | | | | | 0.0214* | |
| | LL& | | | | | | * | |
| Concern for losing future opportunities | attribute | 0.4461* | | 0.4031+ | | | | 1.593* |
| | interaction | -0.0432* | | -0.0434+ | | | | -0.247+ |
| | LL | * | | + | | | | + |
| Sceptical attitude | attribute | 0.6281*** | 0.3996* | 0.6546*** | 0.4627** | 0.5758*** | 0.0748 | 2.55*** |
| | interaction | -0.0931*** | -0.0998*** | -0.106*** | -0.0632* | -0.0524* | -0.041** | -0.334*** |
| | LL | *** | *** | *** | ** | * | ** | *** |

***: significant at $p \leqslant 0.001$; **: significant at $p \leqslant 0.01$; *: significant at $p \leqslant 0.05$; +: tendency at $p \leqslant 0.1$; §coefficient of attribute without interaction; $coefficient of interaction term with attribute; &Log Likelihood ratio test; n=112.

## 3.7 Influences of images of nature

Table 8 shows results from the NL models that include interactions with the images of nature dimensions.

- Two dimensions have a positive influence only on the *cost* attribute (*nature needs and deserves to be protected*: p=0.022; *respect*: p=0.024).

- The *robustness by divine designer* dimension has significant positive influences on three attributes: *tarnished nature experience* (p<0.001), *cultural attractions* (p=0.003), and *cost* (p=0.005). Respondents with high scores in this dimension are less negatively affected by *tarnished nature experience* while highly valuing *cultural attractions*. Additionally, they are less sensitive to increased costs.

  The dimension also demonstrates a tendency toward significance (p=0.0825) when interacted with the *sustainable tourism services* attribute. The positive sign of the interaction terms suggests that respondents who think that nature is robust and that it primarily exists for humans tend to appreciate the value of the offered sustainable tourism services more strongly.

- The *non-spirituality* dimension influences preferences for *sustainable tourism services* (p=0.014) and *natural attractions* (p<0.001), and displays a tendency (p=0.052) with respect to the *convenience* attribute. The signs of the interaction terms are all negative. Respondents who have a more non-spiritual images of the nature, view *sustainable tourism services* less positively, and perceive lower benefits from the *convenience* and *natural attractions* at the destination.

The statistical significance (or tendency) of the single interaction terms is in each case supported by the respective LL ratio tests (see Table 8).

Table 8. Nested logit models of interactions with images of nature dimensions

| Dimension | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Attribute** | | | | | | | | |
| Images of nature | Coefficient | Convenience | Tarnished nature experience | Sustainable tourism services | Cultural attractions | Natural attractions | Cost [1000RMB] | [Non-status quo ASC] |
| Needs and deserves to be protected | attribute§ | | | | | | -0.5536** | |
| | interaction§ | | | | | | 0.0277* | |
| | LL& | | | | | | * | |
| Respect | attribute | | | | | | -0.4492*** | |
| | interaction | | | | | | 0.039* | |
| | LL | | | | | | * | |
| Robustness by divine designer | attribute | | -0.6752*** | -0.2133 | -0.1103 | | -0.3281*** | |
| | interaction | | 0.0528*** | 0.0275+ | 0.0386** | | 0.0227** | |
| | LL | | *** | + | ** | | ** | |
| Non-spirituality | attribute | 0.3376** | | 0.2927* | | 0.5896*** | | |
| | interaction | -0.0751+ | | -0.1192* | | -0.1249*** | | |
| | LL | + | | * | | *** | | |

***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; +: tendency at p≤0.1; no indication: no significance. §coefficient of attribute without interaction; coefficient of interaction term with attribute; &log likelihood ratio-test. n=101.

## 3.8  *Parsimonious model and WTP calculation*

Table 9 shows results from the parsimonious model. Sex is the only influential factor on ASC. *In favour of sustainability* has a strong influence on the *cost* attribute. The *sceptical attitude* displays an influence on preferences for *sustainable tourism services*. In spite of the clearly documented influence of all included predictors on *average* preferences of the

investigated group of Chinese middle class respondents, the pseudo R² (constant only) value of ~0.087 (~0.246 in OLS) indicates a substantial capacity of the model with regard to the prediction of *individual* choices. If we replace the interaction term Sustainable tourism\**sceptical attitude* with Tarnished nature experience\**sceptical attitude*, a slightly better model fit is obtained (interaction term coefficient =-0.1037; LL=-844.7; pseudo R²: 0.088).

Table 9. Parsimonious model and marginal willingness-to-pay estimation based on sub-sample with attitudinal data

| Dimension/variable | Coefficient | Sample mean of the dimension score[&] | Interacted coefficients | Marginal Willingness to Pay (RMB)[§] |
|---|---|---|---|---|
| Convenience | 0.1037* | | 0.1037 | 650 |
| Tarnished nature experience | -0.16** | | -0.16 | -1005 |
| Sustainable tourism services | 0.7153*** | | 0.7153 | 4481 |
| Sceptical attitude * Sustainable tourism services | -0.111*** | 5.78 | -0.6431 | -4029 |
| Cultural attractions | 0.1241*** | | 0.1241 | 777 |
| Natural attractions | 0.2973*** | | 0.2973 | 1862 |
| Sex*[Non-status quo ASC] | 0.5773*** | | 0.5773 | 3616 |
| Cost[1000RMB] | -0.4683*** | | -0.4683 | |
| In favor of sustainability*Cost[1000RMB] | 0.0258* | 11.96 | 0.3087 | |
| Log Likelihood Function | -845.7 | | | |
| P(Chi²); DF | <0.0001; 10 | | | |
| Pseudo R² (constant only) | 0.0868 | | | |
| Inclusive value (IV) | 0.9857 | | | |

\*\*\*: significant at $p \leqslant 0.001$; \*\*: significant at $p \leqslant 0.01$; \*: significant at $p \leqslant 0.05$; [&]sample mean of the attitudinal dimension score; [§]1 Euro ≈ 10 RMB. DF: degree of freedom. n=112.

For a one level improvement of trip *convenience*, e.g., from old roads and some common hotels and restaurants, to highways and various options of hotels and restaurants, respondents were, on average, willing to pay a maximum of 650 RMB (~65 €). In contrast, a one level worsening of the *tarnished nature experience* attribute reduces average WTP by 1,005 RMB (~100 €). After accounting for the average interaction effect with the *sceptic attitude* dimension, aggregated marginal WTP for the sustainable tourism services is 452 RMB (~45

€). Marginal WTP for a one level improvement of *cultural attractions* is less than half (777 RMB) (~78 €) of marginal WTP for improvements of *natural attractions* (1,862 RMB ~186 €)). Independent of the specific destination characteristics, male respondents value a trip to southwestern China ~3,620 RMB (~362 €) higher than female respondents.

## 4   Discussion and conclusion

We assessed influences on hypothetical Chinese domestic tourist destination choices with a focus on options for the sustainable development of Chinese domestic tourism. The destination area investigated was southwestern China, a region nationally well-known for its natural and cultural heritage. Although our sample size is small (n=213), the study has a pioneering character in two regards: (i) to our knowledge, the study uses a unique combination of data on attitudes on sustainable tourism along with data on culturally more fundamental images of nature to predict individual destination choice preference variations, and (ii) to our knowledge, it is the first study ever to quantify economic preferences for destination attributes relevant to sustainable tourism development in mainland China. From a methodological perspective, our study establishes the usefulness of the CE method for the demand-side analysis of sustainable tourism development in the Chinese domestic tourism market (cf. Hearne and Salinas 2002).

Our results indicate that several landscape- and nature-related destination attributes influence destination choices of the queried middle class respondents (see Base Model results; Table 5). The more *convenient* the offered trip (travel comfort, accommodation), and the more *cultural* as well as *natural attractions* are present, the more likely is the respective trip chosen over a competing alternative. On the other hand, the higher the price and the more "*tarnished*" (visitor congestion, visible tourism infrastructure) the expected nature experience, the less likely is a trip chosen. The Base Model suggests that the level of *sustainable tourism services* offered does not influence destination choice. The only other roughly comparable study

indicates mixed results with regard to the acceptance and appreciation of typical sustainable tourism measures: Chinese eco-tourists accept maximum tourist number restrictions on hiking trails, and appreciate access to environmental interpretation on nature reserves; prescribed camping sites are not even appreciated by the "dedicated" eco-tourist and the "frequent" eco-tourist groups, however (Li and Cai 2004).

With regard to socio-demographic influences (Table 6), we found that male respondents have stronger preferences for traveling to southwestern China destinations than female respondents. As expected from microeconomic theory, respondents reporting a higher income are willing to pay a higher maximum price for the same trip. An earlier study on Chinese eco-tourists (Li and Cai 2004) found that eco-tourists tend to be younger, are more often male, higher educated and have higher incomes. For the average middle class tourist sampled in our study, none of these variables influenced preferences for destination attributes including the sustainable tourism attribute (Table 5, Table 9).

Analyzing attitudes toward sustainable tourism of a 112 respondent sub-sample by factor analysis, two 'positive' attitudinal dimensions (*in favor of sustainability, concern for losing opportunities*) and one 'negative' attitudinal dimension (*sceptical attitude on sustainable tourism*) were singled out. Respondents displaying higher scores on the first two dimensions should also display higher preferences for sustainable tourism services. In contrast, respondents receiving higher scores on the *sceptics* dimensions should display lower – or no – preferences for sustainable tourism services. Interaction analysis paints a more complex picture, though (Table 7). The *in favor of sustainability* dimension has no influence at all on the sustainable tourism attribute (although it reduces respondent sensitivity to cost). There is a barely significant indication that respondents who are *concerned of losing future tourism opportunities* tend to care less for sustainable tourism measures. Three interpretations suggest themselves: (i) as also indicated by the base model, there is genuinely no interest in sustainable tourism services; (ii) a ceiling effect (mean in original coding units above 4.0) in

both dimensions does not allow for the detection of influences; (iii) the high scores are an expression of paying lip-service to the ideals of sustainable tourism while the choice experiment reveals more accurately the true - rather pragmatic - preferences.

In contrast, the *sceptical attitude* has a highly significant negative influence on all attributes including the *sustainable tourism services* attribute. Most interestingly, the non-interacted sustainable tourism attribute itself also becomes significant when the interaction term is included (Table 7). Thus, destination choice *does* depend on the level of offered sustainable tourism services. The influence, however, depends on the extent to which respondents refrain from subscribing to popular sceptical notions such as "*sustainable tourism is just another way of charging a higher price*". As the mean dimension score is only slightly lower (3.52) than for the two 'positive' dimensions, it is likely that the lip-service argument explains the poor performance of the two 'positive' dimensions best. In fact, we included items such as the one cited above to differentiate between respondents who superficially respond to the – officially demanded – values of a harmonious development of Chinese society, and more convinced supporters of sustainable development who are able to refrain from popular *sceptical* notions. In other words, the high agreement to the items of the two 'positive' dimensions is likely to be dominated by socially expected response patterns.

The parsimonious model strengthens the conclusion that the interaction of the *sceptical attitude* dimension with the *sustainable tourism services* attribute is one of the most important results (Table 9): Only the model in which the *sceptical attitude* is interacted with the *tarnished nature experience* attribute displays a (marginally) better overall fit. In any case, above average sceptical respondents pose a particular challenge as they strongly demand an untarnished nature experience but appear less willing to pay for it by purchasing sustainable tourism services.

In the second step, the analysis of attitudinal influences is supplemented by an analysis of indirect, cultural influences expressed by the images of nature that Chinese middle class

tourists hold. Two dimensions (*nature needs and deserve to be protected* dimension and *respect* dimension) demonstrate harmony orientated human-nature relation and two other dimensions (*robustness by divine designer* dimension and *non-spirituality* dimension) are more supportive of human domination of nature perception. With using the visually same images of nature items with Kroemker (2004), Chinese middle class respondents demonstrate similar images of nature dimensions with Kromeker' observations of college students of American, German, Indian and Peruvian. *Nature needs and deserves to be protected* and *respect* dimensions also appeared in Kroemker study (2004) with the substantial share of identical items. *Robustness by divine designer* dimension includes items from robustness dimension and one item of spirituality dimension (item of "nature is sacred because it is created by God") in Kroemker results. The *non-spirituality* dimension only emphasizes the aspect of "nature is neither has a soul nor is sacred" which is a facet of spirituality dimension in Kroemker study (2004). The items developed by Kroemker are proven to be useful in cross-cultural study; also the empirical dimensions show substantially similarities.

In regard to destination attribute, two harmonious human-nature relation dimensions only influence the *cost* attribute; while the human domination dimensions display substantial impacts on preference variations. The *robustness by divine designer* reflects the belief that nature mainly exists for human purposes, and that it is rather robust if impacted by humans. Respondents who have high scores in this dimension are little affected by nature experiences in a visibly human-modified ('*tarnished*') environment, and are more strongly fond of *cultural attractions*. There is also weak evidence for a small positive impact of this dimension on preferences for *sustainable tourism services*. While this specific influence is difficult to explain, a much clearer and quantitatively much more relevant influence is exerted by the *non-spirituality* dimension. Above average non-spiritual respondents have lower preferences for *natural attractions*, *sustainable tourism services* and for trip *convenience* (tendency only). Worded differently, the more spiritual the images of nature of a Chinese middle class tourist,

the more s/he prefers – and is willing to pay for – trips featuring more *natural attractions* and more *sustainable tourism services*.

For an indication of the economic scale of the influences of destination attributes and attitudinal factors on destination choice, we turn to the willingness-to-pay calculation derived from the parsimonious model. The range of marginal maximum WTP values ranges from 650 RMB (~65 €) (improved trip convenience) to nearly 1,900 RMB (~190 €) for a trip with more abundant 'charismatic' species and a more impressive landscape. A modest marginal WTP of about 450 RMB (~45 €) is calculated for an average respondent for one level improvement of the *sustainable tourism services* (*sceptical attitude* dimension mean score 3.52). Already a drop from an average approval of 3.52 with regard to the items of the *sceptical attitude* dimension to 3.0 results in a substantially higher WTP of 1,058 RMB (~106 €) for a one level improvement of the *sustainable tourism services* attribute.

Our study suggests that there are attitudinal barriers that hinder a substantial share of Chinese middle class tourists to appreciate sustainable tourism services. Elsewhere, we calculated that a highly sceptical attitude prevents 32 % of respondents from expressing any economic appreciation of sustainable tourism services (Yan et al., accepted). Many Chinese middle class tourists question the benefit of paying for the environmental and social improvements associated with sustainable tourism services while the generally *positive* attitude toward sustainable tourism stated in attitudinal surveys does not yet translate into sustainable consumption and production opportunities for the tourism industry. On the other hand, non-materialist, 'spiritual' images of nature favour the economic appreciation of sustainable tourism services. This result appears to mirror the continuing economic importance of the nature-related, spiritual traditions of the Daoism and Buddhism roots of traditional images of nature and of Chinese culture in general. It is likely that highly sceptical notions decrease if Chinese tourists have experienced positive examples of sustainable tourism development. Yet, it is difficult to predict how deeper cultural background factors

such as the images of nature will change in the future. As higher educated respondents tend to report more strongly spiritual images of nature, the rapid advancement of formal education may support preference change in favour of sustainable tourism services, however. The correlation of age with the *robustness by divine designer* dimension may point to a similar trend in the aging Chinese society.

## Acknowledgement

## References

Ajzen, I. (2005) Attitudes, Personality, and Behaviour (2nd edition). Milton-Keynes, England: Open University Press.

Bagozzi, R. P. (1988). The rebirth of attitude research in marketing. Journal of the Market Research Society 30(2), 163-195.

Bao, J., Zheng, H. and Dai, G. (2002) The evolvement of Spatial Structure and the Significance of Guilin's Domestic Tourist Origins, ACTA Geographica Sinica 57(1): 96-106.

Barnhart, M. G. (1997) Ideas of nature in an Asian context. Philosophy East and West 47(3), 417-432. Bramwell, B. and Lane, B.(2004) Editoral: A fragile recovery and China's emerging prominence. Journal of Sustainable Tourism 12(1), 1-3.

Barkmann, J., Cerda, C. L. and Marggraf, R. (2005) Interdisziplinäre analyse von naturbildern: notwendige voraussetzung für die ökonomische bewertung der natürlichen umwelt. Umwelt psychology, 9 (2), 10-28.

Cai, L. A., Hu, B. and Feng, R. (2001) Domestic tourism demand in China's urban centres: Empirical analyses and marketing implications. Journal of Vacation Marketing 8 (1), 64-74.

Callicott, J. B. and Ames, R. T. (1989) Nature in Asian Traditions of Thought: Essays in Environmental Philosophy. Albany: State University of New York Press.

Cater, E. A. (2000) Tourism in the Yunnan Great Rivers National Parks System Project: prospects for sustainability. Tourism Geographies 2(4), 472-489

Chan, R. (2001) Determinants of Chinese Consumers' Green Purchase Behaviour. Psychology & Marketing 18(4), 389-413

CNBT (China National Bureau of Tourism) (2006) 2005 China Tourism Industry General Statistics.Online document at URL http://www.cnta.gov.cn/32-lydy/2005/2005lytj.htm[25-02-2006].

de Castro, E. V. (1996) Images of Nature and Society in Amazonian Ethnology. Annual Review of Anthropology 25, 179-200.

CNBS (China National Bureau of Statistics) (2005) China Statistical Yearbook: 2005. Beijing: China Statistics Press.

Deng, J., Q, S., Walker, G. and Zhang, Y. (2003) Environmental impacts of nature tourism: A case study of Zhangjiajie national forest park, China. Journal of Sustainable Tourism 11(6), 529-548.

Eisel, U. (2004) Naturbilder sind keine Bilder aus der Natur - Orientierungsfragen an der Nahtstelle zwischen subjektivem und objektivem Sinn. GAIA - Ecological Perspectives for Science and Society 13(2), 92-98.

Eymann, A. and Ronning, G. (1997) Microeconometric models of tourists' destination choice. Regional Science & Urban Economics 27(6), 735-761.

Ge, Q. S. (2002) Strategy of Exploring Tourism in Western China. Beijing: Chinese Tourism Press.

Haener, M., Boxall, P. and Adamowicz, W. (2001) Modeling Recreation Site Choice: Do Hypothetical Choices Reflect Actual Behavior? American Journal of Agricultural Economics 83 (3), 629-642.

He, G., Sun, G., Zhang, X., Chen, Y. and Dong, H. (1999) Fifty years of China Tourism Industry. Beijing, China Tourism Press.

Henscher, D. A., Rose, J. M. and Greene, W. (2005) Applied Choice Analysis: A Primer. Cambridge, New York, Melbourne, Madrid, Cape Town, Saeo Pualo: Cambridge University     Press.

Hearne, R. and Salinas, Z.M., (2002) The use of choice experiments in the analysis of tourist preferences for ecotourism development in Costa Rica. Journal of Environmental Management 65: 153-163.

Jacobsen, K. A. (1997) Humankind and nature in Buddhism. In: Deutsch, E. and Berthrong, J. (eds) A Companion to World Philosophies (pp.381-391), Massechusetts: Blackwell Publishers.

Krömker, D. (2005) Naturbilder-ein Kulturbedingter Faktor im Umgang mit dem Klimawandel. Umwelt Psychologie 9 (2), 146-171.

Krömker D (2004) Naturbilder, Klimaschutz und Kultur. Weinheim, Basel, Berlin: Psychologie Forschung aktuell.

Lafargue, M. (2001) "Nature" as Part of Human Culture in Daoism. In Girardot, N. J., Miller, J. and Liu, X. (eds) Daoism and Ecology-Ways within a Cosmic Landscape (44-59). Cambridge, Massachusetts: Harvard University Press.

Lee, W. H. and Moscardo, G. (2005) Understanding the impact of ecotourism resort experiences on tourists' environmental attitudes and behavioral intentions. Journal of Sustainability Tourism 13 (6), 546-565.

Louviere, J., Hensher, D. A. and Swait, J. D. (2000) Stated Choice Methods: Analysis and Application. Cambridge, UK: CambridgeUniversity Press,.

Li, W. (2004) Environmental management indicators for ecotourism in China's nature reserves: A case study in Tianmushan Nature Reserve. Tourism Management 25, 559-564.

Li, Y., and Cai, Y. (2004) A study on ecotourists' behavioral characteristics in Beijing: a case study in Baihuashan nature reserve. Geographical Research 23(6), 863-874.

Li, J. (2005) On Chinese ecotourists characteristics and motivational factors: making the Shanxi Taibai national park as an example. Economic Geography 25(5), 720-727.

Luzar, E.J., Diagne, A., Ecgan, C. and Henning, B. R. (1998) Profiling the nature-based tourists: a multinomial logit approach. Journal of Travel Research 37, 48-55.

Mao, D., Zhang, J., and Bao, H. (2005) A tourist destination choice model based on Lancasterian characteristics theory and destination image theory: theoretical analysis and case study. Geographical Research 24(6): 992-999.

Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B. And Kent, J. (2000) Biodiversity hotspots for conservation priorities. Nature 403, 853-858.

Naidoo, R. and Adamowicz, W. L. (2005) Biodiversity and nature based tourism at forest reserve in Uganda. Environment and Development Economics 10, 159-178.

Nianyong, H. and Zhuge, R. (2001) Ecotourism in China's nature reserves: opportunities and Challenges. Journal of Sustainable Tourism 9 (3), 228-242.

Nordlund, A. M. and Garvill, J. (2002) Value Structures behind Pro-environmental Behavior. Environment and Behavior 34(6), 740-756.

Rogers, R. and Prentice-Dunn, S. (1997) Protection Motivation Theory. In Gochman D (ed.) Handbook of health behavior research: Vol. 1. Determinants of health behavior: Personal and social. New York: Plenum.

Shaw, G. and Williams, A. M. (2002) Critical Issue in Tourism: A Geographical Perspective (2nd Edition). Oxford, Blackwell Publisher.

Stamou, A. G. and Paraskevopoulos, S. (2004) Images of Nature by Tourism and Environmentalist Discourses in Visitors Books: A Critical Discourse Analysis of Ecotourism. Discourse & Society 15 (1), 29-105.

Steel, B. S. (1996) Thinking globally and acting locally? Environmental attitudes, behavior and activism. Journal of Environmental Management 47, 27-36.

Tao, C. H., Eagles, P.F.J and Smith, S.L.J. (2004) Profiling Taiwanese ecotourists using a self- definition approach. Journal of sustainable tourism 12(2): 149-168.

Tu, W. (1998a) The Continuity of Being: Chinese Visions of Nature. In Tucker, M. E., and Berthrong, J. (eds) Confucianism and Ecology-The Interrelation of Heaven, Earth, and Humans (105-121), Cambridge, Massachusetts: Harvard University Press.

Tu, W. (1998b) Beyond the Enlightenment Mentality. In Tucker, M. E., and Berthrong, J. (eds) Confucianism and Ecology-The Interrelation of Heaven, Earth, and Humans (3-21), Cambridge, Massachusetts: Harvard University Press.

Weller, R. and Bol, P. (1998) From Heaven -and-Earth to Nature: Chinese Concepts of the Environment and Their Influence on Policy Implementation. In Deutsch, E. and Berthrong, J. (eds) Confucianism and Ecology(313-341), Massechusetts: Blackwell Publishers..

Wen, J. and Tisdell, C.A. (2001) Tourism and China's Development - Policies, Regional Economic Growth and Ecotourism. Singapore: World Scientific Publishing.

World Tourism Organisation (WTO) (2004) Sustainable Development of Tourism Conceptual Definition: World Tourism Organization. Online document at URL: http://www.world-tourism.org/sustainable/concepts.htm (09-02-2006).

Wu, B. and Cai, L. (2005) Spatial Modeling - Suburban Leisure in Shanghai. Annals of Tourism Research, 33 (1), 179-198.

Wu, B. (2001) Comments on Master Plan of Sichuan Province Tourism Development. Urban Design & Planning 4, 21-25.

Yan, J., Barkmann,J., Zschiegner, A. and Marggraf, R. (accepted) The sceptics' challenge for sustainable tourism in the Southwestern China biodiversity hotspot: a choice experiment approach. *China Tourism Research*.

# Chapter 4

# Assessing Domestic Tourist Preferences for Nature-based Destinations in Southwestern China-A Choice Modelling Analysis[1]

Jiong Yan, Jan Barkmann, Rainer Marggraf

**Abstract**: Southwestern China is a popular tourism destination region with rich cultural heritages and biodiversity of global significance. This paper aimed at portraying Chinese middle class tourist preferences for nature-based destination attributes in southwestern China. Investigation designed by choice experiment method was conducted with 616 respondents in Beijing and Chengdu. Linear and effect coding were used for NL model analysis. Linear coding results reveal that respondents generally prefer destinations with improved levels of *convenience*, *cultural and natural attractions*, but less *tarnished nature experiences*, *sustainable tourism services* and *cost*. The *natural attractions* attribute is the most influential attribute regarding destination choice. It includes a *species* as well as a *landscape* component. The *landscape* is much more important to respondents than the *species* component. *Cost* is the second most influential attribute, followed by *cultural attractions* and *convenience*.

Additional details are reviewed by effect coding analysis. Respondents generally prefer less *tarnished nature experiences*, but most preferred option actually is the *basic* level instead of the *virgin land* level. Although the *sustainable tourism services* negatively impacts the destination choice in general, the destination utility still increases with the second (*limited*) level of sustainable tourism services.

Key words: preference, choice experiment, Chinese middle class tourists, nature-based destinations, southwestern China

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# 1   Introduction

Chinese domestic tourism market has undergone remarkable growth during the past twenty years. In 2006, Chinese domestic tourists reached 1.394 billion person-trips, increasing by 15% from 2005. Domestic tourism expenditure was 623 billion RMB (~62.3 billion Euro; 1 RMB≈ €0.1), an increase of 18% over 2005 (CNTA, 2006).  A significant contribution to the growth was from the expanding number of China top and middle income earners who started to regard travel a "birthright" (WTTC, 2006: 15).

Southwestern China is a popular tourism region in China which includes Sichuan Province, Yunnan Province, Guizhou Province, Chongqing Municipality and the Tibet Autonomous Region. It harbours one of 25 global biodiversity hotspots (Myers et al., 2000) and 10 UNESCO world heritage sites (UNESCO, 2007). In 2001, the 'National Campaign for the Development of Western China' highlighted tourism as a priority among economic sectors to be developed (Zhu, 2001). Up to date neglected, demand side studies of Chinese domestic tourist destination choice are crucial to assess economic, social and ecological perspectives of the booming tourism industry. To our knowledge, no study has yet been conducted in mainland China that specially targets tourist destination choice from an economic preference perspective. In particular, we report on results from a welfare-economic choice experiment that describes destination-related preferences of Chinese middle-class tourists as well as the socio-demographic influences on the preferences.

The next section provides an overview of research that applied the CE method in tourism and leisure studies, as well the research focusing on Chinese tourist destination choice. In section 3, methodological information on the data collection and analytical methods are given. Results are presented in section 4, followed by the discussion and conclusion in section 5.

## 2   Literature review

### *2.1   A destination choice experiment (CE)*

CE is rooted on Lancaster's 'characteristics' theory of goods (Lancaster, 1966), and on random utility theory (RUT, McFadden, 1973). Lancaster (1966) suggested that consumers do not derive satisfaction from goods themselves but from the characteristic ('attribute') the goods provide. RUT postulates that preferences for destinations consist of a systematic and observable/explainable component and a random and unobservable/unexplainable component (McFadden, 1973). CE requires respondents to choose among several alternatives, each of which is characterized by multiple attribute with varying levels. RUT based choice models allow researchers to make inferences about what choice attributes are preferred on the basis of the observed preferences expressed. This allows estimating marginal willingness-to-pay for each attribute.

CE surveys were widely used in marketing research to elicit economic preferences for product characteristics (e.g., Fredrik et al., 2007; Maynard et al., 2004). The method was frequently employed for tourism and leisure studies and has proven to be a versatile stated preference method (Apostolakis & Jaffry, 2005; Breffle & Morey, 2000; Crouch & Louviere, 2004; Hanley et al., 2002; Huybers, 2003; Kelly et. al, 2007 a/b; Louviere & Timmermans, 1990; Morley, 1994; Naidoo & Adamowicz, 2005).  For example, in the survey of visitors of two Greek heritages, it is reported that middle-age tourists appreciated the introduction services and tourists with younger kids valued kindergarten facilities (Apostolakis and Jaffry, 2005). Kelly (2007b) revealed that travel time, parking fee and fuel cost significantly influenced tourists choice of public or private transportation to a mountain resort in Canada. Answers to hypothetical destination choice questions have been shown to reflect actual destination choice well (Adamowicz et al., 1994; Haener et al., 2001). Hearne and Salinas (2002) concluded in

their study that the CE is a feasible tool to analyze user preferences for the management of protected areas in developing countries.

A rich body of research applied the CE method to the destination choice research. It allows for the quantitative investigation of tourist destination choice preferences by econometric estimation of destination choice models based on destination or trip characteristics (e.g., Crouch & Louviere, 2004; Eymann & Ronning, 1997; Hanley et al., 2002). Huybers (2003) assessed the determinants underlying the short-break holiday destination choices of prospective domestic Australian tourists. The results showed that the quality of amenities and the level of crowdedness were important to the utility of nearly all studied destinations. Naidoo and Adamowicz (2005) examined tourist demand for nature-based tourism in Uganda. The studies reported that tourist demonstrated increased willingness-to-pay for a protected area when the number of bird species increased.

Traditional socio-demographics as well as attitudinal and psychological variables can be incorporated into CE models (e.g., Apostolakis & Jaffry, 2005; Naidoo and Adamowicz, 2005). Typical socio-demographic variables that have been shown to influence destination choice are: age (Apostolakis & Jaffry, 2005; Huybers, 2003; Naidoo and Adamowicz, 2005), and income (Huybers, 2003; Naidoo and Adamowicz, 2005).

Some studies applied CE to assess ecotourism or sustainable tourism development (Adamowicz et al., 1994; Hearne & Salinas, 2002; Kelly et al., 2007a/b). It was reported that water quality significantly influenced tourist preferences for water recreation (Adamowicz et al., 1994). Kelly et al. (2007a) concluded that tourists supported options that would increase the overall eco-efficiency of destinations, like protected area, renewable energy and waste recycling. They were also willing-to-accept an environmental tax for these eco-efficient options. A study of Costa Rica ecotourism development (Hearne & Salinas, 2002) showed that tourists preferred site development with efforts to provide more information, better views, and more modern infrastructure.

## *2.2    Research on Chinese tourist destination choice*

Chinese tourism research and planning is traditionally conducted from a supply-side perspective (Bao et al., 2002; cf. Zhang, 2003). Regional tourism planning and development as well as the social, environmental and cultural impacts of tourism are the main research focus since the 1990s (Zhang, 2003). The 'National Campaign for the Development of Western China' made southwestern China a focus area for tourism planning and development research (cf. Cater, 2000; Ge, 2002; Wu, 2001). Lately, the supply-side of "ecotourism" has received some attention in addition to the supply-side of tourism in general (e.g. Fang, 2002; Li, 2004).

Starting from the first studies in the 1990s (Wu, 1997; Zhang et al., 1999), most current demand-side contributions continue to focus on aspects such as simple relationships between destination choice and geographical distance (e.g., Bao et al., 2002; Huang & Xiao, 2000; Wu & Cai, 2005). These studies revealed that accessibility and distance serve as influential factors in tourist destination choice decisions. In the study of Zhang et al. (1999), it showed that travel distance of tourist visiting Jiuzhaigou was positively correlated with their education and self-perceived income. Jiuzhaigou is one of the UNESCO natural heritage site in Sichuan province.

The importance of tourist motivations and preferences has only recently been acknowledged (e.g., Mao et al., 2005; Li & Cai, 2004; Zhou et al., 2006). Bauer and Chan (2001) investigated tourists to Hongkong, including tourists from China and other countries, and reported that noise levels and cleanliness of the street, and air quality were of concern to visitors. A study conducted in eastern China (Zhou et al., 2006) revealed that gender, education, income and travel expenditure had significant influences on tourists' acceptance and willingness to pay to the certificated 'ecotourism' products. The authors also reported result from the precursor study (Yan et al., accepted) that Chinese middle class tourists preferred better convenience, natural and cultural attractions but less tarnished nature experience and cheaper cost when making destination choice. The preference for the sustainable tourism services appeared to depend on

the degree of the sceptical attitude. To our knowledge, more complex study designs as potentially accomplished by the CE method have not been used in mainland China domestic tourism research.

## 3 Methods

### 3.1 Study area

The destination area chosen is mountainous southwestern China (Figure 1), a global biodiversity hotspot (Myers et al., 2000) and an officially designated tourism development area (Ge, 2002). This area has rich tourism resources which include 5 UNESCO natural heritage sites, 4 UNESCO cultural heritage sites and 1 UNESCO cultural and natural heritage site (UNESCO, 2007). Thirty six ethnic minorities live in the region, which accounts for around two thirds of the total of 56 minorities in China (CCG, 2007).
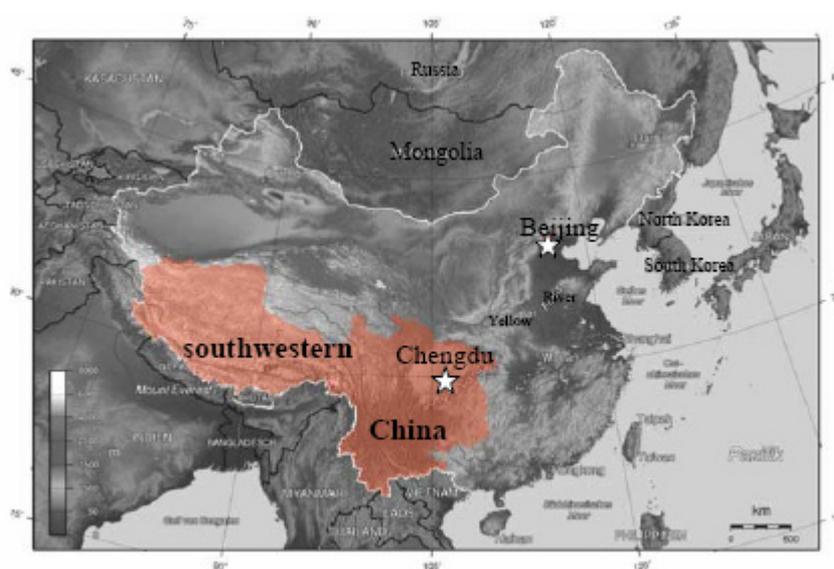


Figure 1. Map of research region and investigation sites

(Changed after source:

http://commons.wikimedia.org/wiki/Atlas_of_the_People%27s_Republic_of_China. GNU Free

Documentation License)

The investigation was conducted in two national tourist source areas (Figure 1): Beijing (about 14.8 million citizens) representing East Coast agglomerations, and the provincial capital city of Chengdu (Sichuan Province), one of the biggest urban agglomerations in southwest China (around 10 million citizens). Similar with the study of Huybers (2003), the investigation was conducted in tourist *source areas* to prevent self-selection bias.

### 3.2    Attribute design

The first step in designing CE instruments is the identification of destination attributes. CE studies on ecotourism development in Costa Rica (Hearne & Salinas, 2002) and Australia (Huybers, 2003) used a travel convenience attribute as well as an attribute of access restrictions on certain trails at the destination site. Studies of domestic Australian tourists destination choices (Huybers, 2003), the Greek heritage attractions study (Apostolakis & Jaffry, 2005) and a study on climbing preference in Scotland (Hanley et al., 2002) used a crowdedness attribute. Kelly et al. (2007) included 'environmental friendly transportation options', the amount of protected area as well as resource saving options (renewable energy use and waste recycling) as independent attributes in their study. In the Scotland research (Hanley et al., 2002) and Uganda biodiversity and nature based tourism research (Naidoo & Adamowicz, 2005), landscape features/scenic quality was one of the CE attribute.  Attributes of this type appeared either a *priori* useful and/or emerged from the pre-study phase of our CE application. To optimize attribute design, in spring and autumn of 2005, the first author conducted 22 qualitative in-depth interviews with Chinese middle class respondents who were interested in travelling to southwestern China.  From lists of factors that tourists paid most attention to when making their decisions to take a trip, five attributes were identified to describe nature based destinations in southwestern China (Table 1). The *sustainable tourism services* attribute was the only attribute designed by the authors due to our research interests, and not spontaneously mentioned by interviewees.

Table 1. Destination attributes and levels in choice experiment

| Destination attribute | Attribute levels | Linear coding[#] | Effect coding[#] |
|---|---|---|---|
| **Convenience at places just outside of attraction site** | 1. No car roads, only trails; no hotels or hostels, tourists need to bring their own food; (*none* level) | 1 | 1, 0, 0, 0 |
| | 2. Difficult motor access; several simple hostels or hotels; (*difficult* level) | 2 | 0, 1, 0, 0 |
| | 3. Old roads; some common hotels and restaurants; (*limited* level) | 3 | 0, 0, 1, 0 |
| | 4. National roads and highways; many hotels from two stars to four or five stars, and many restaurants; (*advanced* level) | 4 | 0, 0, 0, 1 |
| **Tarnished nature experience (Possibility of experiencing Nature)[§]** | 1. Sense of solitude and tranquillity; no tourism infrastructure; no other visitors; (*virgin land* level) | 1 | 1, 0, 0, 0 |
| | 2. At times, some basic tourism infrastructure (restaurants, stores, toilets) visible; meet other people every hour; (*basic* level) | 2 | 0, 1, 0, 0 |
| | 3. Have big scale tourism infrastructure (cable car, Karaoke), always be aware of "this is a tourism place"; meet other people every minute; (*dispersed* level) | 3 | 0, 0, 1, 0 |
| | 4. Many kinds of tourism infrastructures everywhere; many "artificial" attractions; very crowded; (*packed* level) | 4 | 0, 0, 0, 1 |
| **Cultural attractions** | 1. None; (*none* level) | 1 | 1, 0, 0, 0 |
| | 2. Some traditional old buildings mixed with many modern buildings; no original living culture; (*endangered* level) | 2 | 0, 1, 0, 0 |
| | 3. Several traditional local buildings mixed with many modern houses; one temple without usage any more; modernized local customs and culture; (*modernized* level) | 3 | 0, 0, 1, 0 |
| | 4. Well preserved traditional local buildings; temples with monks playing roles in local people's life; and well preserved original customs and culture; (*original* level) | 4 | 0, 0, 0, 1 |
| **Natural attractions[$]** | 1. Ordinary landscapes; no precious or attractive species; (*none* level) | 1 | 1, 0, 0, 0 |
| | 2. Magnificent awe-inspiring natural landscapes; no precious or attractive species; ( *landscape* level) | 2 | 0, 1, 0, 0 |
| | 3. Ordinary landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); (*species* level) | 2 | 0, 0, 1, 0 |
| | 4. Magnificent awe-inspiring natural landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); (*both* level) | 3 | 0, 0, 0, 1 |
| **Sustainable tourism services (STS)** | 1. Freely visit every place; no visitor restriction; no resource saving or recycling; no community involvement; (*none* level) | 1 | 1, 0, 0 |
| | 2. Small conservation program only for core attraction area; litter/trash cans; community based business-restaurants, hostels and small hotels, local specialty stores and horse riding service; (*limited* level) | 2 | 0, 1, 0 |
| | 3. Having buffer zone; scientific conservation program for core area and buffer zone; green buses, bio energy use and waste water treatment; local community participates in decision-making in local development, and local business involvement (see above); (*extensive* level) | 3 | 0, 0, 1 |
| **Cost (local transportation, lodging, food, entrance fee and other expenses)** | 1. 780RMB | 0.78 | 0.78 |
| | 2. 1440RMB | 1.44 | 1.44 |
| | 3. 2400RMB | 2.4 | 2.4 |
| | 4. 4200RMB | 4.2 | 4.2 |
| | 5. 7200RMB | 7.2 | 7.2 |

[#]: Base level (opt out option) was coded as 0 in linear coding and -1 in effect coding (Hensher et al., 2005: 121). [$]the natural attractions level 2 and 3 are coded "2" because there is no "natural" order of the two levels. [§]the attribute *tarnished nature experience* shows up in the actual choice cards (Figure 2) under the more neutral description *possibility of experiencing nature*.

For each attribute, three to five levels were identified based on representative conditions of nature based tourism attraction sites in southwestern China. The levels of the cost attribute are based on published information on trip costs for modest backpackers, self-organized travellers, and commercially organized group-trips, as well as for luxury trips including renting vehicles with drivers.

## 3.3    CE set

| Place A | | |
|---|---|---|
| Convenience at place just outside of attraction site | – | Old roads; |
| | – | Some hotels/ restaurants |
| Possibility of experiencing nature | – | Big scale tourism infrastructure (cable car, Karaoke); |
| | – | Always be aware of "this is a tourism place"; |
| | – | Meet other people every minute |
| Sustainable tourism services | – | Freely visit every place; |
| | – | No resource saving; |
| | – | No community involvement |
| Cultural attractions | – | Well preserved traditional buildings; |
| | – | Temples (alive); |
| | – | Original customs and culture |
| Natural attractions | – | Ordinary landscapes; |
| | – | Many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); |
| Cost (including entrance fee, local transportation, lodging and food, etc) | | 2400RMB |

| Place B | | |
|---|---|---|
| Convenience at place just outside of attraction site | – | Old roads; |
| | – | Some hotels/ restaurants |
| Possibility of experiencing nature | – | Sense of solitude and tranquility; |
| | – | No tourism infrastructure; |
| | – | No other visitors |
| Sustainable tourism services | – | Small conservation program only in core zone (e.g. wild animal monitoring and protection, etc); |
| | – | Community based restaurant/ hostel/small hotel; |
| | – | local specialty stores |
| Cultural    attractions | – | Some traditional old buildings/ modern houses; |
| | – | No original culture alive |
| Natural attractions | – | Magnificent awe-inspiring natural landscapes; |
| | – | No precious or nice species; |
| Cost (including entrance fee, local transportation, lodging and food, etc) | | 4200RMB |

Opt out: I would rather like to spend my money on a better trip offered, and have my vacation enjoyment on another trip.

Figure 2. Example of a set of choice cards ('scenarios'; English language text version)

In face-to-face interviews, each respondent was asked to choose an alternative from a choice set. Each choice set consisted of two different "scenarios" representing tourism trips to southwestern China (Cards A and B), and an opt out/buy nothing option (Figure 2)[2]. Every scenario is a profile of different combination of levels of the six attributes. From the attributes

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[2] The Chinese version and English version choice sets with visual aids are available at: http://www.uni-goettingen.de/de/sh/47518.html

and attribute levels, 3,840 ($4^4$*3*5) single choice scenarios can be generated. An orthogonalisation procedure was used to recover a main effects design, consisting of 24 pair-wise comparisons of destination scenarios. The scenarios were randomly blocked into three groups, each with eight choice sets. Besides the CE sets, socio-demographic questions, attitude and cultural value items were included into the questionnaire.

The CE instrument was iteratively improved. A set of pre-test interviews (n=50) was conducted in Beijing in autumn 2005. A smaller precursor study (n=213) was conducted in Beijing and Chengdu. Based on the comprehensive analysis of the qualitative and quantitative data, and interviewer and respondent feedbacks, the final version of investigation instrument was designed.

## 3.4   *Administration of the CE survey*

The CE was conducted in Beijing and Chengdu from August to November in 2006. We employed and carefully trained local university graduate students as interviewers. Twenty city sub-districts in Beijing and Chengdu were randomly selected from 15 suitable sub-districts each. The sub-districts were identified by the following two criteria:

- typical price range of apartments for middle class customers;
- availability of public spaces or accessible semi-public spaces inside gated residential compounds to contact respondents;

The public and semi-public spaces included shopping malls, supermarkets, outdoor markets, parks, restaurants and tea houses, gardens and other open compound spaces.

We decided to focus on Chinese 'middle class' tourists. A number of studies contribute to the discussion on the rising China middle class and how it should be defined/identified (e.g. Farrell et al., 2006; Li, 2003; Li, 2005). In the literature, there is no consensus regarding a middle class definition. However, income is always one of the most important indicators. Consequently, we focused on this indicator to "filter" the targeted middle class respondents.  In line with Chinese

income data from official Chinese statistics (CNBS, 2006a) and the McKinsey Institute Report (Farrell et al., 2006), the starting income level was set at monthly income of 1,500 RMB.

A quota sampling procedure provided the best way to interview the middle class target group. Three sampling criteria (quota) were applied: (i) equally distributed genders; (ii) balanced age distribution (above age 20); (iii) even recruitment of respondents with respect to the selected 20 sub-districts.

Before the formal interview started, respondents were asked if they like travelling, where they live, and about their approximate income. If respondent income was lower than 1,500 RMB per month, the interviewers would ask two more interactive questions and finished the interview. If respondent income was above 1,500 RMB, the interview would continue. Next, the CE attributes were explained. With a set of sample cards, the choice procedure was practiced to ensure that respondent understood everything properly. Directly before the choice exercise, respondents received a token gift as the appreciation of their participation. In a final section of the interview, further socio-demographic questions were asked. Overall, a total of 4,928 choices were observed from 616 respondents.

## 3.5   *Sample description*

The descriptive statistics and correlations of the socio-demographics were calculated with SPSS 15.0. For econometric analysis, residency and gender were dummy coded (Figure 3a and 3b). Education and self-perceived social status were coded 1-4 and 1-5, respectively (Figure 3d and 3e). During the interview, respondents were asked to indicate the ranges they belong to regarding their age, monthly income and annual travel expenditures. In analysis, age, monthly income and annual travel expenditures (Figure 3c, 3f and 3g) used means of each category for calculation.

To avoid bias non-normal score distributions, nonparametric standard procedures (Kendall's tau-b correlation) was used for correlation analysis. In self-perceived social status, 32

respondents were unsure with their social status. A co-linearity diagnostics linear regression with Durbin-Watson was used to predict the values for the 32 respondents. The other five socio-demographics (Figure 3) were pointed as independent values to estimated self-perceived social status value for the 32 unsure respondents. The predicted values were then substituted into the data base to allow further analysis with the full sample.

## 3.6    *Nested Logit (NL) model*

For the analysis of the CE data, a set of Nested Logit models was calculated with NLOGIT 3.0. Preliminary analyses indicated the risk of violations of the independence from irrelevant alternatives (IIA) condition necessary for the application of (the simpler) conditional logit analysis. Because NL does not rely on the IIA assumption, an eligible NL tree structure was identified, and the corresponding models estimated. The inclusive value was set to 1.0 for the degenerated branch, and the model initiated with starting values obtained from a non-nested NL model (Hensher et al. 2005: 536). All scale parameters were normalized at the lowest level (RU1).  A NL base model includes an alternative specific constant (non-status quo) (Table 2). The alternative specific constant (non-status quo ASC) coded 1 for the generic choices A and B, and 0 for the "opt out/buy nothing" option. The non-status quo ASC captures a fundamental propensity to make a trip to southwestern China beyond the information given by the choice cards A and B.

Where applicable, pseudo $R^2$ ('constants only' value), Log likelihood function and inclusive values (IV) are reported as diagnostic statistics. Pseudo $R^2$ values in reference to a constant only model are much more conservative than the $R^2$ value of ordinary least squares (OLS), for example, values between 0.07-0.08 correspond to $R^2$ values of 0.22 to 0.24 value in OLS model equivalent (Hensher et al., 2005: 338). IV statistics are significantly different from 1. All NL models from which results are presented are overall highly significant (p-value of Chi²-Test < 0.001).

### *3.7   Linear coding attribute and effect coding attribute*

In the analysis, two different types of coding systems (Table 1), linear coding and effect coding, were used for the NL models.

Linear coding is based on the assumption of a strictly proportional quantitative relationship between the levels of an attribute and respondent utility. Consequently, one utility coefficient can sufficiently describe a linear utility component. For the attributes used in this study, a simple linear relation between attribute levels and respondent utility can not be generally assumed. For the natural attractions attribute, already the 1-2-2-3 coding of the linear model indicates, that we did not have strong *a priori* reasons to decide which of the two middle levels would actually be valued more. Thus, we employed effect coding to obtain a better understanding of the true shape of the utility function (Hensher et al., 2005: 120).

In effect coding, a discrete utility coefficient is calculated for each single attribute level. In our effect coding models (see Table 4, Figure 4), the utility coefficients describe the effect of the single attributes versus the opt out/buy nothing choice. The "opt out/buy nothing" option was coded as 0 in linear coding model and -1 in effect coding models (Hensher et al., 2005: 121).

For the estimation of none linearity effects, we first calculated a linearly coded "base model" (Table 3). In a second step, each linearly coded attribute was exchanged one by one by its effect-coded alternative (see section 4.3)

### *3.8   Interaction terms*

To test for the influences of socio-demographics on destination attribute levels, interaction terms between each single level of an attribute and a socio-demographic variable were generated; i.e., we used the effect coded attributes. In Table 5, base model statistics are reported for each model used. Because of the number of tested interaction terms, it was not feasible to include all terms simultaneously in one model. Furthermore, the significant

correlations between several of the socio-demographic variables (see Table 2) would lead to severe multi-colinearity effects.

In order to judge the influence of the interaction terms on respondent utility, the coefficients are multiplied by the mean value of the respective socio-demographic variables. Thus, the coefficients displayed in Table 5 represent the mean interaction effects with respect to all respondents.

## *3.9  WTP calculation*

The estimation of statistically significant attribute coefficients allows for the calculation of willingness-to-pay values. For attributes with a linear relation, the maximum willingness-to-pay for a 1 level change of trip attribute $S_g$ ("marginal" WTP) equals the ratio of the respective coefficient $b_g$ and the negative coefficient of the cost attribute $b_y$ (Figure 5):

$$mWTP(S_g) = -\frac{b_g}{b_y}$$

For effect coding attribute, WTP for one level change from $L_n$ to $L_{n+1}$ equals to the WTP difference between $L_{n+1}$ and $L_n$ (see Figure 5).

$L_n$: an attribute level.

$L_{n+1}$: one level change over level $L_n$;

$$\text{WTP}(L_n) \rightarrow \text{WTP}(L_{n+1}) = \text{WTP}(L_{n+1}) - WTP(L_n) = -\frac{b_{n+1}}{b_y} - (-\frac{b_n}{b_y})$$

## 4   Results

### *4.1   Socio- demographics of the respondent*

We interviewed 307 respondents from Chengdu (49.8%) and 309 (50.2%) from Beijing (Figure 3a). A gender ratio of 53% male to 47% female was achieved (Figure 3b). Average respondent age is 39.9 years. Age groups (Figure 3c) reflect age distribution among middle class sub-districts, although large efforts were put on recruiting respondents older than 40 years.

Half of respondents hold a formal educational degree equivalent to a bachelor degree or above (Figure 3d). This is much higher than the Chinese average of 5.6% (CNBS, 2006b). Around 90% of respondents regard themselves as middle or higher social class while 5.2% were unsure (Figure 3e). With differences between Beijing and Chengdu, mean monthly income per respondent is 3,537 RMB (~354 €) (Figure 3f). The average annual travel expenditures are 3,518 RMB per respondent (~352 €) (Figure 3g), which was much higher than urban resident average tourism expenditures of 737 RMB (~74 €) in 2005 (CNTA, 2006). The sample included non-middle class urban residents.
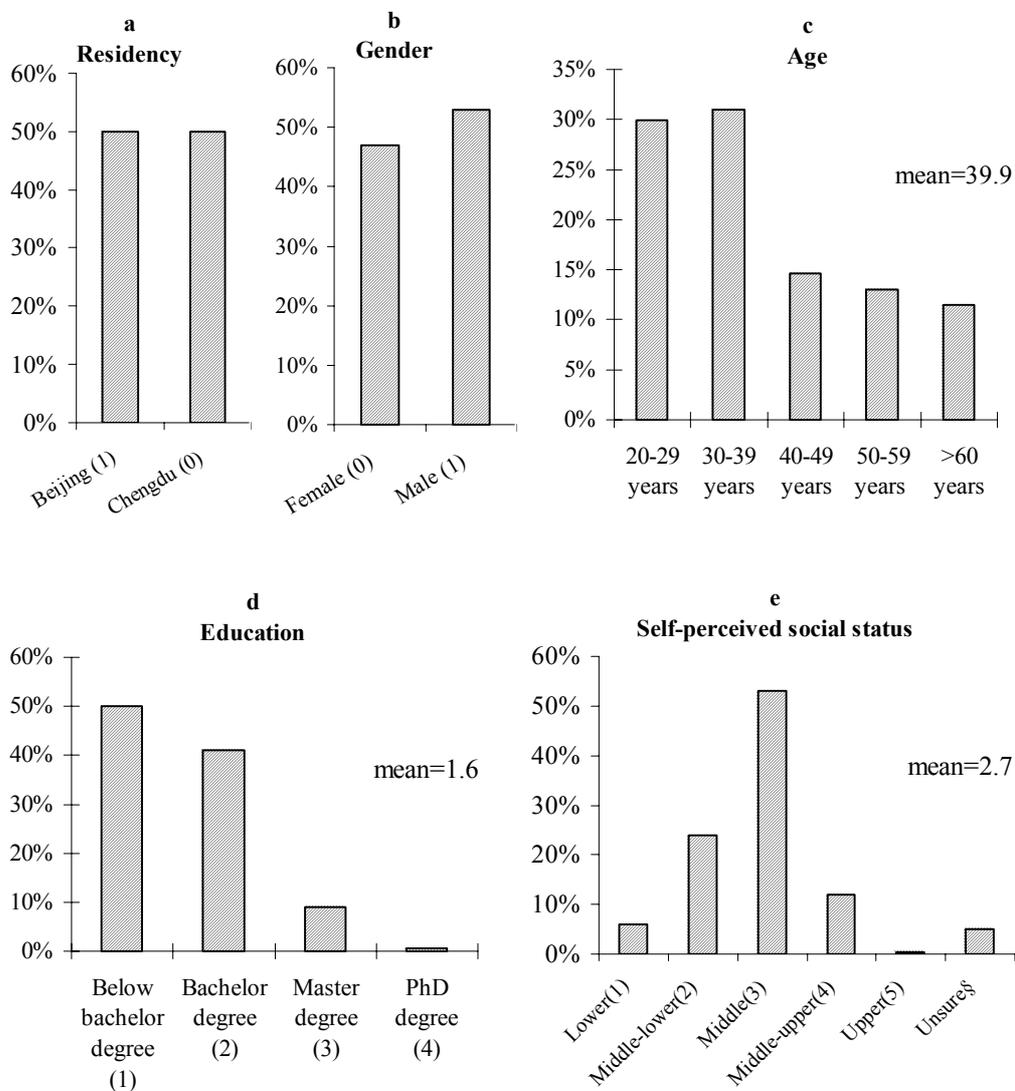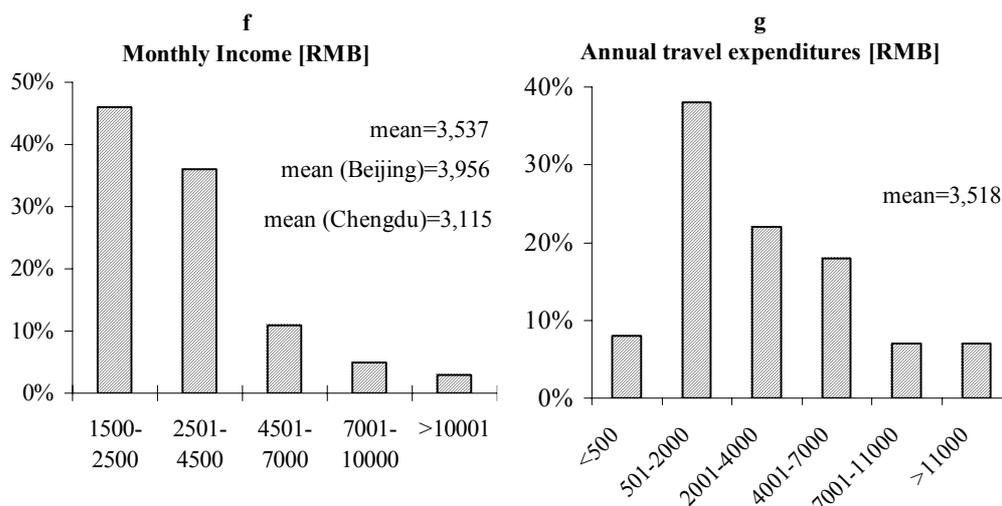
§: "unsure" was substituted by the estimated values from a co-linearity diagnostics linear regression. n=616.

Figure 3. Overview of respondent socio-demographics

Table 2. Correlations of socio-demographics

| | Residency | Gender | Age | Education | Travel expenditures | Income | Self-perceived social status |
|---|---|---|---|---|---|---|---|
| **Residency (Beijing=1)** | | | | | | 0.183** | -0.082* |
| **Gender (male=1)** | | | | | | 0.178** | -0.097** |
| **Age** | | | | -0.188** | | -0.088** | |
| **Education** | | | -0.188** | | 0.257** | 0.389** | 0.206** |
| **Travel expenditures** | | | | 0.257** | | 0.37** | 0.3** |
| **Income** | 0.183** | 0.178** | -0.088** | 0.389** | 0.37** | | 0.186** |
| **Self-perceived social status** | -0.082* | -0.097** | | 0.206** | 0.3** | 0.186** | |

**: Correlation is significant at the 0.01 level (2-tailed); *: correlation is significant at the 0.05 level (2-tailed). No significance: blank space.

Table 3 shows the correlations between socio-demographics. The strongest correlations (above 0.3) exist between income and education, income and travel expenditures, as well as travel expenditures and self-perceived social status. Respondents with higher income have higher formal education, and spend more money for travelling. In turn, respondents who spend more for travelling report a higher social status. Noticeable, the correlation between travel expenditures and self-perceived social status is much stronger than the correlation between income and self-perceived social status.

In details, age negatively correlates with education and income. Older respondents are less educated and earn less income. Education correlates significantly with travel expenditures, income and self-perceived social status. The more educated respondents have more travel expenditures and income, and higher self-perceived social status. Income has significant correlations with all the socio-demographics. Residency in Beijing, male, travel expenditures and self-perceived socio-demographics are positively correlated with income; only age is negatively correlated with it. As for self-perceived social status, it is negatively connected with residency in Beijing and male but positively connected with education, travel expenditures and income.

## 4.2    *Base nested  logit (NL) model with linear coding*

All six attributes are significant determinants of destination choice (see Table 2). A positive sign is displayed for *convenience*, *cultural attractions* and *natural attractions*. This indicates that a trip with "more" of the respective attributes are preferred by respondents. By contrast, *tarnished nature experience, sustainable tourism services* and *cost* have a negative sign. It indicates that, generally, respondents prefer less visitors and tourism infrastructures around, and valued a sense of solitude and tranquillity. Respondents also prefer less developed *sustainable tourism services*. As expected, *cost* represents a disutility of a trip. On average, the offered trips are valued a bit less than expected from the sum of the simple utility values in this model (negative non-status quo).

Table 3. Linear coding nested logit model for destination choice

| Attribute | Coefficient | P |
|---|---|---|
| Convenience | 0.1067*** | 0.0000 |
| Tarnished nature experience | -0.0652** | 0.0031 |
| Sustainable tourism services | -0.0623* | 0.0309 |
| Cultural attractions | 0.1884*** | 0.0000 |
| Natural attractions | 0.4242*** | 0.0000 |
| Cost [1,000RMB] | -0.1958*** | 0.0000 |
| [Non-status quo ASC] | -0.2482* | 0.0346 |
| Log likelihood function | -4933.26 | |
| Pseudo-$R^2$ (constant only)§ | 0.071 | |
| Inclusive value (IV) | 0.842 | |
| Observations (choices) | 4928 | |

***: significant at $p\leq0.001$; **: significant at $p\leq0.01$; *: significant at $p\leq0.05$. The non-status quo ASC in brackets as it is a NL model predictor of destination choice but not a destination attribute. §pseudo $R^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to $R^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistic is significantly different from 1; n=616.

## 4.3    Shape of the utility function

Figure 4 displays the non-linear effects of five destination attributes which were effect coded in NL models. Table 4 reports the diagnostic statistics of each model. Log likelihood functions of five NL models range from -4930.14 to 4921.78.  Pseudo $R^2$ values are from 0.071 to 0.073, which corresponds to $R^2$ values of 0.22 to 0.224 in the linear model equivalent (Hensher et al.2005:338).  IV values are from 0.592 to 0.688, which is significantly different from 1 and suggests the use of NL model.

The utility function shapes of the *convenience* and *cultural attractions* are nearly linear, although there is only a relatively small improvement from the *none* level to the second level. For the other three attributes, effect coding detected strong deviation from linearity. *Tarnished nature experiences* and *sustainable tourism services* utility function demonstrate a "humpback" pattern. Particularly, respondents do not appreciate the *extensive* sustainable tourism services at all. Effect coding also indicates clearly, that the second level of *natural attractions* (magnificent landscape but no precious or attractive species) is much more appreciated than the third level (ordinary landscape but many precious species and rich biodiversity).

Generally, the coefficients of those single attribute levels are significant whose mean value is far away from zero; while those levels close to zero are not.
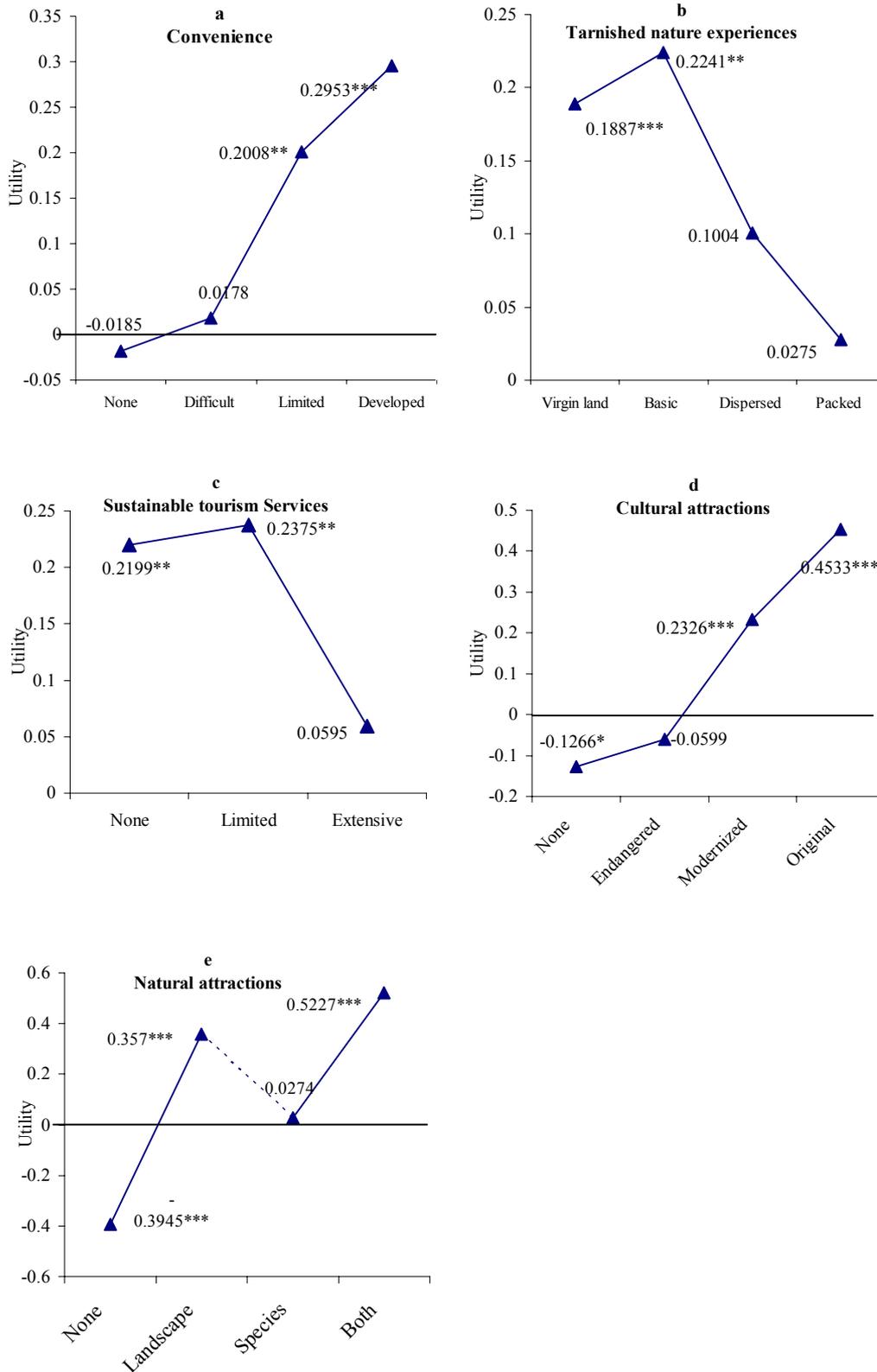
***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; no indication: not significant.

Figure 4. Shape of utility function of destination attributes (effect coding)

Table 4. Diagnostic statistics of NL models with effect coded attributes

| Diagnostic statistics | Effect coding attribute models | | | | |
| --- | --- | --- | --- | --- | --- |
| | Convenience | Tarnished nature experiences | Sustainable tourism services | Cultural attractions | Natural attractions |
| Log likelihood function | -4931.69 | -4931.57 | -4930.67 | -4930.14 | -4921.78 |
| Pseudo $R^2$ (constant only) | 0.071 | 0.071 | 0.071 | 0.071 | 0.073 |
| Inclusive value (IV) | 0.688 | 0.652 | 0.688 | 0.662 | 0.592 |
| Observations | 4928 | 4928 | 4928 | 4928 | 4928 |

Pseudo $R^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to $R^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistics are significantly different from 1; n=616.

## 4.4 WTP shape of the attribute levels

Figure 5 reveals marginal WTP based on the linear coded attributes and WTP estimation for each level based on the effect coded attributes. The comparisons of two patterns WTP elaborate respondents' preferences differentiations for each level which beyond the estimations achieved by marginal WTP.

According to the linear coded attribute, the marginal WTP estimation for one level improvement of the *convenience* attribute is 545 RMB (~55 €), which means that the respondents would like to pay 545 RMB by average for one level change of the convenience. However, the WTP estimation based on effect coded attribute reveals a much higher WTP of 914 RMB (~91 €) for the change from the *difficult* to the *limited* level. In contrast, respondents have a much lower WTP for improvement from the *none* level to the *difficult* level, with only 181 RMB (~18 €). Only the WTP for the improvement from *limited* level to the *developed* level is close to marginal WTP (472 RMB, ~47 €).

The marginal WTP for one level change of the *tarnished nature experiences* attribute is -333 RMB (~-33 €). But effect coding model reveals a positive WTP of 174 RMB (~17 €) for the change from the *virgin land* level to the *basic* level; WTP is then fallen to -609 RMB (~-61 €) for the change from the *basic* level to the *dispersed* experiences. The change from the *dispersed* level to the *packed* level has WTP of -359 RMB (~-36 €), similar to marginal WTP.

In the sustainable tourism services attribute, the marginal WTP is -318 RMB (~-32 €) for one level improvement. However, the change from the *none* level to the *limited* level obtains a positive WTP of 88 RMB (~9 €). For the change from the *limited* services level to the *extensive* services level, the respondents WTP is declined to -819 RMB (~-82 €).

The marginal WTP for one level improvement of the cultural attractions attribute is 962 RMB (~96 €). Respondents have the highest WTP of 1,431 RMB (~143 €) for the improvement from the *endangered* level to the *modernized* level, followed by WTP of 1,079 RMB (~108 €) for the change from the *modernized* level to the *original* cultural attractions. The change from the *none* cultural attractions level to the *endangered* level only receives WTP of 326 RMB (~33 €). The natural attractions attribute has the highest marginal WTP of 2,167 RMB (~217 €) for one level improvement. Comparing the WTPs within the natural attractions, the change from the *none* level to the *landscape* attraction has WTP of 3,456 RMB (~346 €). The change from the *none* level to the *species* attraction only receives WTP of 1,940 RMB (~194 €). WTP for the change from the *species* level to the *both* level is improved to 2,278 RMB (~228 €), while the change from *landscape* level to the *both* level is dropped to 762 RMB (~76€).
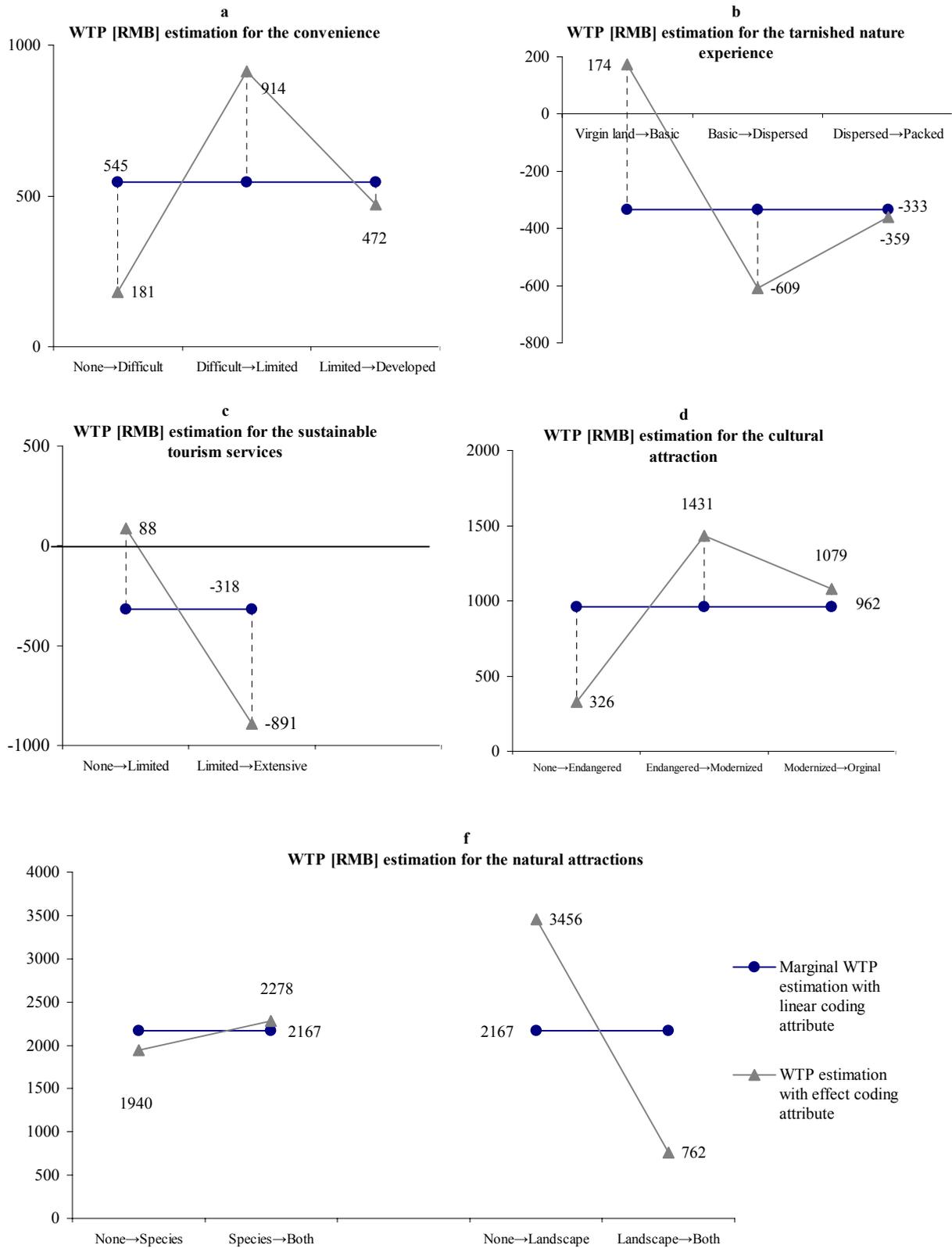
Figure 5. Comparison of marginal WTP and WTP estimations from effect coding attributes

### 4.5    *Socio-demographics influences on the destination choice*

Table 5 presents the overview results about how the socio-demographic variables influence respondent preferences for the destination attributes. Due to the significant cross correlations among socio-demographics, each socio-demographic was incorporated into the model respectively to clarify the influences without cross correlation effect. Log likelihood functions of all interaction models ranges from -4867.08 to -4928.92 and pseudo $R^2$ are between 0.072 and 0.083, which corresponds to $R^2$ values of 0.223 to 0.242 in the linear model equivalent (Hensher et al.2005:338).  IV values are from 0.59 to 0.85, which are significantly different from 1 and suggest the use of NL model (Table 5).

Age generates the most influences regarding destination choice attributes. All six attributes, 9 levels are significantly affected by age. Education significantly influences five attributes (4 levels) and is followed by travel expenditures influencing four attributes (4 levels). Self-perceived social status and residency significantly impact three attributes, but 4 and 5 levels respectively. Income and gender only generate influence with two attributes (1 level) and one attribute (1 level).

Age negatively influences the *no* and *difficult* convenience level, but positively influences the *developed* level.  Older respondents favour the better convenience level. In the *tarnished nature experiences* attribute, age negatively influences the *virgin land* level but positively impacts the *packed* experiences. Older respondents like the *packed* level much more than the sense of solitude and tranquillity.  Age also has negative and significant impacts of the *limited* sustainable tourism services level, *original* cultural attractions, *landscape* and *species* natural attractions, as well as the *cost*. It suggests that older respondents are not interested in these attribute levels and prefer cheaper *cost*.

Education positively influences the *difficult* convenience level, the *original* cultural attractions, the *virgin land* experience and *landscape* natural attraction as well as the *cost*.  The

better educated respondents are highly interested in *difficult convenience*, well-preserved *cultural attractions*, pure wilderness and solitude as well as the beautiful *landscape*. They are less sensitive to the trip *cost*.

Travel expenditures and self-perceived social status have coincident influence patterns in regard to destination attributes. Travel expenditures negatively influences the *limited* convenience level but positively affects the *developed* level, and self-perceived social status negative affects the *none* convenience level. Respondents with higher travel expenditures and self-perceived social status require better convenience. Travel expenditure and self-perceived social status negatively influence the *packed* nature experiences. Respondents with higher travel expenditure and self-perceived social status do not prefer to the *packed* level. Travel expenditures positively impact the *original* cultural attractions. Self-perceived social status negatively influences the *species* level but positively affects the *both* level. It informs that respondents who spend more money for travelling favour the *original* cultural attractions and higher self-perceived social status respondents are less interested in the *species* attractions but more interested in the magnificent landscape together with precious species. Travel expenditures also positively influences the *cost* attribute. Respondents with higher travel expenditures prefer to pay more for the trip cost.

Residency positively influences the *limited* sustainable tourism services, *endangered* cultural attractions, *none* and *species* natural attractions. On the other side, it negatively influences the *both* level of natural attractions. Compared with Chengdu respondents, Beijing respondents prefer the *limited* sustainable tourism services and are more interested in the *endangered* cultural attractions, *none* and *species* natural attractions; while Chengdu respondents are more favoured the *natural attractions* with both the landscape and precious species.

Income only positively influences the *none* natural attractions level and the *cost*. The respondents with more monthly income prefer the *none* natural attractions and are more tolerant to the cost increase.

Gender positively impacts the *virgin land* experience. It suggests that male respondents are more interested in the naturalness and solitude.

Table 5. Socio-demographics influences on the destination choice attribute levels

| Attribute | | Age§ | Education§ | Gender | Income§ | Travel expenditures§ | Self-perceived Social status§ | Residency |
|---|---|---|---|---|---|---|---|---|
| **Convenience** | **None** | -0.844*** | | | | | -0.3494** | |
| | **Difficult** | -0.436*** | 0.2237* | | | | | |
| | **Limited** | | | | | -0.1112* | | |
| | **Developed** | 0.78*** | | | | 0.1464** | | |
| | Log likelihood function | -4869.98 | -4928.92 | | | -4923.42 | -4926.24 | |
| | Pseudo R$^2$ (constant only) | 0.083 | 0.072 | | | 0.073 | 0.072 | |
| | Inclusive value (IV) | 0.75 | 0.69 | | | 0.73 | 0.7 | |
| **Tarnished nature experience** | **Virgin land** | -0.392*** | 0.1874* | 0.0945** | | | | |
| | **Basic** | | | | | | | |
| | **Dispersed** | | | | | | | |
| | **Packed** | 0.316* | | | | -0.1252* | -0.6961*** | |
| | Log likelihood function | -4906.81 | -4928.27 | -4927.24 | | -4926.88 | -4922.52 | |
| | Pseudo R$^2$ (constant only) | 0.076 | 0.072 | 0.072 | | 0.072 | 0.073 | |
| | Inclusive value (IV) | 0.68 | 0.7 | 0.66 | | 0.66 | 0.67 | |
| **Sustainable tourism services** | **None** | | | | | | | |
| | **Limited** | -0.328*** | | | | | | 0.0953** |
| | **Extensive** | | | | | | | |
| | Log likelihood function | -4909.72 | | | | | | -4920.35 |
| | Pseudo R$^2$ (constant only) | 0.075 | | | | | | 0.073 |
| | Inclusive value (IV) | 0.7 | | | | | | 0.66 |
| **Cultural attractions** | **None** | | | | | | | |
| | **Endangered** | | | | | | | 0.1127** |
| | **Mordernized** | | | | | | | |
| | **Original** | -0.3* | 0.3026** | | | 0.1351** | | |
| | Log likelihood function | -4909.72 | -4925.26 | | | -4925.45 | | -4919.35 |
| | Pseudo R$^2$ (constant only) | 0.075 | 0.072 | | | 0.072 | | 0.073 |
| | Inclusive value (IV) | 0.65 | 0.65 | | | 0.68 | | 0.68 |
| **Natural attractions** | **None** | | | | 0.0955* | | | 0.1007** |
| | **Landcape** | -0.324* | 0.2307* | | | | | |
| | **Species** | -0.26* | | | | | -0.3129* | 0.1114** |
| | **Both** | | | | | | 0.1107* | -0.1008* |
| | Log likelihood function | -4900.46 | -4916.64 | | -4919.26 | | -4916.24 | -4906.35 |
| | Pseudo R$^2$ (constant only) | 0.077 | 0.074 | | 0.073 | | 0.074 | 0.076 |
| | Inclusive value (IV) | 0.68 | 0.59 | | 0.59 | | 0.62 | 0.63 |
| **Cost** | | -0.068* | 0.0754** | | 0.0485*** | 0.0478*** | | |
| | Log likelihood function | -4867.08 | -4920.81 | | -4922.39 | -4915.14 | | |
| | Pseudo R$^2$ (constant only) | 0.083 | 0.073 | | 0.073 | 0.074 | | |
| | Inclusive value (IV) | 0.85 | 0.84 | | 0.84 | 0.85 | | |

§the interaction coefficient is multiplied with the mean of the social variable to allow the estimation with the average respondents. ***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; Pseudo R$^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to R$^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistics are significantly different from 1; n=616.

# 5  Conclusion and Discussion:

The study focuses on the preference patterns of Chinese middle class tourist for nature-based destination attribute in southwestern China. We firstly start discussion with the method, and then follow with the preference patterns of destination attributes, and socio-demographics influences regarding destination choice. The last part outlines the implication of the study results.

The method of incorporating the linear coding and effect coding allows displaying preference deviation from linear attribute and detect relevant size of difference. A method challenge in the study is the lack of the middle class population statistics in Beijing and Chengdu. Therefore, the quota-sampling approach was used. The drawback of the approach is quato-sampling approach can not guarantee representativeness of the sample for Chinese middle class consumers. The reported data on absolute willingness-to-pay values should be treated with caution; there are no indications in the sample, however, that the discussed influences on WTP are actually biased.

In mapping of the preference patterns of Chinese middle class respondents, *convenience, tarnished nature experience, sustainable tourism services, cultural and natural attraction*s and *cost* all emerge as significant predictors of destination choice. Despite of deviation from linearity and relevant size of difference between levels, the respondents generally prefer nature based destinations in southwestern China with improved levels of *convenience, cultural and natural attractions*, but less *tarnished nature experiences, sustainable tourism services* and *cost*.

*Natural attractions* is the most influential attribute regarding the destination choice. *Cost* is the second influential attribute and the cheaper trip cost is better preferred by the respondents. In Naidoo and Adamowicz (2005) study of nature-based tourism in Uganda, wildlife biodiversity had positive effects regarding destination choice. Hanley et al. (2002) and Hearne and Salinas (2002) also proved that more scenic areas were preferred by the respondents. In our

study, the *landscape* attraction is much more favoured by the respondents than the *species* attraction. The highest WTP (3,456 RMB, ~346 €) is attained for the change from the *none* natural attractions to the *landscape* attraction.

As for the *cultural attractions*, *original* cultural attractions are most favoured by the respondents and the *modernized* cultural attractions are also appreciated. However, the highest WTP is obtained when *endangered* cultural attractions is improved to the *modernized* cultural attractions (1,431 RMB, ~143 €).

In line with other studies (Adamowicz et al., 1994; Huybers, 2003; Naidoo & Adamowicz, 2005), respondents like the better convenience. Noticeable, the highest WTP for *convenience* is observed by the change from the *difficult* to the *limited* convenience (914 RMB, ~91 €), which is nearly double of the WTP for the improvement from the *limited* to the *advanced* convenience (472 RMB, ~47 €).

Respondents prefer less *tarnished nature experiences*, the similar results were also presented by Hanley et al. (2002)  and Apostolakis and Jaffry (2005) that crowdedness were not preferred by the respondents. However, the pure wilderness is not Chinese middle class tourists' favourite. The most preferred option is the *basic* level instead of the *virgin land* level. The mixture of naturalness and basic infrastructures, and occasional other visitors, are mostly welcomed and the change from the *virgin land* to the *basic* level receives WTP of 174 RMB (~17 €). In the study of domestic Australian tourists (Huybers, 2003), it was also reported that tourists received utility from the "pleasantly busy" level of the "crowdedness" attribute.

The *sustainable tourism services* in general negatively impacts destination choice. However, the destination utility increases with the *limited* level of sustainable tourism services and attain a positive WTP of 88 RMB (~9 €). It indicates that some initial services, like community based business and small conservation programs, are still appreciated by the respondents. In Kelly et al. (2007) investigation of Canada tourists, eco-efficient options were in general preferred by the respondents although the degree of support differed by market segments. Investigation of

Costa Rica tourists reported that domestic tourists were not preferred access restrictions (Hearne & Salinas, 2002). A study of tourist WTP for eco-certified products which was conducted in southeastern China (Zhou et al., 2006) reported that regardless of product types, the cheaper products were always more preferred. The constraint of the price may hint that respondents in our study may be also afraid of expensiveness of buying such services. It could be the reason that the improvement of sustainable tourism services from the *limited* level to the *extensive* received very negative WTP; and the change from the *none* to the *limited* level obtained modest positive WTP.

It should be noted that middle class tourist preferences also demonstrate different patterns based on socio-demographic characteristics: older respondents expect good *convenience*, more visitors/infrastructures around, cheaper *cost* and have no particular requirements for the destination attractions. The well educated respondents prefer difficult transportation and accommodation, the *original* cultural attractions and pure wilderness and magnificent landscape. The respondents with higher travel expenditures and self-perceived social status require high *convenience* and high quality of *cultural and natural attractions*, and strongly oppose the crowdedness around. The well educated respondents and higher travel expenditure and self-perceived social status respondents are less sensitive to the *cost* increase.

The results from our study demonstrate that Chinese middle class tourists highly value the *cultural and natural attractions* in southwestern China nature-based destinations. In the arena of domestic tourism market, the maintenance of the natural beauty and cultural attractions are crucial for the sustainable tourism development of southwestern China. Another indication from our study is the preference deviations among Chinese middle class tourist. Respondents with different socio-demographic characteristics display different preference patterns. It provides marketing implications for local tourism operators. For example, destinations with good accessibility and accommodation options, but without magnificent natural and cultural attractions, could target older middle class respondents with lower price offers. Destinations

with good transportation and accommodation, as well as high quality destination attractions could charge higher price and target higher travel expenditure and self-perceived social status respondents. However, the destinations should take measures to control the crowdedness and infrastructures to maintain the attractiveness of the destinations. Remote destinations without good transportation and accommodation could also set higher price range and aim at middle class tourists with higher formal education. The pure wilderness and high quality destination attractions would attract these respondents.

For the future studies, the application of the study in other tourist source cities, like Guangzhou and Shanghai, would contribute to confirm or revise the accuracy of the result from our study. Future studies should also evaluate in full details of the preferences for sustainable tourism services/products to find what services will be appreciated. The evaluation of the quantitative tolerance levels of tarnished nature experience would also be valuable to instruct the destination design and management.

## Acknowledgement

## References

Adamowicz, W., Louviere, J. & Williams, M. (1994). Combing revealed and stated preference method for valuing environmental amenities. *Journal of Environmental Economics and Management*, 26, 271-291.

Apostolakis, A. & Jaffry, S. (2005). A choice modelling application for Greek heritage attractions. *Journal of Travel Research*, 43, 309-318.

Bao, J., Zheng, H. and Dai, G. (2002). The evolvement of spatial structure and the significance of Guilin's domestic tourist origins. *ACTA Geographica Sinica* (in Chinese), 57(1), 96-106.

Bauer, T. G. & Chan, A. (2001). Does the environment matter? Experiences, attitudes, and revisit intentions of international visitors to Hong Kong. *Pacific Tourism Review*, 5(1), 75-82.

Breffle, W. S. & Morey, E. R. (2000). Investigating preference heterogeneity in a repeated discrete-choice recreation demand model of Atlantic salmon fishing. *Marine Resource Economics*, 15, 1-20.

Cater, E. A. (2000). Tourism in the Yunnan great rivers national parks system project: prospects for sustainability. *Tourism Geographies*, 2(4), 472-489.

China Central Government (CCG) (2007). Minorities living in China. Online document at URL http://www.gov.cn/test/2006-04/17/content_255861.htm. Accessed July 3rd, 2007.

China National Bureau of Statistics (CNBS) (2006a). Per capital annual income of urban household by source and region. China Statistical Yearbook 2006. China Statistics Press, Beijing.

China National Bureau of Statistics (CNBS) (2006b). Population by sex, educational attainment and region. China Statistical Yearbook 2006. China Statistics Press, Beijing.

China National Tourism Administration (CNTA) (2006). Major statistics of China domestic tourism 2006. Online document at URL http://www.cnta.gov.cn/news_detail/newsshow.asp?id=A2007361050143901487. Accessed June 19th, 2007.

Crouch, G. & Louviere, J. J. (2004). The determinants of convention site selection: a logistic choice model from experimental data. *Journal of Travel Research*, 43, 118-130.

Eymann, A. & Ronning, G. (1997). Micro-econometric models of tourists' destination choice. *Regional Science & Urban Economics*, 27, 735-761.

Fang, Y. (2002). Development ecotourism in western Sichuan, China: replacing the forestry-based economy. *Mountain Research and Development*, 22(2), 113-115.

Farrell, D., Gersch, U., & Stephenson, E. (2006). The value of China's emerging middle class. *McKinsey Quarterly*; 2006 Special Edition, 60-69.

Fredrik, C., Frykblom, P. & Lagerkvist, J. C. (2007). Consumer benefits of labels and bans on GM foods-choice experiments with Swedish consumers. *American Journal of Agricultural Economics*, 89(1), 151-161.

Ge, Q. S. (2002). *Strategy of exploring tourism in western China* (in Chinese). Beijing:China Tourism Press.

Haener, M. K., Boxall, P. C. & Adamowicz, W. L. (2001). Modelling recreation site choice: do hypothetical choices reflect actual behaviour? *American Journal of Agricultural Economics*, 83(3), 629-642.

Hanley, N., Wright, R. E. & Koop, G. (2002). Modelling recreation demand using choice experiments: climbing in Scotland. *Environmental and Resource Economics*, 22, 449-466.

Hearne, R. R. & Salinas, Z. M. (2002). The use of choice experiment in the analysis of tourist preferences for ecotourism development in Costa Rica. *Journal of Environmental Management*, 65, 153-163.

Hensher, D. A., Rose, J. M. & Greene, W. (2005). *Applied choice analysis: a primer*. Cambridge (UK): Cambridge University Press.

Huang, A. & Xiao, H. (2000). Leisure-based tourist behaviour: a case study of Changchun. *International Journal of Contemporary Hospitality Management*, 12(3), 210-214.

Huybers, T. (2003). Domestic tourism destination choices-a choice modelling analysis. *International Journal of Tourism Research*, 5, 445-459.

Kelly, J., Haider, W., Williams, P. W. & Englund, K. (2007a). Stated preferences of tourists for eco-efficient destination planning options. *Tourism Management*, 28, 377-390.

Kelly, J., Haider, W. & Williams, P. W. (2007b). A behavioural assessment of tourism transportation options for reducing energy consumption and Greenhouse gases. *Journal of Travel Research*, 45, 297-309.

Lancaster, K. J. (1966). A new approach to consumer theory. *Journal of Political Economy*, 74, 132-157.

Li, C.L. (2003). The structure and proportion of China's middle class. *Population Science of China* (in Chinese), 6, 25-32.

Li, W. (2004). Environmental management indicators for ecotourism in China's nature reserves: a case study in Tianmushan nature reserve. *Tourism Management*, 25(5), 559-564.

Li, Y. &. Cai, Y (2004). A study on ecotourists' behavioural characteristics in Beijing: a case study in Baihuashan nature reserve. *Geographical Research* (in Chinese), 23(6), 863-874.

Li, Y. (2005). *The structure and evolution of Chinese social stratification*. Lanham: University press of American.

Louviere, J. J. & Timmermans, H. J. P. (1990). Stated preference and choice models applied to recreation research: a review. *Leisure Science*, 12, 9-32.

Mao, D., Zhang, J. & Bao, H. (2005). A tourist destination choice model based on Lancasterian characteristics theory and destination image theory: theoretical analysis and case study. *Geographical Research* (in Chinese), 24(6), 992-999.

McFadden, D. (1973). Conditional logit analysis of qualitative choice behaviour. In P. Zarembka (Eds.), *Frontiers in Econometrics* (pp.105-142), New York: Academic Press.

Morley, C. L. (1994). Experimental destination choice analysis. *Annals of Tourism Research*, 21(4), 780-791.

Maynard, L. J., Hartell, J. G., Meyer, A. L. & Hao, J. (2004). An experimental approach to valuing new differentiated products. *Agricultural Economics*, 31(2/3), 317-325.

Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B. & Kent, J. (2000). Biodiversity hotspots for conservation priorities. *Nature*, 403, 853-858.

Naidoo, R. & Adamowicz, W. L. (2005). Biodiversity and nature-based tourism at forest reserves in Uganda. *Environment and Development Economics*, 10, 159-178.

United Nations Educational, Scientific and Cultural Organizations (UNESCO) (2007). China UNESCO world heritage. Online document at URL http://whc.unesco.org/en/list. Accessed June 26, 2007.

World Travel and Tourism Council (WTTC) (2006). China, China Hongkong SAR and China Macau SAR: the impact of travel and tourism on jobs and the economy. Online document at URL http://www.wttc.org/publications/pdf/FINAL%20WTTC_China%20English.pdf. Accessed December 20, 2006.

Wu, B. (1997). A study on destination choice behaviour of Chinese urban residents. *Acta Geographica Sinica* (in Chinese), 52(2), 97-103.

Wu, B. (2001). Comments on master plan of Sichuan province tourism development. *Urban Design & Planning* (in Chinese), 4, 21-25.

Wu, B. & Cai, L. (2005). Spatial modelling-suburban leisure in Shanghai. *Annals of Tourism Research*, 33 (1), 179-198.

Zhang, G. (2003). Tourism research in China. In A. A. Lew, L. Yu, J. Ap & G. Zhang (Eds.), *Tourism in China* (pp. 67-81), New York, London, Oxford: The Haworth Hospitality Press.

Zhang, J., Du, J.K., Zhou, Y.K. & Gan, M. Y. (1999). The travel distance and travel patterns of tourists to national parks in China. *Asia Pacific Journal of Tourism Research*, 4(2), 27-34.

Zhou, L., Cheng, X. & Zhou, T. (2006). A Research on the willingness to pay for certificated ecotourism product-the empirical analysis based on the tourists of Zhejiang's four scenic spots. *Economic Geography* (in Chinese), 26(1), 141-144.

Zhu, R. (2001). Report on the 10th Five-year plan for the national economy and social development of China central government. *People's Daily* (in Chinese), March 17, 2001, Beijing.

# Chapter 5

# Harmony vs. Domination: Chinese Tourist Images of Nature and Their Influences on Preferences for Nature-based Destinations in Southwestern China[1]

Jiong Yan, Jan Barkmann, Rainer Marggraf

**Abstract**: The study portrays Chinese middle class tourist images of nature; and to examine images of nature influences on tourist preferences for nature-based destination attributes in southwestern China with the choice experiment method. Empirical analysis shows dimensions with a *harmonious human-nature relation* orientation as well as a *human domination* dimension shape contemporary Chinese middle class images of nature. The traditional harmony with nature values still plays a leading role. Average Chinese middle class respondents agree strongly with items depicting *harmonious human-nature relation*. However, *human domination* also emerged as an images of nature dimension (the *robustness and non-spirituality* dimension). This can be interpreted as an influence from the "conquering nature" practices applied in China since 1949. In regard to destination choice, respondents who hold strong *human domination* images of nature favour more *tarnished nature experience*, particularly, and lower trip *costs*. In contrast, the *harmonious human-nature relation* dimensions only generate stable influences regarding the *convenience* attribute. In spite of high scores that average respondents reached for the *harmonious human-nature relation* dimensions, none of the dimensions positively influences preferences for *sustainable tourism services*. This gap indicates that the strongly *harmonious* images of nature do currently not support demand for sustainable tourism services.

Key words: images of nature, preference, nature-based destination, southwestern China.

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# 1   Introduction

As typical for the tourism development path for many destinations, China domestic tourism market is currently undergoing an early rapid growth phase with little regard to the economic and ecologic sustainability of the developed tourism resources (WTTC, 2006). The steady growth of domestic tourism during the past twenty years made China one of the biggest domestic tourism markets globally (WTTC, 2006). In 2006, 1.394 billion person-trips were statistically documented; this is 15% increase from 2005. Domestic tourism expenditure was 623 billion RMB (~62.3 billion Euro), an increase of 18% over 2005 (CNTA, 2006). The development is mainly driven by price competition in the volume market – and accompanied by a lack of effective standards to protect the rich diversity and natural beauty of Chinese destinations (WTTC, 2006). The rapid growth causes considerable strain on existing resources (WTTC, 2006), and threatens ecologically sensitive areas (Li et al., 2005; Nianyong & Zhuge, 2001).

In this paper, we investigate the cultural background within which a more sustainable tourism development of the Chinese domestic tourism market may occur in the future. In particular, we use a comprehensive approach in which tourist preferences for sustainable tourism services are embedded in a suit of destination attributes that characterize nature- and landscape-based destinations in southwestern China. While we investigate *attitudes* on specific sustainable tourism services and their influence on Chinese domestic tourist preferences in a related paper (Yan, et al., in preparation a; chapter 6), we focus here on the more fundamental aspect of tourist views of 'nature' and on the human-nature relationship. Within the complex preference framework of Nobel Laureate G. Becker (1996), these 'images of nature' are an expression of fundamental cultural values that play a crucial role in the construction and stabilization of economic preferences for specific goods and services (Barkmann et al. 2005) – as for example stated by Chinese middle-class respondents in this

study. On the applied side, the importance of cultural values is documented in various marketing/consumption studies (Bowden, 2006; Chan, 2001; Wong & Lau, 2001; Yau, 1988; Zografos & Allcroft, 2007). By combing cultural value analysis with marketing/consumption study, such approach offers a window into the deeply entangled relationship between cultural background and consumer behaviour.

While images of nature analyses are increasingly used in other social science disciplines, to our knowledge, this is the first such study within tourism research as well as with Chinese respondents. Thus, certain aspects of the study are necessarily exploratory, for example, as existing images of nature scales have to be adapted to the Chinese cultural context. The study has two objectives: i) to achieve a better understanding of images of nature profile of Chinese middle class tourists, and ii) to evaluate how images of nature patterns influence tourist preferences for nature-based destinations in southwestern China including preferences for sustainable tourism services.

## 2   Literature review

### 2.1   *Cultural background: images of nature*

"Images of nature" have increasingly become a topic in social science disciplines concerned with the environment. Examples include environmental education (Enomoto & Meijo, 1994; Korfiatis, 2004), environmental psychology (Krömker 2004/2005, Barkmann et al., 2005), environmental governance and management (Born et al., 2001; Keulartz, 2004) as well as tourism research (Stamou & Paraskevopoulos, 2004) and theoretical ecology (Jax & Rozzi, 2004). In general, studies on images of nature investigate culture-dependent ways how humans conceptualize the complex relations between human and nature.

Different populations with specific cultural characteristics tend to hold different images of nature (Krömker, 2004; 2005). Historically, an anthropocentric view that can be traced to its Judeo-Christian roots has dominated much of Western history (Jenni, 2005; Keulartz et al.,

2004). In contrast, there is a much stronger ecocentric tradition in Chinese culture (Deng et al., 2006; Jenkins, 2002), and a comprehensive *harmony* concept as a prominent aspect of the Chinese image of nature (Chan, 2001; Deng et al., 2006; Jenkins, 2002; Yau, 1988; see next subsection).

Krömker (2004) presents empirical evidence from a study with US-American, German, Peruvian, and Indian college students that a set of images of nature items can be operationlised successfully in an intercultural context. The dimensions were developed from a review including and supplementing Cultural Theory items (Thompson et al., 1990; Smith, 2001). Cluster analysis revealed four groups of respondents with different images of nature. Membership in these groups had a higher explanatory value than socio-demographic variables for several variables of an integrated socio-psychological action model targeting the acceptance of a climate tax.

## 2.2    *Transition of images of nature in China*

The traditional images of nature in China are based on the three classical roots of what is commonly called Chinese traditional culture: Confucianism, Buddhism und Daoism (Tu, 1998a; Tu, 1997; Jacobsen, 1997; Jenkins, 2002). A core concept of the Chinese perception of the human-nature relationship is the pursuit of harmony with nature (*He*) and the "unity of human and heaven/nature" (*"Tian Ren He Yi"*; with *Tian* translated as heaven or nature; see, e.g., Chan, 2001; Jenkins, 2002; Tu, 1998b; Yau, 1988).

To be in harmony with nature has different facets of meaning. In the Buddhist tradition, all living creatures are revered (Jacobsen, 1997). In Daoism, following the law of nature (*Dao*) is emphasized.  Humans are portrayed as part of nature and should not try to master it (Chan, 2001; Jenkins, 2002). Both traditions provide an images of nature includes substantial spiritual aspects. In contrast, Confucianism circles around a slightly more anthropocentric, slightly more pragmatic vision. Here the focus of attention is on accepting the appropriate

limits and boundaries of nature in relation to human agency (Tu, 1998a; Fung, 1976). Amalgamating these influences, the Chinese harmony concept includes the idea of the reconciliation of complementary opposites to form a harmonious unity, in which the contrasting parts are found in their 'proper proportion' (Fung, 1976). Rooted in harmony and "the unity of human and heaven" idea, the Chinese vision of nature always includes the human-nature relationship. Nature is conceptualized as an all-encompassing, spontaneously self-generating life process that excludes nothing (Tu, 1998a).

Since the last century, traditional Chinese value systems have undergone profound changes. Rather aggressive anthropocentric ideologies gained ground in comparison to the traditional harmony-based view of the human-nature relation. During the Mao era between 1949 and 1976, a number of violate battles which aimed at conquering nature were carried out (Bao, 2006; Jiang, 2005; Sanders, 1999). Several of the infamous slogans of the Mao era reflect a desire of transforming nature to meet human economic needs. The belief was championed that human power would defy all limits imposed by nature: "Create farmland by encircling the lake", "Man must conquer heaven/nature", "How much courage you have, this much yield it has" (Bao, 2006: 37). During the Great Leap (1958-1960) and during Cultural Revolution (1966-1976), ordinary Chinese often enthusiastically took part in programs of 'moving mountains', cutting down forests, diverting rivers, and eliminating errant species (Shapiro, 2001). Disastrous for the environment, the desirability was promoted that humankind dominates nature (Jiang, 2005). Ironically, the ultra-pragmatic approach of the communist Mao era also provided the ideological basis for aggressive, the near capitalist-style management of natural resources of today's post-Mao times. While nature was perceived as a mere political instrument in the Mao era, it is now regarded as a mere economic instrument (Jiang, 2005: 651).

Along with China's rapid economic development in the last 20 years, Chinese environment has continued to deteriorate (Sanders, 1999). Partly induced by human-aggravated natural

disasters which have being occurred in accelerating frequencies in China, the recent political rhetoric has picked up the ideal of a "harmonious society" (Holbig, 2006). One aspect of "harmonious society" integrates "scientific development" (sustainable development) into the traditional harmony values (Holbig, 2006).

Although a number of studies discuss Chinese philosophical tradition and its recent transitions, only few empirical studies investigate the current cultural values of Chinese citizens/consumers. Exemplary studies look for cultural and psychological determinants of "green" purchasing behaviour in general (Chan & Lau 2000, Chan, 2001), investigate cultural values in relation to behaviour on group tour packages (Wong & Lau; 2001), or focus on elements of environmental perception in the tourism industry (Hashimoto, 2000). To our knowledge, none of the studies focus on 'images of nature' as defined here, or deals with the influence of the cultural values on tourism-related economic preferences.

## 2.3   A destination choice experiment (CE)

The CE method is rooted in the 'characteristics' theory of goods, and random utility theory (RUT, McFadden, 1973). Lancaster (1966) suggested that consumers do not derive satisfaction from goods themselves but from the characteristics ('attributes') of the goods. These attributes are usually quantified by a specific set of attribute 'levels'. For example, restaurant choice is an important characteristic of many destinations, and it may be quantified by the number of restaurants present (levels). RUT postulates that consumer preferences for such (destination) attributes consist of a systematic component that relates to 'observable' characteristics of the destination (i.e., to the attribute levels), and an unobservable random component (McFadden, 1973). Using data on consumer choices among goods with varying characteristics, the analyst can assess the relative influence of each observable characteristic on choice. This fundamental fact is systematically exploited by the choice experiment method.

For CEs, different goods are represented by attributes and attribute levels according to experimental design rules. In our case, this abstract good is represented by a trip to a generic southwestern China destination with systematically varying attribute levels. A small number of single goods ('options') are presented concurrently to survey respondents for choice. The options that are presented concurrently are a choice set. With maximum Log-Likelihood estimation techniques, the observable regularities in consumer choices are used to estimate a utility function with the attributes as arguments. If one attribute is a monetary attribute, e.g. the price of a trip to the destination, the marginal willingness-to-pay for a change in attribute levels can be calculated (Batemann et al. 2002). Socio-demographic as well as cultural/psychological variables can be also incorporated into CE models in order to investigate their influence on the importance of the single attributes (e.g., Apostolakis & Jaffry, 2005; Huber, 2003). For recent reviews and manuals on a state-of-the-art application of the CE methods refer, e.g., to Bateman et al. (2002), Louviere et al. (2001), Hensher et al. (2005).

CEs are frequently employed for tourism and leisure studies, and have proven to be a versatile stated preference method (Apostolakis & Jaffry, 2005; Eymann & Ronning, 1997; Grouch & Louviere, 2004; Hanley et al., 2002; Huber, 2003; Naidoo and Adamowicz, 2005). Answers to hypothetical destination choice questions have been shown to reflect actual destination choice well (Adamowicz et al., 1994; Haener et al. 2001).

## 2.4   *Research on Chinese tourist destination choice*

Chinese tourism research and planning is traditionally conducted from a supply-side perspective (Bao et al., 2002; cf. Zhang, 2003). Regional tourism planning as well as the social, environmental and cultural impacts of tourism are the main focus of this line of research (Zhang, 2003). Starting from the first studies in the 1990s (Wu, 1997; Zhang et al., 1999), the few demand-side contributions continue to focus on aspects such as relationships

between destination choice and geographical distance (e.g., Bao et al., 2002; Huang & Xiao, 2000; Wu & Cai, 2005).

The importance of tourist motivations and preferences has only recently been acknowledged (e.g., Bauer and Chan, 2001; Mao et al., 2005; Li & Cai, 2004; Zhou et al., 2006). For example, Bauer and Chan (2001) investigated tourists to Hongkong, including tourists from mainland China, and reported that noise levels and cleanliness of the street, and air quality were of concern to visitors. A study conducted in eastern China (Zhou et al., 2006) revealed that gender, education, income and travel expenditure had significant influences on tourists' acceptance and willingness to pay for certified 'ecotourism' products.

## 3   Methods

### 3.1   Study areas

The destination area chosen is mountainous southwestern China (Figure 1), which harbours a global biodiversity hotspot (Myers et al., 2000) and is an officially designated tourism development area (Ge, 2002). This area has rich tourism resources which include five UNESCO natural heritage sites, four UNESCO cultural heritage sites and one UNESCO cultural and natural heritage site (UNESCO, 2007). Thirty six minorities live in the region, which account for about two thirds of the total 56 minorities in mainland China (CCG, 2007).

The investigation was conducted in two national tourist source areas (Figure 1): Beijing (about 14.8 million citizens) representing East Coast agglomerations, and the provincial capital city of Chengdu (Sichuan Province), one of the biggest urban agglomerations in southwest China (around 10 million citizens). The investigation was conducted in two tourist *source areas* to prevent self-selection bias (Huybers 2003).

Figure 1. Map of research region and investigation sites

(Changed after source:

http://commons.wikimedia.org/wiki/Atlas_of_the_People%27s_Republic_of_China. GNU

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## 3.2   Sample

A total of 616 respondents were successfully interviewed from August to November 2006. We employed and carefully trained local university graduate students as interviewers. Twenty city sub-districts in Beijing and Chengdu were randomly selected from fifteen suitable sub-districts each. The total of 30 sub-districts was identified by the following two criteria:

· typical price ranges of apartments for middle class customers;

· availability of public spaces or accessible semi-public spaces inside gated residential compounds to contact respondents;

The public and semi-public spaces included shopping malls, supermarkets, outdoor markets, parks, restaurants and tea houses, gardens and other open compound spaces.

We decided to focus on Chinese 'middle class' tourists. In the literature, there is no consensus regarding a suitable middle class definition for mainland China (e.g. Farrell et al.,

2006; Li, 2003; Li, 2005). However, income is always one of the most important indicators. Consequently, we focused on this indicator to "filter" the targeted middle class respondents. In line with Chinese income data from official Chinese statistics (CNBS, 2006a) and the McKinsey Institute Report (Farrell et al., 2006), the starting income level was set at monthly income of 1,500 RMB.

A quota sampling procedure provided the best way to interview the middle class target group. Three sampling criteria (quota) were applied: (i) equally distributed genders; (ii) balanced age distribution (above age 20); (iii) even recruitment of respondents with respect to the selected 20 sub-districts.

## *3.3 Survey instruments*

Following a brief introduction, the survey instrument consists of three main parts: CE choice sets, images of nature items and attitudes items, as well as socio-demographic questions. Instrument development was aided by extensive qualitative interviews (n= 13). Pre-test (n=50) was conducted in Beijing in autumn 2005. With improved instrument and survey administration, a larger scale precursor study was administered in Beijing and Chengdu (n=213 for CE, and n=101 for images of nature items). Furthermore, an additional qualitative interview (n=9) were conducted. Based on the comprehensive analysis of the qualitative and quantitative data, as well as interviewer and respondent feedbacks, the final version of survey instrument was designed.

### 3.3.1  Images of nature items

Our images of nature items stem from two sources: (i) the dissertation of Krömker (2004, 2005) and (ii) original items operationalising a "harmony" dimension. Krömker's items focus on eight aspects of the human-nature-relation:

- *Purpose*: plants and animals exist primarily for human use.

- *Robustness*: Nature is not that fragile that it has to be protected by humans. It can best help itself.

- *Reciprocity*[2]: Whatever humans take from nature they must give something back in order to keep the balance of the universe.

- *Nature needs & deserves to be protected*: Nature should be protected because it enriches our lives.

- *Spiritual*: Nature is spiritual or sacred in itself.

- *Threatening*: Many processes of nature are dangerous to humans.

- *Perverse/Tolerant*: To some degree humans can modify nature. Nature gets out of control only if a specific threshold is crossed.

- *Limitation*: Earth is like a spaceship with only limited space and resources.

Based on an intensive literature analysis (see section 2.2), four aspects were singled out in order to design a set of harmony items that would supplement the above items to account specifically for traditional Chinese images of the human-nature relation:

- *Wholeness*: Nature is a whole formed by different living beings (animals and plants). Humans are a part of this unit.

- *Equality*: Human and nature, including animals and plants, have an equal right to exist.

- *Respect*: Nature has its own law. Humans should respect it and follow it in order to live in harmony.

- *Proper proportion*: When humans interfere with nature, they should follow the law of proper proportion.

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[2] Krömker terms this aspect "respect". In fact, the item points rather towards reciprocity as the central idea, however. In order to differentiate this aspect from the "respect for nature" idea that is part of the Chinese harmony concept, we use the term "reciprocity" here.

Table 1. Examples of images of nature items

- Human and nature, including animals and plants have the equal right to exist. (*Equality and harmony*)[§]
- Humans must follow the law of nature in order to live in harmony. *(Respect and fragility)*
- Ignoring the law of the nature will eventually bring the disaster to humans. *(Protection and prevention)*
- Nature always recovers (by itself), no matter what humans do. *(Robustness and non-spirituality)*
- Nature is sensitive to any kind of interference. Even small interference ca lead to big and irreversible damage. *(Spirituality and fragility)*

[§]: Phrase in parenthesis identifies the images of nature dimension to which the item was assigned by factor analysis (see results section).

Starting from the original English and German language versions, the first author translated twenty seven images of nature items developed by Krömker (2004) into Chinese. Twelve harmony items were designed. In all, 39 items were tested in the precursor study (n=101) of which 25 were kept in the main study. We used a closed answer format with a 5-point Likert scale (1: totally disagree to 5: totally agree). For examples of images of nature items, see Table 1.

### 3.3.2 Attribute design

The first step of designing CE choice sets was the identification of attributes that characterized southwestern China destinations. To optimize this step, the first author conducted 22 qualitative in-depth interviews with Chinese middle class respondents who were interested in travelling to southwestern China in spring and autumn 2005. From lists of factors that tourists said they paid most attention to when making their destination decisions, the five following attributes were constructed (Table 2). The *sustainable tourism services* attribute was the only attribute not spontaneously mentioned by interviewees but included due to research interests.

Table 2. Destinations attributes/levels used in choice experiment

| Destination attribute | | Attribute levels | Coding[#] |
|---|---|---|---|
| **Convenience at places just outside of attraction site** | 1. | No car roads, only trails; no hotels or hostels, tourists need to bring their own food; (*none* level) | 1 |
| | 2. | Difficult motor access; several simple hostels or hotels; (*difficult* level) | 2 |
| | 3. | Old roads; some common hotels and restaurants; (*limited* level) | 3 |
| | 4. | National roads and highways; many hotels from two stars to four or five stars, and many restaurants; (*advanced* level) | 4 |
| **Tarnished nature Experiences (Possibility of experiencing Nature)[§]** | 1. | Sense of solitude and tranquillity; no tourism infrastructure; no other visitors; (*virgin land* level) | 1 |
| | 2. | At times, some basic tourism infrastructure (restaurants, stores, toilets) visible; meet other people every hour; (*basic* level) | 2 |
| | 3. | Have big scale tourism infrastructure (cable car, Karaoke), always be aware of "this is a tourism place"; meet other people every minute; (*dispersed* level) | 3 |
| | 4. | Many kinds of tourism infrastructures everywhere; many "artificial" attractions; very crowded; (*packed* level) | 4 |
| **Cultural attractions** | 1. | None; (*none* level) | 1 |
| | 2. | Some traditional old buildings mixed with many modern buildings; no original living culture; (*endangered* level) | 2 |
| | 3. | Several traditional local buildings mixed with many modern houses; one temple without usage any more; modernized local customs and culture; (*modernized* level) | 3 |
| | 4. | Well preserved traditional local buildings; temples with monks playing roles in local people's life; and well preserved original customs and culture; (*original* level) | 4 |
| **Natural attractions[$]** | 1. | Ordinary landscapes; no precious or attractive species; (*none* level) | 1 |
| | 2. | Magnificent awe-inspiring natural landscapes; no precious or attractive species; (*landscape* level) | 2 |
| | 3. | Ordinary landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); (*species* level) | 2 |
| | 4. | Magnificent awe-inspiring natural landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); (*both* level) | 3 |
| **Sustainable tourism services (STS)** | 1. | Freely visit every place; no visitor restriction; no resource saving or recycling; no community involvement; (*none* level) | 1 |
| | 2. | Small conservation program only for core attraction area; litter/trash cans; community based business-restaurants, hostels and small hotels, local specialty stores and horse riding service; (*limited* level) | 2 |
| | 3. | Having buffer zone; scientific conservation program for core area and buffer zone; green buses, bio energy use and waste water treatment; local community participates in decision-making in local development, and local business involvement (see above); (*extensive* level) | 3 |
| **Cost (local transportation, lodging, food, entrance fee and other expenses)** | 1. | 780RMB | 0.78 |
| | 2. | 1440RMB | 1.44 |
| | 3. | 2400RMB | 2.4 |
| | 4. | 4200RMB | 4.2 |
| | 5. | 7200RMB | 7.2 |

[#]base level (opt out option) was coded as 0. [$]the natural attractions level 2 and 3 are coded "2" because there is no "natural" order of the two levels. [§]the attribute *tarnished nature experience* shows up in the actual choice cards (Figure 2) under the more neutral description *possibility of experiencing nature*.

For each attribute, three to five levels were constructed based on representative conditions of nature and landscape-based tourism attraction sites in southwestern China. The levels of the cost attribute are based on published information on trip costs ranging from trips for modest backpackers, self-organized travellers and commercially organized group-trips to 'luxury' trips including renting vehicles with drivers.

Some published CE studies include similar destination attributes. For example, travel convenience is included by Hearne & Salinas (2002) and Huybers (2003). An attribute comparable to our 'tarnished' nature experience is used by Apostolakis & Jaffry (2005), Hanley et al. (2002), and Huybers (2003). Kelly et al. (2007) deals with sustainable tourism services, while Hanley et al. (2002) or Naidoo and Adamowicz (2005) employ attributes on landscape and scenic quality.

### 3.3.3   CE choice sets

From the attributes and attribute levels, 3,840 ($4^4*3*5$) different combinations of destination characteristics can be generated. An orthogonalisation procedure was used to generate a main effects design leading to 24 pair-wise comparisons of destination options, i.e. choice sets. The choice sets were randomly blocked into three groups. Each respondent was asked to choose the preferred trip from one of two described destinations (Cards A and B), and an opt out/buy nothing option (Figure 2).

| Place A | |
|---|---|
| Convenience at place just outside of attraction site | – Old roads;<br>– Some hotels/ restaurants |
| Possibility of experiencing nature | – Big scale tourism infrastructure (cable car, Karaoke);<br>– Always be aware of "this is a tourism place";<br>– Meet other people every minute |
| Sustainable tourism services | – Freely visit every place;<br>– No resource saving;<br>– No community involvement |
| Cultural attractions | – Well preserved traditional buildings;<br>– Temples (alive);<br>– Original customs and culture |
| Natural attractions | – Ordinary landscapes;<br>– Many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 2400RMB |

| Place B | |
|---|---|
| Convenience at place just outside of attraction site | – Old roads;<br>– Some hotels/ restaurants |
| Possibility of experiencing nature | – Sense of solitude and tranquility;<br>– No tourism infrastructure;<br>– No other visitors |
| Sustainable tourism services | – Small conservation program only in core zone (e.g. wild animal monitoring and protection, etc);<br>– Community based restaurant/ hostel/small hotel;<br>– local specialty stores |
| Cultural attractions | – Some traditional old buildings/ modern houses;<br>– No original culture alive |
| Natural attractions | – Magnificent awe-inspiring natural landscapes;<br>– No precious or nice species; |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 4200RMB |

Opt out: I would rather like to spend my money on a better trip offered, and have my vacation enjoyment on another trip.

Figure 2. Example of a choice set (English language version[3])

## 3.4 Administration of the survey

Before the formal interview started, respondents were asked if they like travelling, where they live, and about their approximate income. If respondent income was lower than 1,500 RMB per month (~150 €), the interviewers would ask two more interactive questions and finished the interview. Next, the CE attributes were explained. With a set of sample cards, the choice procedure was practiced. Directly before the choice exercise, respondents received a token gift as the appreciation of their participation. Images of nature questions were asked after the choice excise. In a final section of the interview, further socio-demographic questions were asked. Overall, a total of 4,928 choices were observed from 616 respondents (see also Figure 3).

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[3] The Chinese version and English version choice sets with visual aids are available at: http://www.uni-goettingen.de/de/sh/47518.html.

## *3.5   Statistical and econometric analysis*

### 3.5.1   Factor analysis and correlation analysis

Factor analyses and correlation analysis were conducted with SPSS 15.0. A varimax rotated factor analysis with binary squared Euclidean distance and Ward-linkage was employed to generate five empirical dimensions of images of nature (Kroemker, 2004). Based on factor analysis results, all items $i$ of each dimension $d$ with a factor loading $l$ above 0.4 were used to calculate an individual dimension score $V$ of the respective dimension for each respondent $n$:

$$V(d,n) = \sum_i l * Q$$

with $Q$: Likert score of $i$

For all dimensions, a descriptive label was chosen that reflects contents and wording of the underlying items. While these dimension scores are used for econometric analysis, we also report mean raw scores for each dimension to facilitate a more intuitive understanding with reference to the original 1-5 likert scale (Table 3).

To avoid bias non-normal score distributions, nonparametric standard procedures (bivariate Spearman correlation) were used for correlation analysis. For econometric analysis, residency and gender were dummy coded (Figure 3a and 3b). Education and self-perceived social status were coded as 1-4 and 1-5 (Figure 3d and 3e). In the survey, respondents were asked to indicate the right ranges they belong to regarding their age, monthly income and annual travel expenditures. In analysis, age, monthly income and annual travel expenditures (Figure 3c, 3f and 3g) used means of each category for calculation.

### 3.5.2   Nested Logit (NL) model estimation

For the analysis of the CE data, a set of Nested Logit models (NL) was calculated with NLOGIT 3.0. Preliminary analyses indicated the risk of violations of the independence from irrelevant alternatives (IIA) condition necessary for the application of (the simpler)

conditional logit analysis. Because NL does not rely on the IIA assumption, an eligible NL tree structure was identified, and the corresponding models estimated. The inclusive value was set to 1.0 for the degenerated branch, and the model initiated with starting values obtained from a non-nested NL model (Hensher et al. 2005: 536). All scale parameters were normalized at the lowest level (RU1).

All models include an alternative specific constant (ASC) coded 1 for the generic choices A and B, and 0 for the "opt out/buy nothing" option. The ASC expresses a fundamental propensity to make (or not to make) a trip to southwestern China beyond the information given during the CE.

In the tables presenting the NL models, pseudo-$R^2$ values (constant only), Log likelihood function (LL) and inclusive value (IV) are reported as diagnostic statistics. Pseudo-$R^2$ values in reference to a constant only model are much more conservative than the $R^2$ value of ordinary least squares (OLS), for example, values between 0.07-0.08 correspond to $R^2$ values of 0.22 to 0.24 value in an OLS equivalent (Hensher et al., 2005: 338). IV statistics are significantly different from 1 highlighting the insufficiency of ordinary multinomial logit models. All NL models are overall highly significant (p-value of Chi²-Test < 0.001).

### 3.5.3 Interaction terms

To test for the influences of images of nature dimensions on preferences, interaction terms between attributes and dimensions were generated. In a first step, these interaction terms were included one-by-one as single terms into a NL base model.

With NL procedures, we estimated an additive utility function of the form

$$U = b_1 * \text{attribute}_1 + \ldots + b_6 * \text{attribute}_6 + b_i * \text{interaction term}_i + b_{asc} * \text{ASC}$$

with

$\quad\quad\quad b_1 \ldots b_6$: attribute coefficients including the cost attribute $b_6$;

$b_i$:        coefficient of interaction term$_i$;

$b_{asc}$:    coefficient of the Alternative Specific Constant.

Because the coefficients of the interaction terms $b_i$ are estimated with individually varying dimension scores, these coefficients represent some of the preference heterogeneity within the sample.

### 3.5.4  Parsimonious model and willingness-to-pay (WTP) estimation

In a second analysis step, we combined promising interaction terms into a single NL model. The parsimonious models of Table 7 were generated by stepwise exclusion non-significant interaction terms using the conventional significance threshold of $p \leq 0.1$. The estimation of statistically significant attribute and interaction coefficients allows for the calculation of welfare measures. The maximum willingness-to-pay for a 1 level change of trip attribute $S_i$ ("marginal" WTP) equals the ratio of the respective coefficient $b_i$ ($b_i$=attribute) and the negative value of coefficient of the cost attribute $b_6$.

$$mWTP(S_i) = -\frac{b_i}{b_6}$$

If the WTP calculations include interaction terms, sample mean of the dimension scores of the images of nature dimensions must be accounted for (see Table 7).

## 4  Results

### *4.1  Respondent socio-demographics*

Figure 3 summarizes the socio-demographic characteristics of the sample. There are 307 respondents of Chengdu (49.8%) and 309 (50.2%) of Beijing. A gender ratio of 53:47 (male: female) was achieved. Respondents less than 39.9 years old comprise 61% of the sample. Age groups (Figure 3c) reflect age distribution among Chinese middle class sub-districts, although large efforts were put on recruiting respondents older than 40 years. With differences between

Beijing and Chengdu, mean monthly income is 3,537 RMB (~354 €), which is about twice of the average monthly income in Beijing and four time of average monthly income in Chengdu (CNBS, 2006a). Average annual travel expenditures are ~3,500 RMB (~350 €). The amount is nearly five times higher than urban resident average tourism expenditures of 737 RMB (~74 €) in 2005 (CNTA, 2006). Half (50%) of respondents hold a formal educational degree equivalent to a bachelor degree or above. This is much higher than the Chinese average of 5.8% (CNBS, 2006b). Around 90% of the respondents regard themselves at least as middle class.
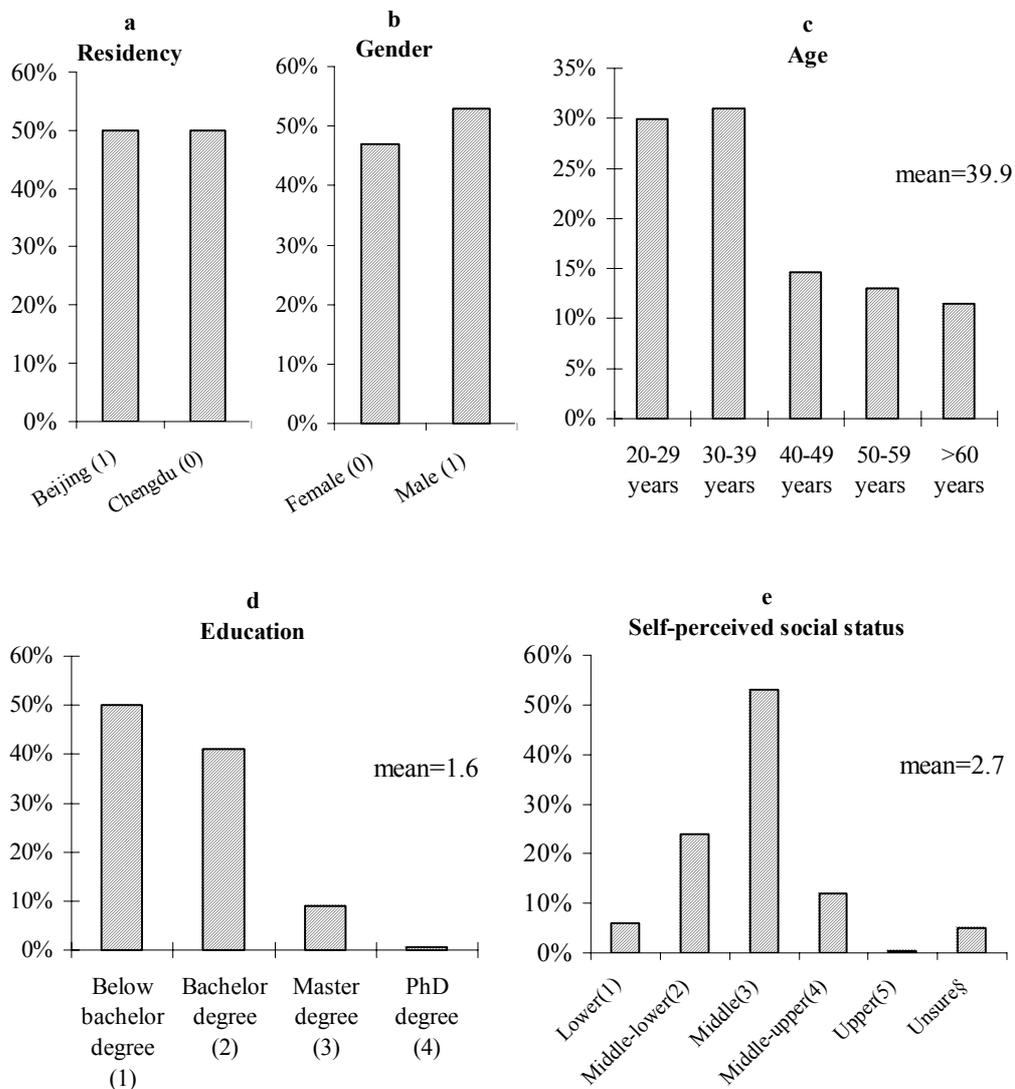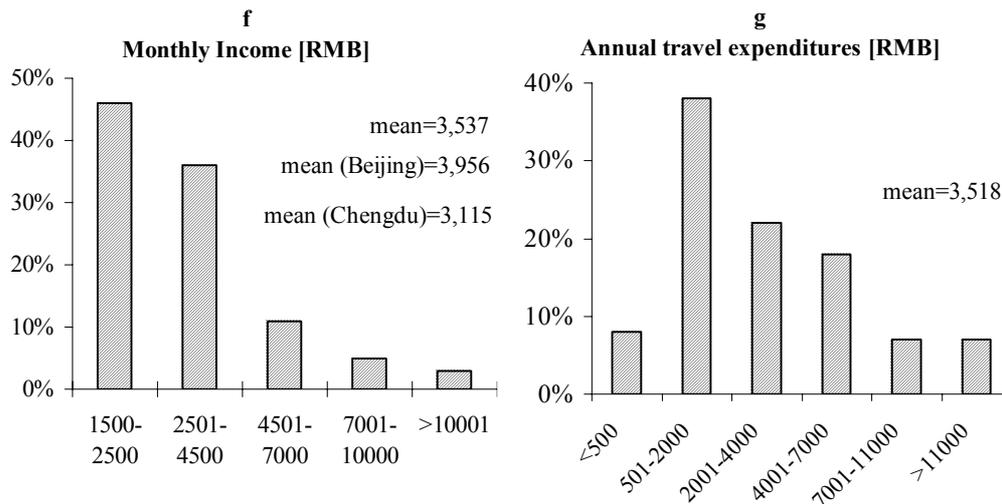
§: "unsure" (n=32) is substituted by the estimated values from a co-linearity diagnostics linear regression. n=616.

Figure 3. Respondent socio-demographics overview

## 4.2 Images of nature dimensions

Factor analysis generated six dimensions from images of nature items. Based on reliability considerations, we selected the first five dimensions (for details, see Table 3). The *equality and harmony* dimension explains 22% of factor analysis variance. The *respect and protection value* dimension explains 9.6%, 5.8% is explained by the *consequence and personal connection* dimension, the r*obustness and non-spirituality* dimension accounts for 4.9% while the *spirituality and fragility* explains 4.5%. A total of 46.8% of variance is explained by the dimensions.

The five dimensions can be grouped into two categories that either focus on a *harmonious human-nature relation* or *domination of* nature for human purposes. With the exception of the *robustness and non-spirituality* dimension, all other dimensions belong to the *harmony*-oriented dimensions.

The dimension mean raw score (5-point Liker scale) shows that average respondents have a high level agreement with the values expressed by the *harmonious* dimensions (4.3, 4.3, 4.4

and 3.7). For the *domination* of nature dimension *robustness and non-spirituality*, the mean

raw score is only 2.3.

Table 3. Images of nature dimensions and items

| Images of nature dimension | Items | Factor loading | Cronbach's Alpha | Mean (raw score) ±SD |
|---|---|---|---|---|
| **Equality and harmony** (*harmonious human-nature relation)* | In the grand design of world, humans have the same value with other living beings. | 0.734 | | |
| | Human and nature, including animals and plants have the equal right to exist. | 0.706 | | |
| | Human should protect nature because it has a right of existence in itself in the same way that all and everything living does. | 0.699 | **0.768** | **4.3±0.54** |
| | Humans belong to nature the same way as animals and plants do. | 0.569 | | |
| | As the supreme beings on earth, human should not tarnish nature. | 0.507 | | |
| **Respect and protection value** (*harmonious human-nature relation* ) | When human interfere with nature, they should follow the law of proper portion. | 0.74 | | |
| | Humans should protect nature because it provides recreation and quietness. | 0.543 | | |
| | Humans must follow the law of nature in order to live in harmony. | 0.511 | **0.668** | **4.3±0.46** |
| | Humans should protect nature because it enriches our lives by its wonderful magnificence. | 0.471 | | |
| | Nature is sensitive to any kind of interference. Even small interference can lead to big and irreversible damage. | 0.462 | | |
| **Consequence and personal connection** (*harmonious human-nature relation* ) | Ignoring the law of the nature will eventually bring the disaster to humans. | 0.734 | | |
| | Humans should protect nature because it is useful and provides a lot of advantages for us. | 0.701 | **0.642** | **4.4±0.5** |
| | I feel threatened by the ongoing destruction of nature. | 0.53 | | |
| | The earth is like a spaceship with only limited room and resources. | 0.482 | | |
| **Spirituality and fragility** (*harmonious human-nature relation* ) | Nature is sacred because it is created by God. | 0.59 | | |
| | Nature has its own right of existence; therefore it is not allowed to destroy nature anywhere for human needs. | 0.497 | | |
| | Nature is sensitive to any kind of interference. Even small interference can lead to big and irreversible damage. | 0.453 | **0.506** | **3.7±0.63** |
| | The earth is like a spaceship with only limited room and resources. | 0.429 | | |
| **Robustness and non-spirituality** (*human domination)* | Humans have the right to use natural resources of any kind they want to. | 0.677 | | |
| | Nature is important, but neither has a soul nor is sacred. | 0.588 | | |
| | Plants and animals do exist primarily for human use. | 0.581 | **0.596** | **2.3±0.62** |
| | Nature always recovers (by itself), no matter what humans do. | 0.573 | | |
| | Not humans can protect nature; only God has the power to do so. | 0.486 | | |

## 4.3 *Correlation of images of nature dimensions with socio-demographics*

The *equality and harmony* dimension is positively correlated with education but negatively

correlated with gender (Table 4). The *respect and protection value* dimension is positively

correlated with age and self-perceived social status but negatively correlated with gender.

Higher educated respondents and Chengdu respondents agree more strongly with the

*consequence and personal connection* dimension. The *robustness and non-spirituality*

dimension has a positive correlation with age and negative correlation with education and

monthly income. Female and Chengdu respondents agreed more strongly with the values

expressed by the *spirituality and fragility* dimension.

In sum, respondents agreeing above average with the *harmonious human-nature relation* dimensions are more frequently from Chengdu, more often female and tend to have a higher education. Age and self-perceived social status are the only surveyed socio-demographic variables that are exclusively correlated with the *respect and protection value* dimension, and not shared by other *harmonious* dimensions. On the other hand, supporter of the *human domination* dimension are older, lower educated and receive less income than the average respondent.

Table 4. Correlations between images of nature dimensions and socio-demographics

| Images of nature dimensions | Socio-demographics | | | | | | |
|---|---|---|---|---|---|---|---|
| | Residency | Gender | Age | Education | Monthly Income | Annual travel expenditures | Self-perceived social status |
| **Equality and harmony (*harmonious*)** | | -0.09* | | 0.081* | | | |
| **Respect and protection value** *(harmonious)* | | -0.127** | 0.178** | | | | 0.089* |
| **Consequence and personal connection** (***harmonious***) | -0.146** | | | 0.103* | | | |
| **Spirituality and fragility (*harmonious*)** | -0.082* | -0.202** | | | | | |
| **Robustness and non-spirituality** (***domination***) | | | 0.156** | -0.172** | -0.092* | | |

[**]significance at 0.01 level (two-tailed); [*]significance at 0.05 level (two-tailed). In residency, Beijing is coded as 1 and Chengdu is coded as 0 in residency. In gender, male is coded as 1 and female is coded as 0.

## *4.4   Destination choice base model*

Table 5 presents the influences of six destination attributes on respondent preferences for destination choice. All six attributes have significant influences on destination choice in southwestern China nature-based destinations. *Convenience, cultural and natural attractions* have highly significant and positive influences regarding destination choice. The coefficients of the *tarnished nature experiences* and the *sustainable tourism services* are significant and negative. *Cost* is highly significant, and displays a negative sign of the utility coefficient, as to be expected from fundamental micro-economic theory. The negative sign of the ASC coefficient indicates that actual respondent preferences are overestimated if calculated from the attribute levels alone.

Table 5. Nested logit model result for destination attributes

| Attribute | Coefficient | P |
|---|---|---|
| Convenience | 0.1067*** | 0.0000 |
| Tarnished nature experience | -0.0652** | 0.0031 |
| Sustainable tourism services | -0.0623* | 0.0309 |
| Cultural attractions | 0.1884*** | 0.0000 |
| Natural attractions | 0.4242*** | 0.0000 |
| Cost [1,000RMB] | -0.1958*** | 0.0000 |
| [Non-status quo ASC] | -0.2482* | 0.0346 |
| Log likelihood function | -4933.26 | |
| Pseudo-$R^2$ (constant only)[§] | 0.071 | |
| Inclusive value (IV) | 0.842 | |
| Observations (choices) | 4928 | |

[***]: significance at 0.001 level; [**]: significance at 0.01 level; [*]: significance at 0.05 level. The ASC in brackets as it is a NL model predictor of destination choice but not a destination attribute. [§]Pseudo $R^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to $R^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al. 2005:338); IV statistic is significantly different from 1; n=616.

### 4.5  *Images of nature dimensions influences on destination choice*

Table 6 displays the results from interaction analysis with the images of nature dimensions. The *respect and protection value* dimension positively influences preferences for the *convenience* attribute (p=0.002), and negatively influences the overall value of the offered trips as compared to the opt out/buy nothing options (negative interaction with the *ASC;* p=0.016). The *consequence and personal connection* dimension shows a negative influence regarding the *tarnished nature experience* attribute (p=0.028). The respondents, who agree strongly with the dimension, prefer a less tarnished nature experience. The *robustness and non-spirituality* dimension displays a positive influence regarding *tarnished nature experiences* (p=0.005), a negative tendency concerning the *cost* attribute (p=0.065), and a positive tendency in regards to overall trip preferences (positive interaction with *ASC*; p=0.087).

The *equality and harmony* dimension and *spirituality and fragility* dimension have no significant influences regarding destination choice attribute.

As a whole, the interaction results reveal that respondents who are more supportive of the *harmonious* dimensions more strongly prefer higher levels of *convenience*; more strongly dislike *tarnished nature experiences* and display a higher (negative) deviation of total preferences for trips to southwestern China than calculated from the attribute information alone. In contrast, respondents with more *domination* values are less put off by more visitors around and more visible tourism infrastructures in a destination. They tend to like travelling to southwestern China more, but are also more susceptible to higher costs.

Table 6. Influences of images of nature dimensions on destination choice attributes

| Images of nature dimensions | Variable | Destination attribute | | | | | |
|---|---|---|---|---|---|---|---|
| | | Convenience | Tarnished nature experiences | Cultural attractions | Natural attractions | Cost | [Non-status quo ASC] |
| **Equality and harmony** | Attribute | | | | | | |
| | Interaction | | | | | | |
| **Respect and protection value** | Attribute | -0.4979* | | | | | 2.2496* |
| | Interaction | 0.0522** | | | | | -0.2159* |
| | Log likelihood -4926.41 | | | | | | |
| | Pseudo-R$^2$ | | | | | | |
| | (constant only) 0.072 | | | | | | |
| **Consequence and personal connection** | Attribute | | 0.3681$^+$ | | | | |
| | Interaction | | -0.04* | | | | |
| | Log likelihood -4928.68 | | | | | | |
| | Pseudo-R$^2$ | | | | | | |
| | (constant only) 0.072 | | | | | | |
| **Spirituality and fragility** | Attribute | | | | | | |
| | Interaction | | | | | | |
| **Robustness and non-spirituality** | Attribute | | -0.2934*** | | | -0.1267** | -0.9565* |
| | Interaction | | 0.0333** | | | -0.01$^+$ | 0.1048$^+$ |
| | Log likelihood -4915.88 | | | | | | |
| | Pseudo-R$^2$ | | | | | | |
| | (constant only) 0.074 | | | | | | |

***: significance at 0.001 level; **: significance at 0.01 level; *: significance at 0.05 level; $^+$: significance at 0.1 level. Pseudo R$^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to R$^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistics are significantly different from 1; n=616.

### 4.6 *Parsimonious model and WTP calculation*

Table 7 displays the parsimonious model and estimated WTP. The *respect and protection value* dimension retains a positive influence regarding the *convenience* attribute (p=0.002), and a negative influence on ASC (p=0.003). The *robustness and non-spirituality* dimension maintains positive influences with regards to *tarnished nature experiences* (p<0.001), and negative impacts regarding the *cost* attribute (p=0.049). The pseudo-R$^2$ (constant only) value

of 0.075 (~0.225 in OLS) indicates small but substantial capacity of the model to actually

predict of *individual* choices from the used destination choice sets.

Table 7. Parsimonious model and WTP estimation

| Variable | Coefficient | Sample mean of the dimension score | Interaction term coefficient | Coefficient for WTP calculation | Marginal WTP[RMB] | Aggregated marginal WTP[RMB] |
|---|---|---|---|---|---|---|
| Convenience | -0.4767** | | | -0.4767 | -2430 | |
| Respect and protection value*convenience | 0.05** | 11.61 | 0.5821 | 0.582 | 2968 | 537 |
| Tarnished nature experiences | -0.3622*** | | | -0.3622 | -1846 | |
| Robustness and non-spirituality*tarnished nature experiences | 0.0433*** | 6.87 | 0.2974 | 0.3516 | 1516 | -330 |
| Sustainable tourism services | -0.066* | | | -0.066 | -337 | -337 |
| Cultural attractions | 0.1892*** | | | 0.1892 | 964 | 964 |
| Natural attractions | 0.4279*** | | | 0.4279 | 2182 | 2182 |
| [Non-status quo ASC] | 1.2303* | | | 1.2303 | 6273 | |
| Respect and protection value *non-status quo ASC | -0.1269** | 11.61 | -1.7081 | -1.4738 | -7514 | -1241 |
| Cost | -0.1322*** | | | | | |
| Robustness and non-spirituality*cost | -0.0093* | 6.87 | -0.0639 | -0.1962$^{§}$ | | |
| Observations | 4928 | | | | | |
| Log likelihood | -4912.14 | | | | | |
| Pseudo-R$^2$ (constant only) | 0.075 | | | | | |
| Inclusive value(IV) | 0.84 | | | | | |

***: significance at 0.001 level; **: significance at 0.01 level; *: significance at 0.05 level; §cost coefficient for WTP calculation = the non-interacted cost attribute coefficient + interaction term coefficient. Pseudo R$^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to R$^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistic is significantly different from 1; n=616. 1RMB≈€0.10.

For a one level improvement of travel convenience (Table 7), respondents would on average

willing to pay 537 RMB (~54 €) by maximum. This value is the sum of the non-interacted

marginal WTP for the attribute term and marginal WTP for the interaction term with the

*respect and protection value* dimension. With regard to the marginal WTP for *tarnished*

*nature experiences*, the negative appreciable WTP indicated by the non-interacted attribute

tern is largely counterbalanced by the *robustness and non-spirituality* dimension from (from -

1,846 RMB (~-185 €) to -330 RMB (~-33 €). No images of nature dimension impact

preferences for *sustainable tourism services*, or *cultural* or *natural attractions*. WTP for one

level improvement of *sustainable tourism services* is -337 RMB (~34 €), and 964 RMB (~96

€) for one level improvement of *cultural attractions* and 2,182 RMB (~218 €) for *natural attractions*. The *respect and protection value* dimension significantly impacts ASC. With its influence, respondents displayed on average -1,241 RMB (~124 €) less WTP for taking a trips to southwestern China that predicted by the attribute information alone.

In brief, the *harmonious* dimensions significantly improve WTP for *convenience*. Respondents, who have higher score in the *respect and protection value* dimension, prefer a reduction of 1,241 RMB (~124 €) with the overall trip cost. The *domination* dimension significantly improves WTP for *tarnished nature experiences* attribute. In addition, respondents who are more *domination* orientated prefer lower trip costs.

## 5    Discussion and conclusion

The first part of our contribution profiles the images of nature of Chinese middle class tourists. Two features shape the pre-theoretic perception of Chinese respondent human-nature relation: a set of four dimensions that share a *harmony* vision of the human-nature relationship, and a distinctly non-spiritual dimension that assumes that nature is rather robust and should be dominated for human purposes. A clear *harmony* orientation can be found in the *equity and harmony*, *respect and protection value*, *spirituality and fragility*, as well as in the *consequence and personal connection* dimensions. Although these dimensions include several items that were specifically developed based on a literature analysis of the four aspects of the harmony concept in Chinese traditional culture, these traditional aspects only moderately determine our factor analytical dimensions empirically. Likewise, the factor analytical combination of items into dimensions demonstrate substantial deviation from the dimensions constructed by Krömker (2004, 2005) with an identical factor analysis methodology. In addition to the added harmony items specifically developed for this study, our sample of Chinese middle class respondents is culturally much more homogeneous that her respondents from India, Peru, the United States and Germany.

Judged by average raw scores in the respective dimensions (all > 3.7), average Chinese middle class respondents hold rather strong "*harmonious*" values towards nature as also documented in previous studies (Chan, 2001; Deng et al., 2006). For the *robustness and non-spirituality* dimension, average agreement scores are much lower (2.3) than for the *harmonious* dimensions. Still the emergence of this dimension as well as the occurrence of respondents with high scores suggest that the violent practices of conquering nature since 1949 left traces in the contemporary Chinese images of nature. Similarly, Chan & Lau (2000) report that the Chinese adhere only moderately to the traditional harmony orientation. In their study, a pronounced human domination of nature dimension did not emerge, however. Compared to our precursor study (Barkmann et al, in preparation, chapter 3), only one "*domination*" of nature dimension was documented that integrates notions of robustness with non-spiritual perspective. In the precursor study, these two dimensions appeared separately.

*Harmonious* or *domination* dimensions correlate with different socio-demographic characteristics. Roughly speaking, a *harmony* orientation is stronger in better educated, female, respondents from Chengdu and those who report a higher self-perceived social status. Conversely, a *domination* of nature orientation is more pronounced in older, lower educated respondents with lower income. With regard to cultural background factors of female respondents, a more pronounced agreement with "biospheric" values has been documented for female respondents (Deng et al., 2006), as well as for female university students (Stern and Dietz 1994).

All five tested destination attributes as well as the *cost* attribute influence hypothetical destination choices. The influence of the *sustainable tourism services* attribute is significant but negative. Form more detailed analysis to be published elsewhere (Yan et al. in preparation b, chapter 4), we know that a *limited* (i.e. rather low) level of *sustainable tourism services* is appreciated. The *extensive* level of *sustainable tourism services* appears to convey a disutility to Chinese middle class respondents of Beijing and Chengdu. However, the positive

willingness-to-pay for the opportunity to have less *tarnished nature experience*, and to enjoy high levels of traditional *cultural attractions* as well as *natural attractions* still point to the importance of a socially and environmentally careful tourism development in southwestern China.

For three of the five images of nature dimensions, we could document influences on preferences for destination attributes constructing one Nested Logit model per dimension (Table 6). In the combined 'parsimonious' NL model (Table 7), only one of the four *harmony*-oriented dimensions - *respect and protection value* – influences destination choice. Respondents with high scores in this dimension appreciate travel *convenience* more highly than average respondents. Furthermore, they are generally less interested in travelling to any of the offered generic southwestern Chinese destinations. Although the initial NL model has indicated that the *consequence and personal connection* dimension may influence preferences for (*un-*) *tarnished nature experiences* (Table 6), the parsimonious model did neither support this conclusion – nor did any other *harmony*-oriented image-of-nature dimension form a significant interaction term with this attribute or with the *natural* and *cultural attractions* or with the *sustainable tourism services* attributes.

The *human domination*-oriented *robustness and non-spirituality* dimension, however, influences preferences for two destination attributes. For highly *domination*-oriented respondents, the possibility to experience nature in an untarnished state with low visitor congestion and a low level of tourism infrastructure is less important when making destination choices. Also, these respondents are more sensitive to the (on-site) trip cost to a southwestern China destination. Also in the precursor study (Barkmann, et al., in preparation, chapter 3), the *human domination*-oriented dimensions had stronger influences on destination attribute preferences than the *harmony-oriented* dimensions. Particularly, respondents with high scores in the *robustness by divine designer* dimension also tended to be less put off by nature experiences in a visibly human-modified ('*tarnished*') environment, and were more

sensitive to *costs*. While our results document a considerable individual heterogeneity of individual preferences statistically not accounted for (modest pseudo-$R^2$ of 0.075), the predicted impact on preferences for two of the five destination attributes and an trip costs is non-the-less substantial. For example, a decrease of the average agreement with the *respect and protection value* dimension from 4.3 Likert points to just 4.0 points would reduce willingness-to-pay for one level improvement of the travel *convenience* attribute by 37%, from 559 ($\sim$ 56 €) to 350 RMB ($\sim$35 €). In contrast, a reduction of the average agreement with the *robustness and non-spirituality* dimension of also 0.3 Likert points from 2.3 to 2.0 would nearly result in 58% increase of willingness-to-pay from 375 ($\sim$38 €) to more than 594 RMB[4] ($\sim$ 60 €) for one level improvement toward less *tarnished nature experience*. In light of the secular trends of the development of Chinese society, the expected levels of higher education, income and social status either reduce agreement with the *robustness and non-spirituality* dimension or enlarge agreement with the *respect and protection value* dimension. The average aging of the Chinese people would be predicted to improve agreement with both images of nature dimensions. In sum, our results point at an increased future importance of travel *convenience* and of an *untarnished nature experience*. Consistent with micro-economic standard assumptions, the negative correlation between monthly income with the *robustness and non-spirituality* dimension would tend to decrease sensitivity to the costs of a trip, i.e. raise overall WTP for appreciated attribute level changes.

Similar to an attitude-intention gap in our dataset between a declared positive attitudes for sustainable tourism and a virtually inexistent influence of such attitudes for the intention to actually pay for such services (Yan et al. in preparation a, chapter 6), there appears to exist a gap between high declared agreement with *harmonious* images of the human-nature relation

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[4] This calculation takes into account that a change in the *robustness and non-spirituality* dimension does not only have a directly improving effect on WTP for a less tarnished nature experiences but also this change reduces the cost denominator of the WTP calculations (see equation in section 3.6.1) resulting in an additional WTP increase.

and WTP for *sustainable tourism services*. This result is in line with Chan (2001) who reports that Chinese consumers possess harmony-orientated culture values, their actual commitment to 'green purchases' was at rather low level, however. A possible explanation questions the credibility of the environmental claims of green products available in China (Chan, 1999). Results of the attitudinal analysis of the precursor study point into the same direction as agreement with *sceptical attitude* items explained (lack of) preferences for *sustainable tourism services* much better than agreement with positive items (Yan et al. accepted).

Because the quota-sampling survey administered exclusively to Beijing and Chengdu respondents can not guarantee representativeness for the universe of Chinese middle class tourists, the reported absolute WTP values should be treated with a measure of caution. In particular, the negative value of WTP for the alternative specific constant (ASC) indicates that respondent WTP is overestimated if exclusively calculated based on an addition of the partial WTP values of the single destination attributes. There are no indications in the sample, however, that the discussed influences on WTP are actually biased. Likewise, the Cronbach's Alpha values of the empirically identified image of nature dimensions are psychometrically not satisfactory, yet. Thus, we do not wish to suggest that this study provides definite guidance on the extent of the influence of cultural background variables on the preferences of Chinese domestic tourists. Rather we stress the pioneering aspect of scale construction in the study. Still, the study highlights the importance that a combined investigation of economic preferences and of cultural background values has for marketing/consumption studies also within Chinese domestic tourism research (see, e.g., Bowden, 2006; Chan, 2001; Wong & Lau, 2001; Zografos & Allcroft, 2007).

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## References

Apostolakis, A. & Jaffry, S. (2005). A choice modelling application for Greek heritage attractions. Journal of Travel Research, 43, 309-318.

Adamowicz, W., Louviere, J. & Williams, M. (1994). Combing revealed and stated preference method for valuing environmental amenities. Journal of Environmental Economics and Management, 26, 271-291.

Bateman, I.J., Carson, R.T. Day, B. Hanemann, M. Hanley, N. Hett, T. Jones-Lee, M. Loomes, G. Mourato, S. Özdemiroglu, E. Pearce, D.W. Sugden, R. and Swanson, J. (2002) Economic Valuation with Stated Preference Techniques – A Manual. Cheltenham, Northampton.

Bao, M. (2006). The evolution of environmental policy and its impact in the People's Republic of China. Conservation and Society, 4(1), 36-54.

Bao, J., Zheng, H. and Dai, G. (2002). The evolvement of spatial structure and the significance of Guilin's domestic tourist origins. ACTA Geographica Sinica, 57(1), 96-106. [in Chinese].

Becker, G. (1996). Accounting for tastes. Harvard University Press, Cambridge, Massachusetts & London, England.

Barkmann, J., Cerda, C. L. and Marggraf, R. (2005). Interdisziplinäre Analyse von Naturbildern: Notwendige Voraussetzung für die ökonomische Bewertung der natürlichen Umwelt. Umweltpsychologie, 9 (2), 10-28.

Barkmann, J., Yan, J., Zschiegner, A. and Marggraf, R. (in preparation). The Dao of the sceptic and the spiritual: attitudinal and cultural influences on preferences for sustainable tourism services in the domestic Chinese tourism market.

Bauer, T. G. & Chan, A. (2001). Does the environment matter? Experiences, attitudes, and revisit intentions of international visitors to Hong Kong. Pacific Tourism Review, 5(1), 75-82.

Born, R.V.D., Lenders, R.H.J., Groot, W.T.D. and Huijsman, E. (2001). The new biophilia: an exploration of visions of nature in western countries. Environmental Conservation, 28(1), 65-75.

Bowden, J. (2006). A logistic regression analysis of the cross-cultural differences of the main destination choices of international tourists in China's main gateway cities. Tourism Goegraphies, 8(4), 403-428.

Chan, R.Y.K. (2001). Determinants of Chinese consumers' green purchase behaviour. Psychology & Marketing, 18(4), 389-413.

Chan, R.Y.K. & Lau, L.B.Y. (2000). Antecedents of green purchases: a survey in China. Journal of Consumer Marketing, 17(4), 338-357.

China Central Government (CCG) (2007). Minorities living in China. Online document at URL http://www.gov.cn/test/2006-04/17/content_255861.htm. Accessed July 3rd, 2007.

China National Bureau of Statistics (CNBS) (2006a). Per capital annual income of urban household by source and region.  China Statistical Yearbook 2006, China Statistics Press, Beijing.

China National Bureau of Statistics (CNBS) (2006b). Population by sex, education attainment and region.  China Statistical Yearbook 2006, China Statistics Press, Beijing.

China National Tourism Administration (CNTA) (2006). Major statistics of China domestic tourism 2006. Online document at URL

http://www.cnta.gov.cn/news_detail/newsshow.asp?id=A2007361050143901487. Accessed June 19$^{th}$, 2007.

Crouch, G. & Louviere, J. J. (2004). The determinants of convention site selection: a logistic choice model from experimental data. Journal of Travel Research, 43, 118-130.

Deng, J., Walker, G.J. and Swinnerton, G. (2006). A comparison of environmental values and attitudes between Chinese in Canada and Anglo-Canadians. Environment and Behaviour, 38 (1), 22-47.

Enomoto, H. and Meijo, U. N. (1994). A study on the images of the nature and the playing experiences in the natural fields: from the view point of environmental education in the home. Japanese Journal of Family Psychology 8(2):83-93.

Eymann, A. and Ronning, G. (1997). Microeconometric Models of Tourists' Destination Choice. Regional Science & Urban Economics, 27, 735-761.

Farrell, D., Gersch, U., & Stephenson, E. (2006). The value of China's emerging middle class. McKinsey Quarterly; 2006 Special Edition, 60-69.

Fung, Y. (1976). A short history of Chinese philosophy - a systematic account of Chinese thought from its origins to the present day. The Free Press, New York, London, Toronto, Sydney, Singapore. 172-174.

Ge, Q. S. (2002). Strategy of exploring tourism in western China (in Chinese). Beijing: China Tourism Press.

Haener, M. K., Boxall, P. C. & Adamowicz, W. L. (2001). Modelling recreation site choice: Do hypothetical choices reflect actual behaviour? American Journal of Agricultural Economics, 83(3), 629-642.

Hanley, N., Wright, R. E. & Koop, G. (2002). Modelling recreation demand using choice experiments: climbing in Scotland. Environmental and Resource Economics, 22, 449-466.

Hashimoto, A. (2000). Environmental perception and sense of responsibility of the tourism industry in mainland China, Taiwan and Japan. Journal of Sustainable Tourism, 8(2), 131-146.

Hearne, R. R. & Salinas, Z. M. (2002). The use of choice experiment in the analysis of tourist preferences for ecotourism development in Costa Rica. Journal of Environmental Management, 65, 153-163.

Hensher, D. A., Rose, J. M. and Greene, W. (2005). Applied Choice Analysis: a Primer, Cambridge University Press, Cambridge (UK).

Holbig, H. (2006). Ideological reform and political legitimacy in China: challenges in the Post-Jiang era. Working papers issue: Legitimacy and Efficiency of Political System. GIGA German Institute of Global and Area Studies. Online document at URL: www.giga-hamburg.de/workingpapers. Accessed December 5th, 2007.

Huang, A. & Xiao, H. (2000). Leisure-based tourist behaviour: a case study of Changchun. International Journal of Contemporary Hospitality Management, 12(3), 210-214.

Huybers, T. (2003). Domestic tourism destination choices - a choice modelling analysis. International Journal of Tourism Research, 5, 445-459.

Jacobsen, K.A. (1997). Humankind and nature in Buddhism. In: Deutsch E., & Berthrong, J. (Hrsg.): A companion to world philosophies. Blackwell Publishers, Massechusetts. 381-391.

Jax, K. and Rozzi, R. (2004). Ecological theory and values in the determination of conservation goals: examples from temperate regions of Germany, United States of America, and Chile. Revista Chilena de Historia Natural, 77, 349-366.

Jenkins, T.N. (2002). Chinese traditional thought and practice: lessons for an ecological economics worldview. Ecological Economics, 40, 39-52.

Jenni, K. (2005). Western environmental ethics: an overview. Journal of Chinese Philosophy, 32(1), 1-17.

Jiang, H. (2004). Grassland management and views of nature in China since 1949: regional policies and local changes in Uxin Ju, inner Mongolia. Geoforum, 36, 641-653.

Keulartz, J., Windt, H.V.D. and Swart, J. (2004). Concepts of nature as communicative devices: the case of Dutch nature policy. Environmental Values, 13, 81-99.

Korfiatis, K., Stamou, G. A. and Paraskevopoulos, S. (2003). Images of nature in Greek primary school textbooks. Science Education, 88(1):72-89.

Krömker, D. (2005). Naturbilder - ein kulturbedingter Faktor im Umgang mit dem Klimawandel. Umweltpsychologie, 9 (2), 146-171.

Krömker, D. (2004). Naturbilder, Klimaschutz und Kultur, In (Ernst, A., Frey, D., Lantermann, E.-D., Linneweber, V., Sonntag, K., Staudinger, U. M.): Psychologie Forschung aktuell, Beltz Verlag, Programm PVU Psychologie Verlags Union, Weinheim, Basel, Berlin.

Lancaster, K. J. (1966). A new approach to consumer theory. Journal of Political Economy, 74, 132-157.

Li, C.L. (2003). The structure and proportion of China's middle class. Population Science of China (in Chinese), 6, 25-32.

Li, Y. &. Cai, Y (2004). A study on ecotourists' behavioural characteristics in Beijing: a case study in Baihuashan nature reserve. Geographical Research (in Chinese), 23(6), 863-874.

Li, W., Ge, X. and Liu, C. (2005). Hiking trails and tourism impact assessment in protected area: Jiuzhaigou Biosphere Reserve, China. Environmental Monitoring and Assessment, 108, 279-293.

Louviere, J., Hensher, D. A. and Swait, J. D. (2000). Stated Choice Methods: Analysis and Application, Cambridge University Press, Cambridge (UK).

Mao, D., Zhang, J. & Bao, H. (2005). A tourist destination choice model based on Lancasterian characteristics theory and destination image theory: theoretical analysis and case study. Geographical Research (in Chinese), 24(6), 992-999.

McFadden, D. (1973). Conditional logit analysis of qualitative choice behaviour. In P. Zarembka (Eds.), Frontiers in Econometrics (pp.105-142), New York: Academic Press.

Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B. & Kent, J. (2000). Biodiversity hotspots for conservation priorities. Nature, 403, 853-858.

Naidoo, R. & Adamowicz, W. L. (2005). Biodiversity and nature-based tourism at forest reserves in Uganda. Environment and Development Economics, 10, 159-178.

Nianyong, H. and Zhuge, R. (2001). Ecotourism in China's nature reserves: opportunities and challenges. Journal of Sustainable Tourism, 9(3), 228-242.

Sanders, R. (1999). The political economy of Chinese environmental protection: lessons of the Mao and Deng years. Third World Quarterly, 20(6), 1201-1214.

Shapiro, J. (2001). Mao's war against nature: politics and the environment in revolutionary China. Cambridge university press, Cambridge and New York.

Smith, P. (2001). Cultural theory: An introduction. Blackwell Publisher, Malden.

Stamou, A.G. and Paraskevopoulos, S. (2004). Images of Nature by Tourism and Environmentalist Discourses in Visitors Books: A Critical Discourse Analysis of Ecotourism. Discourse & Society, 15(1), 29-105.

Stern, P.C. and Dietz, T. (1994). The value basis of environmental concern. Journal of Social Issues, 50(3), 65-84.

Thompson, M., Ellis, R. & Wildavsky, A. (1990). Cultural theory: the social construction of nature. Westview Press, Boulder, San Francisco & Oxford.

Tu, W. (1998a). The Continuity of Being: Chinese Visions of Nature. In: Tucker, M. E., and Berthrong, J. (Hrsg.): Confucianism and Ecology - The Interrelation of Heaven, Earth, and Humans, Harvard University Press, Cambridge, Massachusetts. 105-121.

Tu, W. (1998b). Beyond the enlightenment mentality. In: Tucker M E, & Berthrong J (Hrsg.): Confucianism and ecology-the interrelation of heaven, earth, and humans. Harvard University Press, Cambridge, Massachusetts. 3-21.

Tu, W. (1997). Chinese philosophy: a synoptic view. In: Deutsch E, & Berthrong J (Hrsg.): A companion to world philosophies. Blackwell Publishers, Massechusetts. 2-23.

United Nations Educational, Scientific and Cultural Organizations (UNESCO) (2007). China UNESCO world heritage. Online document at URL http://whc.unesco.org/en/list. Accessed June 26, 2007.

Wong, S. & Lau, E. (2001). Understanding the behaviour of Hong Kong Chinese tourists on group tour packages. Journal of Travel Research, 40, 57-67.

World Travel and Tourism Council (WTTC) (2006). China, China Hongkong SAR and China Macau SAR: the impact of travel and tourism on jobs and the economy. Online document at URL http://www.wttc.org/publications/pdf/FINAL%20WTTC_China%20English.pdf. Accessed December 20, 2006.

Wu, B. & Cai, L. (2005). Spatial modelling - suburban leisure in Shanghai. Annals of Tourism Research, 33 (1), 179-198.

Wu, B. (1997). A study on destination choice behaviour of Chinese urban residents. Acta Geographica Sinica (in Chinese), 52(2), 97-103.

Yan, J., Barkmann, J., Zschiegner, A. and Marggraf, R. (accepted). The sceptics' challenge for sustainable tourism in the Southwestern China biodiversity hotspot: a choice experiment approach. China Tourism Research.

Yan, J., Barkmann,J., and Marggraf, R. (in preparation a). Sustainable tourism development in southwestern China: attitude-intention gaps in domestic tourists.

Yan, J., Barkmann,J., and Marggraf, R. (in preparation b). Assessing domestic tourist preferences for nature based destinations in southwestern China-a choice modelling analysis.

Yau, O.H.M. (1988). Chinese cultural values: their dimensions and marketing implications. European Journal of Marketing, 22, 44-57.

Zhang, G. (2003). Tourism research in China. In A. A. Lew, L. Yu, J. Ap & G. Zhang (Eds.), *Tourism in China* (pp. 67-81), New York, London, Oxford: The Haworth Hospitality Press.

Zhang, J., Du, J.K., Zhou, Y.K. & Gan, M. Y. (1999). The travel distance and travel patterns of tourists to national parks in China. Asia Pacific Journal of Tourism Research, 4(2), 27-34.

Zhou, L., Cheng, X. & Zhou, T. (2006). A research on the willingness to pay for certificated ecotourism product-the empirical analysis based on the tourists of Zhejiang's four scenic spots. *Economic Geography* (in Chinese), 26(1), 141-144.

Zografos, C. and Allcroft, D. (2007). The environmental values of potentials eco-tourists: a segmentation study. Journal of Sustainable Tourism, 15(1), 44-66.

# Chapter 6

## Sustainable Tourism Development in Southwestern China: Attitude-Intention Gap in Domestic Tourists[1]

Jiong Yan, Jan Barkmann, Rainer Marggraf

**Abstract**: With using choice experiment (CE) method, the study portrays Chinese middle class tourist attitudes toward sustainable tourism; and examines the influences of tourist attitudes on preferences for nature-based destination attributes in southwestern China. Six hundred sixteen respondents were surveyed in Beijing and Chengdu. Three attitudinal dimensions, two *positive* (*conservative sustainable development* and *concern for socio-ecological development*) and one *negative* (*sceptical attitude*), were identified. Furthermore, the images of nature of the respondents were examined. *Positive* attitudinal dimensions are strongly correlated with *harmonious human-nature relation* images of nature, while the *negative* attitudinal dimension is strongly related with *human domination* images of nature. Stated agreement with the attitudes dimensions showed that supportive attitudes of sustainable tourism development are rather high (4.2 and 3.9 out of 5 likert scale). However, the *positive* altitudinal dimensions only generate positive behaviour intension calculated as willingness-to-pay (WTP) for trip convenience (both dimensions: $p<0.001$). None of the attitudinal dimension influences willingness-to-pay for sustainable tourism service. The study results suggest that though strong *positive* attitudes toward sustainable tourism are present in Chinese domestic tourists, these attitudes do not translate into actual behavioural intentions.

Key words: Attitudes toward sustainable tourism, preference, destination choice, willingness-to-pay, southwestern China

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# 1   Introduction

A number of studies suggest that an analysis of tourist attitudes improves the understanding of tourist destination choice (Machairas and Howvrdas 2005, Obua and Harding 1996, Shin and Jaakson 1997, Um and Crompton 1990). These insights are currently not reflected well in Chinese tourism research: Chinese tourism research and planning is traditionally conducted from a supply-side perspective (Bao et al., 2002; cf. Zhang, 2003). Starting in the 1990s, some initiatives set up demand-side studies focusing on the relationship between destination choice and travel distance (e.g., Bao et al., 2002; Wu and Cai, 2005, zhang et al., 1999). Only recently, the first pioneering studies on Chinese tourist attitudes and motivations appeared (e.g., Mao et al., 2005; Li & Cai, 2004; Li, 2005; Yan et al., accepted).

In 2006, domestic tourists reached 1.394 billion person-trips, increasing by 15% from 2005. Domestic tourism expenditure was 623 billion RMB, an increase of 18% over 2005 (CNTA, 2006). The continual growth of domestic tourism in the past twenty years has made China one of the biggest domestic tourism markets in the world. The limited knowledge about Chinese domestic tourist attitudes and destination choice is in distinct contrast with the rapid growth of the Chinese domestic tourism market.

Particularly for a sustainable tourism perspective, the lack of more in-depth demand-side studies is unfortunate. The Chinese market for tourism services is mainly driven by price competition in the volume market. The booming tourism industry causes increased energy and resource consumption, and threatens ecologically sensitive areas in China (Wen, 1998; Nianyong & Zhuge, 2001). These issues are particularly crucial in southwestern China, which harbours one of 25 global biodiversity hotspots (Myers et al., 2000), and is an officially designated tourism development area (Ge, 2002). In this precarious situation, timely data on Chinese domestic tourist attitudes toward sustainable tourism and their influences on

preference for sustainable tourism services are urgently needed for a policy as well a marketing perspective.

By combing state-of-the-art attitude analysis with a stated preference economic valuation method, the study profiles the attitudes of Chinese middle class tourists toward sustainable tourism, and investigates how the attitudes influence preference for several destination attributes including sustainable tourism services. To our knowledge, no study has yet been conducted in mainland China that specially targets sustainable tourism aspects from an economic preference perspective. In addition, we take the potential impacts of cultural background values on attitudes into account (Chan, 2000; Homer & Kahle, 1988; Nordlund & Garvill, 2002; Yau, 1988).

The next section outlines current knowledge on the relationship between attitudes and destination choice. In the methods section (section 3), the data collection and analytical methods for the attitude dimensions (factor analysis) and for the choice experiment (CE) are described. Results are reported in section 4. Factor analysis results of attitudes toward sustainable tourism and images of nature are presented first, the correlations between attitude dimensions and images of nature dimensions, as well as attitude dimensions and socio-demographics are reported next. The base nested logit (NL) model of preferences for destination attributes is displayed and followed by the NL models presenting attitudes influences on preferences. The last part of the results is the parsimonious model and estimated willingness-to-pay (WTP) for attributes.  Discussion and conclusion is in the last part (section 5).

## 2    Literature review

### *2.1    Attitudes toward sustainable tourism*

Attitudes are evaluative judgments that integrate and summarize cognitive, affective and behavioural reactions toward a mental object (Crano & Prislin, 2006). A number of tourism

studies report attitude as an influential explanatory variable of tourist behaviour or behaviour intention (Machairas & Hovardas, 2005; Obua & Harding, 1996; Shin & Jaakson, 1997; Um & Crompton, 1990; Verplanken et al., 1994). Willingness-to-pay as estimated by stated preference methods such as contingent valuation or choice experiments can be interpreted as a behavioural intention (Ajzen & Driver, 1992*a*; Kotchen & Reiling, 2000). Attitude has been shown to influence destination choice in general (Um & Crompton, 1990), including leisure choice (Ajzen & Driver, 1992*b*) and choice of travel mode (Verplanken et al., 1994), and specific examples with regard to the wilderness quality of places visited (Shin & Jaakson, 1997), and to destination management (Machairas & Hovardas, 2005),

The New Ecological Paradigm (NEP) (Dunlap et al., 2000) provides the most widely used set of environmental attitude items for attitude-behaviour studies (e.g. Kotchen & Reiling, 2000; Stern et al., 1995; Widegren, 1998). NEP scales have been used to segment and profile target groups for 'ecotourism' or nature based tourism (Luzar et al., 1998; Zografos & Allcroft, 2007). This approach was also used by Li and Cai (2004) for visitors to Baihuashan Nature Reserve near Beijing, and Li (2005) for visitors of Taibai National Park (Shanxi Province). Because of the general scope of NEP, these studies do not specifically investigate tourist attitudes toward sustainable tourism; neither do they focus on behavioural intentions with regard to sustainable tourism services.

Several studies reveal that using attitudinal items toward specific environmentally friendly behaviour instead of toward general environmental issues improves the prediction of attitude-behaviour relationships (Chan, 2001; Hines et al., 1987). Some studies in tourism research developed specific attitudinal items, for example, attitudes toward specific destinations (Um & Crompton, 1990), attitudes toward species protection (Machairas & Hovardas, 2005) or wilderness attitudes (Shin & Jaakson, 1997). To our knowledge, no published set of questionnaire items exists that specifically assesses attitudes toward sustainable tourism.

In our study, attitudes toward sustainable tourism services are designed based on Protection Motivation Theory (PMT) which belongs to the rational choice approaches in psychology (Rogers & Prentice-Dunn, 1997). PMT was originally developed to foster individual health-related behaviours (Floyd et al., 2000) but it was quickly adapted for the investigation of pro-environmental behaviour (e.g. Hass et al., 1975; Martens & Rost, 1998), for which it is a prime methodological choice (Homburg & Stollwerk, 2006). Central to PMT are variables that operationalise perceived threat and coping appraisals (Rogers & Prentice-Dunn, 1997). It is postulated that a higher level of perceived threat, for example, for the attractiveness of a destination, as well as a higher coping appraisal are likely to result in higher intentions for a suitable "adaptive" action. For environmental psychology applications, perceived threat consists of three cognitive dimensions: the individual values affected, the frequency or likelihood with which a risk may materialize, and the severity of the threat if it materializes. The coping appraisal consists of beliefs in the general suitability of a risk mitigation strategy, and beliefs in the individual's own ability to apply such a strategy. Additionally, costs and situational barriers may influence the formation of a behavioural intention.

PMT is used in the marketing and recreation contexts (Graefe, 1998; Gramann et al., 1995; Tanner et al., 1991). Gramann et al. (1995) reports that the awareness of possible sanctions ('threat appraisal') was the strongest attitudinal predictor for intentions to obey rules on outdoor recreation. Similarly, the perceived threat because of personal security issues was a better predictor for travel intentions than previous visits to a region (Graefe, 1998).

With regard to economic valuation studies, PMT items have been used, e.g., to explain economic preferences species conservation in the Amazonian rainforests (Menzel, 2003), for soil conservation measures by Chilean small holders (Huenchuleo et al., submitted), for additional tourism infrastructure in southern Patagonia (Cerda et al., 2006), or for village-based resource conservation programs in rural Indonesia (Barkmann et al., accepted).

Based on the premise of a value-attitude-behaviour hierarchy (Homer & Kahle, 1988), some studies further explored impacts of cultural values on attitudes (Chan & Lau, 2000; Groot & Steg, 2007; Nordlund & Garvill, 2002; Homer & Kahle, 1988). Cultural values on the human-nature relationship were shown to explain environmental attitudes empirically (Chan, 2000; Groot & Steg, 2007; Vaske & Donnelly, 1999).

## 2.2    *Sustainable tourism*

Sustainable tourism is as precisely defined as the sustainable development concept to which a specific definition refers. Following Shaw and Williams (2002) we define sustainable tourism as a form of tourism in which the economic interests of the tourism industry are embedded in a frame of a broader sustainable development of economic, cultural and social issues as well as a careful utilisation of the natural resource base (cf. also WTO, 2004). A related concept is 'ecotourism'. For ecotourism, two main concepts are put forward: one is compatible with the sustainable tourism definition cited above. The second concept exploits the growing public interest in sustainable development issues by using the label "ecotourism" as a mere selling proposition for a specific tourism product ("Eco-Sell"; Wight, 1993). Ecotourism products and services of this second type may not even be intended to promote the aims of sustainable tourism and are not connected to this study.

## 2.3    *A destination choice experiment (CE)*

Choice experiment surveys are used in marketing research to estimate economic preferences for product characteristics. For tourism research applications, they allow for the quantitative investigation of tourist destination choice by the econometric estimation of destination choice models based on destination or trip characteristics (Eymann & Ronning, 1997; Hanley et al., 2002). Choice experiments have proven to be a versatile stated preference method (Hanley et al., 2002, Hensher et al., 2005). Answers to hypothetical destination choice questions have been shown to reflect actual destination choice well (Adamowicz et al., 1994; Haener et al.,

2001). Compared to conditional logit models, nested logit models as well as mixed and random parameter logit models are increasingly used for econometric estimation because they (i) allow for less restrictive assumptions on the structure of respondent preferences, (ii) account better for preference heterogeneity, and (iii) often result in improved model fit (Hensher et al., 2005). For recent reviews and manuals on a state-of-the-art application of the CE methods refer, e.g., to Bateman et al. (2002), Louviere et al. (2000), Hensher et al. (2005).

CEs are widely used in tourism studies. Examples include measurement of tourist preferences for tourism products/activities/services (Apostolakis & Jaffry, 2005; Pettersson, 2001), of preferences to pricing alternatives of Australian destinations (Morley, 1994) and recreation demand in Scotland (Hanley et al., 2002). CEs are also applied in various sustainable tourism studies, like assessing tourist preferences for different biodiversity levels in global biodiversity hotspots (Naidoo & Adamowicz, 2005), climate change effects on destination choice (Braun et al., 1999), ecotourism development in Costa Rica (Hearne and Salinas, 2002), and pro-environmental destination characteristics and/or sustainable tourism services planning options (Kelly et al., 2007).

## 3   Methods

### 3.1   Study areas

The destination area chosen for the CE is mountainous southwestern China (Figure 1), which harbours a global biodiversity hotspot (Myers et al., 2000) and is an officially designated tourism development area (Ge, 2002). This area has rich tourism resources which include five UNESCO natural heritage sites, four UNESCO cultural heritage sites and one UNESCO cultural and natural heritage site (UNESCO, 2007). Thirty six minorities live in the region, which account for about two third of the total fifty six minorities in China (CCG, 2007).
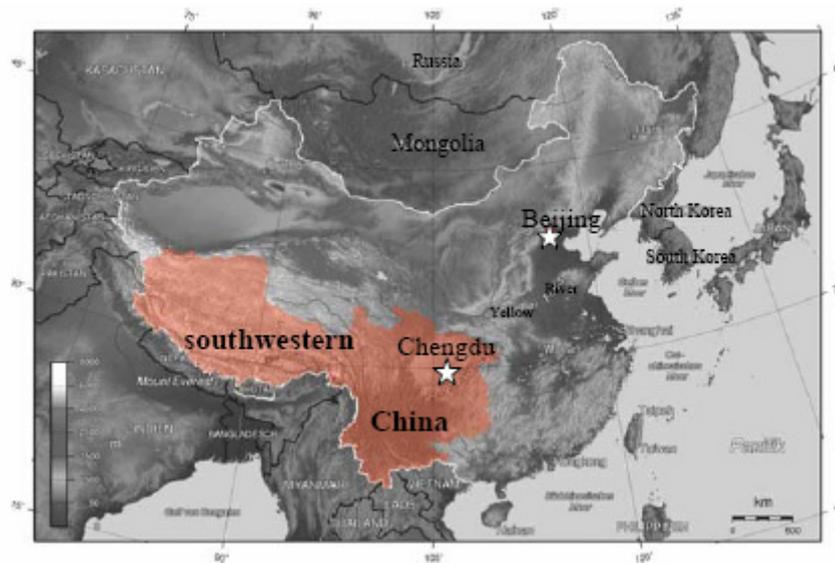
Figure 1. Map of research region and investigation sites

(Changed after source:

http://commons.wikimedia.org/wiki/Atlas_of_the_People%27s_Republic_of_China. GNU

Free Documentation License)


The survey was conducted in two national tourist source areas (Figure 1): Beijing (about

14.8 million citizens) representing East Coast agglomerations, and the provincial capital city

of Chengdu (Sichuan Province), one of the biggest urban agglomerations in southwest China

(around 10 million citizens). The investigation was conducted in two tourist *source* areas to

prevent self-selection bias (Huybers, 2003).

### 3.2  *Sample*

A total of 616 respondents were interviewed from August to November in 2006. We

employed and carefully trained local university graduate students as interviewers. Twenty city

sub-districts in Beijing and Chengdu were randomly selected from fifteen suitable sub-

districts each. The 30 sub-districts were identified by the following criteria:

- typical price range of apartments for middle class customers;

- availability of public spaces or accessible semi-public spaces inside gated residential

  compounds to contact respondents;

The public and semi-public spaces included shopping malls, supermarkets, outdoor markets, parks, restaurants and tea houses, gardens and other open compound spaces.

We decided to focus on Chinese 'middle class' tourists. A number of studies contribute to the discussion on the rising China middle class and how it should be defined/identified (e.g. Farrell et al., 2006; Li, 2003; Li, 2005). In the literature, there is no consensus regarding a middle class definition. However, income is always one of the most important indicators. Consequently, we focused on this indicator to "filter" the targeted middle class respondents. In line with Chinese income data from official Chinese statistics (CNBS, 2006a) and the McKinsey Institute Report (Farrell et al., 2006), the starting income level was set at monthly income of 1,500 RMB.

A quota sampling procedure provided the best way to interview the middle class target group. Three sampling criteria (quota) were applied: (i) equally distributed genders; (ii) balanced age distribution (above age 20); (iii) even recruitment of respondents with respect to the selected 20 sub-districts.

### 3.3   *Survey instrument*

The survey instrument consists of four parts: the CE frame, the CE excise itself, attitudinal and images of nature items, as well as socio demographic questions. The survey instrument was designed based on qualitative interviews (n=22) and iteratively improved in two steps. A pretest interview (n=50) was conducted in Beijing in autumn 2005, followed by a larger scale precursor study (n=213 for CE sets; split sub-samples of n=112 for attitudinal items and n=101 for images of nature items). For details of the precursor study, see Yan et al., (accepted).

### 3.3.1   Attitudinal and images of nature items

The attitudes toward sustainable tourism items refer to two parts (Table 1 and 4): first part is a range of sustainable tourism risks and concerns, including risks of losing natural resources and cultural originality, and concern of losing future tourism opportunities. Second part is sustainable tourism coping appraisals. Exemplarily items refer to acceptance of coping strategies (item 1), or local community involvement (item 3), and cost of the offered sustainable tourism services (item 4). In all, 17 items were used in the precursor study (n=112) (Zschiegner, 2006), of which 13 were kept in the main study and two newly developed. We used a closed answer format with a 5-point Likert scale (1: totally disagree to 5: totally agree).

For details of images of nature item construction and examples, please refer to Yan et al., (in preparation) (chapter 5 of this dissertation, section 3.3.1).

Table 1. Examples of attitude items

1. Having garbage cans is important to protect the beauty of the natural and cultural attractions in southwest China. (*conservative sustainable development* dimension)§
2. I am really afraid of losing the future opportunity for travel enjoyment in southwestern China if the tourism development is not done in a sustainable manner. (*concern for socio-ecological* development dimension)
3. Making sure that the members of a local community can run tourism-related businesses is essential for harmonious tourism development in southwestern China. (*concern for socio-ecological development* dimension)
4. In my opinion, extra fees for sustainable tourism services, such as green buses, are just an excuse to charge more and rip-off tourists. ( *sceptical attitude* dimension)

§Phrase in parenthesis identifies the sustainable tourism attitude dimension to which the item was assigned by factor analysis (see results section).

### 3.3.2   CE sets

The first step of designing the CE instrument was the identification of attributes that characterize southwestern China nature- and landscape-based destinations. To optimize this step, the first author conducted 22 qualitative in-depth interviews with Chinese middle class respondents who were interested in travelling to southwestern China in spring and autumn

2005. From lists of factors that tourists paid most attention to when making their destination decisions, the five following attributes were identified to describe nature based destinations in southwestern China (Table 2). The sustainable tourism services attribute was the only attribute not spontaneously mentioned by interviewees but included due to research interests.

For each attribute, three to five levels were identified based on representative conditions of nature-based destinations in southwestern China. The level of the cost attribute was based on published information on expenses of modest backpackers, self-organized travellers, and costs for commercially organized group-trips, as well as for luxury trips including renting vehicles with drivers.

Some CE studies used similar destination attributes including travel convenience (Hearne & Salinas, 2002; Huybers, 2003), tarnished nature experience (Apostolakis & Jaffry, 2005; Hanley et al., 2002; Huybers, 2003), sustainable tourism services (Kelly et al., 2007) and landscape/scenic quality (Hanley et al., 2002; Naidoo and Adamowicz, 2005).

From the attributes and attribute levels, 3,840 ($4^4*3*5$) single choice scenarios can be generated. Each scenario is a profile of different combination of levels of the six attributes. An orthogonalisation procedure was used to recover a main effects design, consisting of 24 pair-wise comparisons of destination scenarios. The scenarios were randomly blocked into three groups, each with eight choice sets. In face-to-face interviews, each respondent was asked to choose an alternative from a set of scenarios. In the final choice sets, each set consisted of two different scenarios representing different tourism trips to southwestern China (Cards A and B), and an opt out/buy nothing option (Status quo) (Figure 2[2]).

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[2] The Chinese version and English version choice sets with visual aids are available at: http://www.uni-goettingen.de/de/sh/47518.html

Table 2. Destinations attributes/levels used in choice experiment

| Destination attribute | Attribute levels | Linear coding[#] | Effect coding[#] |
|---|---|---|---|
| **Convenience at places just outside of attraction site** | 1. No car roads, only trails; no hotels or hostels, tourists need to bring their own food; (*none* level) | 1 | 1, 0, 0, 0 |
| | 2. Difficult motor access; several simple hostels or hotels; (*difficult* level) | 2 | 0, 1, 0, 0 |
| | 3. Old roads; some common hotels and restaurants; (*limited* level) | 3 | 0, 0, 1, 0 |
| | 4. National roads and highways; many hotels from two stars to four or five stars, and many restaurants; (*advanced* level) | 4 | 0, 0, 0, 1 |
| **Tarnished nature experiences (Possibility of experiencing Nature)[§]** | 1. Sense of solitude and tranquillity; no tourism infrastructure; no other visitors; (*virgin land* level) | 1 | 1, 0, 0, 0 |
| | 2. At times, some basic tourism infrastructure (restaurants, stores, toilets) visible; meet other people every hour; (*basic* level) | 2 | 0, 1, 0, 0 |
| | 3. Have big scale tourism infrastructure (cable car, Karaoke), always be aware of "this is a tourism place"; meet other people every minute; (*dispersed* level) | 3 | 0, 0, 1, 0 |
| | 4. Many kinds of tourism infrastructures everywhere; many "artificial" attractions; very crowded; (*packed* level) | 4 | 0, 0, 0, 1 |
| **Cultural attractions** | 1. None; (*none* level) | 1 | 1, 0, 0, 0 |
| | 2. Some traditional old buildings mixed with many modern buildings; no original living culture; (*endangered* level) | 2 | 0, 1, 0, 0 |
| | 3. Several traditional local buildings mixed with many modern houses; one temple without usage any more; modernized local customs and culture; (*modernized* level) | 3 | 0, 0, 1, 0 |
| | 4. Well preserved traditional local buildings; temples with monks playing roles in local people's life; and well preserved original customs and culture; (*original* level) | 4 | 0, 0, 0, 1 |
| **Natural attractions[$]** | 1. Ordinary landscapes; no precious or attractive species; (*none* level) | 1 | 1, 0, 0, 0 |
| | 2. Magnificent awe-inspiring natural landscapes; no precious or attractive species; (*landscape* level) | 2 | 0, 1, 0, 0 |
| | 3. Ordinary landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); (*species* level) | 2 | 0, 0, 1, 0 |
| | 4. Magnificent awe-inspiring natural landscapes, many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); (*both* level) | 3 | 0, 0, 0, 1 |
| **Sustainable tourism services (STS)** | 1. Freely visit every place; no visitor restriction; no resource saving or recycling; no community involvement; (*no* level) | 1 | 1, 0, 0 |
| | 2. Small conservation program only for core attraction area; litter/trash cans; community based business-restaurants, hostels and small hotels, local specialty stores and horse riding service; (*limited* level) | 2 | 0, 1, 0 |
| | 3. Having buffer zone; scientific conservation program for core area and buffer zone; green buses, bio energy use and waste water treatment; local community participates in decision-making in local development, and local business involvement (see above); (*extensive* level) | 3 | 0, 0, 1 |
| **Cost (local transportation, lodging, food, entrance fee and other expenses)** | 1. 780RMB | 0.78 | 0.78 |
| | 2. 1440RMB | 1.44 | 1.44 |
| | 3. 2400RMB | 2.4 | 2.4 |
| | 4. 4200RMB | 4.2 | 4.2 |
| | 5. 7200RMB | 7.2 | 7.2 |

[#]base level (opt out option) was coded as 0 in linear coding and -1 in effect coding (Hensher et al., 2005: 121). [$]the natural attractions level 2 and 3 are coded "2" because there is no "natural" order of the two levels. [§]the attribute *tarnished nature experience* shows up in the actual choice cards (Figure 2) under the more neutral description *possibility of experiencing nature*.

| Place A | |
|---|---|
| Convenience at place just outside of attraction site | – Old roads;<br>– Some hotels/ restaurants |
| Possibility of experiencing nature | – Big scale tourism infrastructure (cable car, Karaoke);<br>– Always be aware of "this is a tourism place";<br>– Meet other people every minute |
| Sustainable tourism services | – Freely visit every place;<br>– No resource saving;<br>– No community involvement |
| Cultural attractions | – Well preserved traditional buildings;<br>– Temples (alive);<br>– Original customs and culture |
| Natural attractions | – Ordinary landscapes;<br>– Many precious species and very abundant species-rich biodiversity (Panda, Golden Monkey); |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 2400RMB |

| Place B | |
|---|---|
| Convenience at place just outside of attraction site | – Old roads;<br>– Some hotels/ restaurants |
| Possibility of experiencing nature | – Sense of solitude and tranquility;<br>– No tourism infrastructure;<br>– No other visitors |
| Sustainable tourism services | – Small conservation program only in core zone (e.g. wild animal monitoring and protection, etc);<br>– Community based restaurant/ hostel/small hotel;<br>– local specialty stores |
| Cultural   attractions | – Some traditional old buildings/ modern houses;<br>– No original culture alive |
| Natural attractions | – Magnificent awe-inspiring natural landscapes;<br>– No precious or nice species; |
| Cost (including entrance fee, local transportation, lodging and food, etc) | 4200RMB |

Opt out: I would rather like to spend my money on a better trip offered, and have my vacation enjoyment on another trip.

Figure 2.  Example of a set of choice cards ('scenarios'; English language text version)

### 3.4   Data collection technique

Before the formal interview started, respondents were asked if they like travelling, where they live, and about their approximate income. If respondent income was lower than 1,500 RMB per month, the interviewers would ask two more interactive questions and finished the interview. If respondent income was above 1,500 RMB, the interview would continue. Next, the CE attributes were explained. With a set of sample cards, the choice procedure was practiced to ensure that respondent understood everything properly. Directly before the choice exercise, respondents received a token gift as an appreciation of their participation. The attitudinal and images of nature questions followed the choice exercise. In a final section of the interview, socio-demographic questions were asked. Overall, a total of 4,928 choices were observed from 616 respondents.

## *3.5    Statistical and econometric analysis*

Based on the premise of a value-attitude-behaviour hierarchy (Homer & Kahle, 1988),
Figure 3 presents the overview of analytic steps of the study. Destination choice is influenced
by tourist preferences for destination attributes (link ①). Attitudinal factors are postulated as
important moderating variables that influence tourist preferences (link ②). In turn, attitudes
themselves are influenced by socio-demographics (④) and by images of nature as cultural
background factors(③).
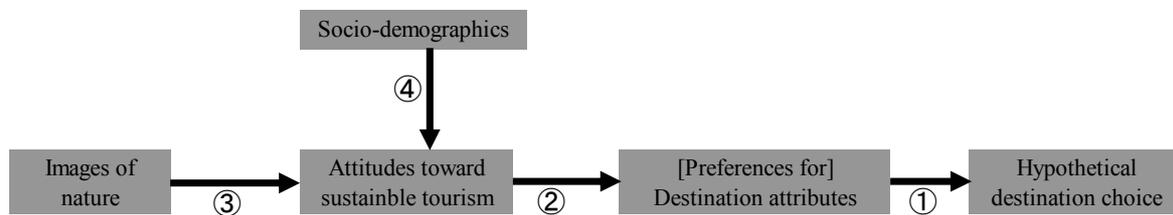
Figure 3. Overview of analytic steps

### 3.5.1    Factor analysis and correlation analysis

Factor analyses and correlation analysis were conducted with SPSS 15.0. A varimax
rotated factor analysis with binary squared Euclidean distance and Ward-linkage (Kroemker,
2004) was employed to generate empirical dimensions of attitudes toward sustainable tourism
as well as images of nature dimensions. Based on factor analysis results, all items *i* of each
dimension *d* with a factor loading *l* above 0.4 were used to calculate an individual dimension
score *V* of the respective dimension for each respondent *n*:

$$V(d,n) = \sum_i l * Q$$

with *Q*: Likert score of *i*

For all dimensions, a descriptive label was chosen that reflects contents and wording of the underlying items. While these dimension scores are used for econometric analysis, we also report mean raw scores for each dimension to facilitate a more intuitive understanding with reference to the original 1-5 likert scale (Table 3 and 4).

To avoid bias non-normal score distributions, nonparametric standard procedures (bivariate Spearman correlation) were used for correlation analysis. For econometric analysis, residency and gender were dummy coded (Figure 4a and 4b). Education and self-perceived social status were coded as 1-4 and 1-5, respectively (Figure 4d and 4e). In the survey, respondents were asked to indicate the right ranges they belong to regarding their age, monthly income and annual travel expenditures. In analysis, age, monthly income and annual travel expenditures (Figure 4c, 4f and 4g) used means of each category for calculation.

### 3.5.2   Nested Logit (NL) model

For the analysis of the CE data, a set of Nested Logit models (NL) was calculated with NLOGIT 3.0. Preliminary analyses indicated the risk of violations of the independence from irrelevant alternatives (IIA) condition necessary for the application of (the simpler) conditional logit analysis. Because NL does not rely on the IIA assumption, an eligible NL tree structure was identified, and the corresponding models estimated. The inclusive value was set to 1.0 for the degenerated branch, and the model initiated with starting values obtained from a non-nested NL model (Hensher et al. 2005: 536). All scale parameters were normalized at the lowest level (RU1). NL models include an alternative specific constant (ASC) coded 1 for the generic choices A and B, and 0 for the "opt out/buy nothing" option. The ASC expresses a fundamental propensity to make (or not to make) a trip to southwestern China beyond the information given by the choices A and B.

In the tables presenting the NL models, pseudo-$R^2$ values (constant only), Log likelihood function (LL) and inclusive value (IV) are reported as diagnostic statistics. Pseudo $R^2$ values

in reference to a constant only model are much more conservative than the $R^2$ values of ordinary least squares (OLS) estimation;  for example, Pseudo $R^2$ values between 0.07-0.08 correspond to $R^2$ values of 0.22 to 0.24 in an OLS model equivalent (Hensher et al., 2005: 338). IV statistics are always significantly different from 1, which suggests that the NL model is an improvement over the ordinary multinomial logit model. All NL models from which results are presented are overall highly significant (p-value of Chi²-Test < 0.001).

### 3.5.3   Linear coding attribute and effect coding attributes

Linear coding of attribute levels in CE analysis is based on the assumption of a strictly proportional quantitative relationship between the levels of an attribute and respondent utility. Consequently, one utility coefficient can sufficiently describe a linear utility component. For the attributes used in this study, a simple linear relation between attribute levels and respondent utility can not be generally assumed. Thus, we employed effect coding to cross-check of the validity of results from simpler linear coding (Hensher et al., 2005: 120).

In effect coding, a discrete utility coefficient is calculated for each single attribute level. In our effect coding models (see Annex 1, 2 and 3), the utility coefficients describe the effect of the single attributes versus the opt out/buy nothing choice. The "opt out/buy nothing" option was coded as 0 in linear coding model and -1 in effect coding models (Hensher et al., 2005: 121).

### 3.5.4   Interaction terms

To test for the influences of attitudinal dimensions on tourist destination preferences, interaction terms between destination attributes and attitudinal dimensions were generated. These interaction terms were included one-by-one as single term into a NL base model.

The interaction terms are generated from the formula:

$$\text{Interaction} = V(d, n) * \text{attribute}_n$$

With NL procedures, we estimated an additive utility function of the form

$$U = b_1*attribute_1 + \ldots + b_6*attribute_6 + b_i*interaction_i + b_{asc}*ASC$$

With

$b_1 \ldots b_6$: estimated coefficients of the respective attributes up to and including

the cost attribute $b_6$;

$b_i$: estimated coefficient of interaction$_i$;

$b_{asc}$: estimated coefficient of the Alternative Specific Constant[3].

Because the coefficients of the interaction terms $b_i$ are estimated with individually varying

attitudinal variables, these coefficients represent some of the preference heterogeneity within

the sample (Table 8).

### 3.5.5  Parsimonious model and WTP estimation

Parsimonious models identify the most stable and influential predictors that influence

destination choice. The parsimonious models of Table 9 and Annex 3 were generated

stepwise by initially including all statistically 'significant' interaction terms from the single

interaction models and then deleting non-significant interaction terms one-by-one. In Annex 1,

all attribute levels were included into the model first, then the non-significant levels were

deleted one-by-one till all only significant terms remained.

The estimation of statistically significant attribute coefficients allows for the calculation of

quantitative measure of a behaviour intention in the form of WTP. The maximum willingness-

to-pay for a 1 unit/level change of trip attribute $S_i$ ("marginal" WTP) equals the ratio of the

respective coefficient $b_i$ ($b_i$=attribute or interaction term) and the negative coefficient of the

negative value of the cost attribute $b_y$ (Table 8):

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[3] We also report interaction results with the ASC. The positive sign of interactin term coefficient with ASC
indicates the value in this variable result in stronger appreciation of the offered trips to southwestern China as
opposed to opt-out choice. Because these interactions do not related to destination attribute, the results have no
direct policy relevance. For completeness of the results, we report these interaction results but do not disucss
them.

$$mWTP(S_i) = -\frac{b_i}{b_y}$$

## 4    Results

### *4.1    Sample profile*

Figure 4 presents overview of respondent socio-demographics. There are 307 respondents of Chengdu (49.8%) and 309 (50.2%) of Beijing. A gender ratio of 53% male to 47% female is achieved. Average respondent age is 39.9 years old. Age groups under 39.9 years comprise around 61% and 39% of respondents are above 39.9. Age groups (Figure 4c) reflect the age distribution among middle class sub-districts, although large efforts were put on recruiting respondents older than 40 years. With differences between Beijing and Chengdu, mean monthly income per respondent is 3,537 RMB (∼354 €), which is around double of average monthly income in Beijing and four time of average monthly income in Chengdu (CNBS, 2006a). Nearly half (46%) of the respondents have the monthly income between 1,500 RMB (∼150 €) and 2,500 RMB (∼250 €); only 8% respondents have monthly income over 7,000 RMB (∼700 €). Average annual travel expenditure is 3,518 RMB (∼352 €). The amount is nearly five times higher than the Chinese urban resident average tourism expenditures of 737 RMB (∼74 €) in 2005, which includes non-middle class respondents (CNTA, 2006). Half (50%) of respondents hold a formal educational degree equivalent to a bachelor degree or above. This is much higher than the Chinese average of 5.8% (CNBS, 2006b). Around 90% of the respondents regard themselves as middle or higher social class.
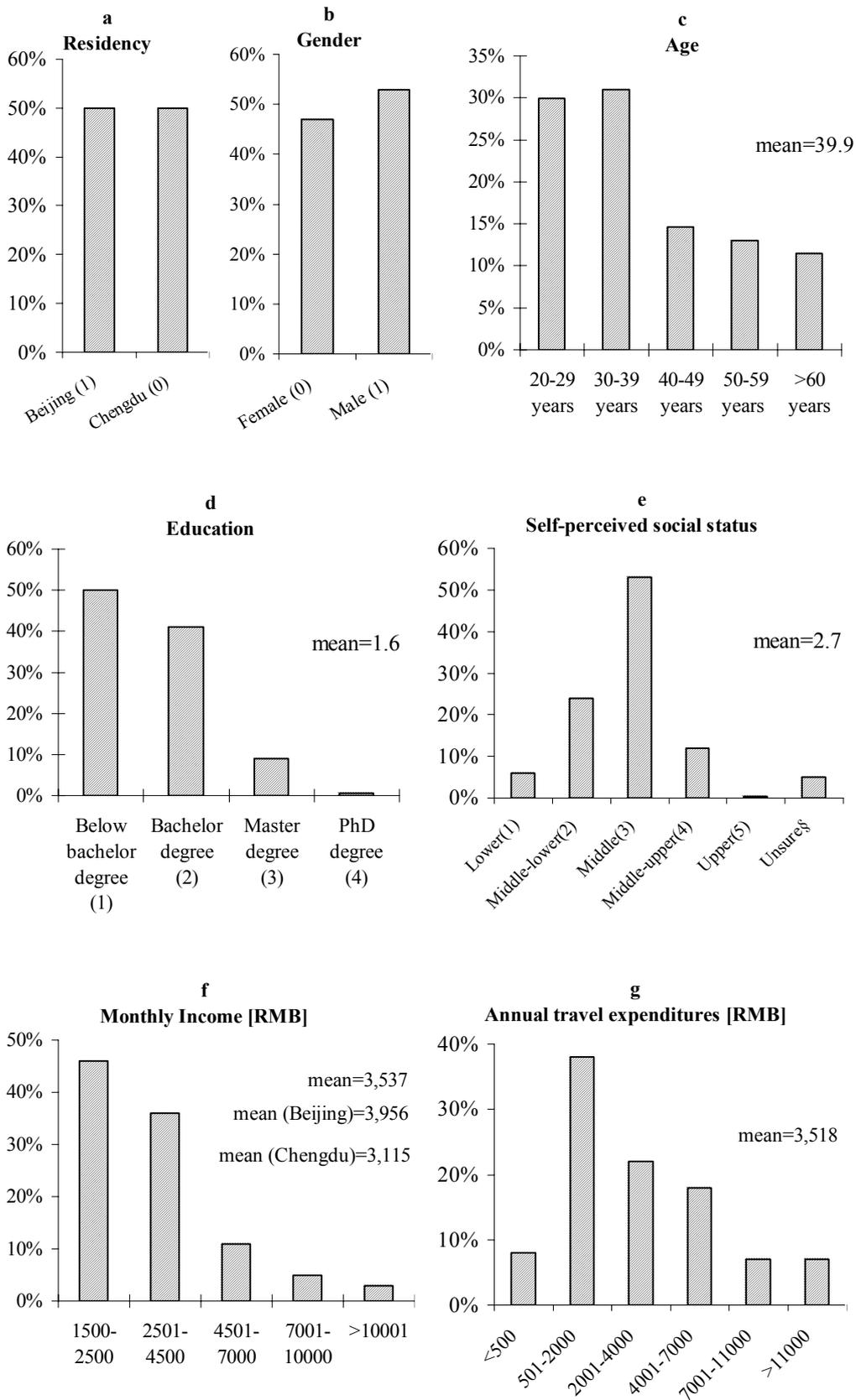
§: "unsure" is substituted by the estimated values from a co-linearity diagnostics linear regression. n=616.

Figure 4. Respondent socio-demographics overview

## *4.2   Attitudinal dimensions*

Table 3. Attitudinal dimensions and items

| Attitude towards sustainable tourism dimensions | Item | Factor loading | Cronbach's Alpha | Mean (raw score) ±SD |
|---|---|---|---|---|
| **Conservative sustainable development** (*positive*) | I would be very sad if local cultures in southwest China would lose some of their originality because of tourism development. | 0.695 | **0.685** | **4.2±0.46** |
| | If I know for sure that the facilities in a tourist site benefit the local environment, I would pay more for such facilities. | 0.651 | | |
| | My friends and family expected me to feel responsible for maintain the attraction of the site. | 0.645 | | |
| | Local government should make sure that growth of tourism in southwest China does not damage natural and cultural heritages. | 0.606 | | |
| | Having garbage cans is important to protect the beauty of the natural and cultural attractions in southwest China. | 0.476 | | |
| **Concern for socio-ecological development** (*positive*) | Making sure the members of local community can run tourism related businesses is essential for harmonious tourism development in southwest China. | 0.72 | **0.511** | **3.9±0.55** |
| | Without a scientific conservation program in place, many natural destinations in southwest China are in danger of losing their natural attractions. | 0.562 | | |
| | It would be a shame if the local people in southwest China would not benefit the most from tourism development in that region. | 0.453 | | |
| | I am really afraid of losing the future opportunity for travel enjoyment in southwest China if the tourism development is not done in a sustainable manner. | 0.415 | | |
| **Sceptical attitude** (*negative*) | In my opinion, extra charge for tourism services such as green buses is just an excuse to charge more (rip off tourist). | 0.69 | **0.441** | **3.0±0.62** |
| | It would be a big financial burden for me to pay more for tourism. | 0.637 | | |
| | In many scenic and historical/cultural sites, restrictions of entering certain area and stepping on/touching objects are a nuisance for me. | 0.593 | | |
| | Putting a lot of members of local communities in charge of tourism businesses can have bad impact on service quality and trip experience. | 0.461 | | |

Factor analysis singled out three attitudes toward sustainable tourism dimensions. The dimensions and items, the Cronbach's Alpha, mean (raw score) and standard deviation (SD) of each dimension were presented in Table 3. The *conservative sustainable development* dimension explains 22.7% of factor analysis variance, the *concern for socio-ecological development* dimension explains 12.1%, and the *sceptical attitude* dimension accounts for 8.7%. A total of 43.5% of variance is explained by the dimensions. The first two dimensions are more *positive*, and *sceptical attitude on sustainable tourism* is a *negative* attitude dimension.

By average, respondents state high agreement with the *positive* attitudes (dimension mean raw score: 4.2 and 3.9 out of 5). As for the *negative* dimension, the average respondents hold a tentative inclination toward *sceptical attitude* (dimension mean raw score: 3.0 out of 5).

### *4.3 Images of nature dimensions*

Five images of nature dimensions emerged from factor analysis (Table 4). The *equality and harmony* dimension explains 22% of factor analysis variance. The *respect and protection value* dimension explains 9.6%, 5.8% is explained by the *consequence and personal connection* dimension, the r*obustness and non-spirituality* dimension accounts for 4.9% while the *spirituality and fragility* explains 4.5%. A total of 46.8% of variance is explained by the dimensions.

Table 4. Images of nature dimensions and items

| Images of nature dimension | Items | Factor loading | Cronbach's Alpha | Mean (raw score) ±SD |
|---|---|---|---|---|
| **Equality and harmony** (*harmonious human-nature relation)* | In the grand design of world, humans have the same value with other living beings. | 0.734 | **0.768** | **4.3±0.54** |
| | Human and nature, including animals and plants have the equal right to exist. | 0.706 | | |
| | Human should protect nature because it has a right of existence in itself in the same way that all and everything living does. | 0.699 | | |
| | Humans belong to nature the same way as animals and plants do. | 0.569 | | |
| | As the supreme beings on earth, human should not tarnish nature. | 0.507 | | |
| **Respect and protection value (***harmonious human-nature relation* ) | When human interfere with nature, they should follow the law of proper portion. | 0.74 | **0.668** | **4.3±0.46** |
| | Humans should protect nature because it provides recreation and quietness. | 0.543 | | |
| | Humans must follow the law of nature in order to live in harmony. | 0.511 | | |
| | Humans should protect nature because it enriches our lives by its wonderful magnificence. | 0.471 | | |
| | Nature is sensitive to any kind of interference. Even small interference can lead to big and irreversible damage. | 0.462 | | |
| **Consequence and personal connection (***harmonious human-nature relation* ) | Ignoring the law of the nature will eventually bring the disaster to humans. | 0.734 | **0.642** | **4.4±0.5** |
| | Humans should protect nature because it is useful and provides a lot of advantages for us. | 0.701 | | |
| | I feel threatened by the ongoing destruction of nature. | 0.53 | | |
| | The earth is like a spaceship with only limited room and resources. | 0.482 | | |
| **Spirituality and fragility (***harmonious human-nature relation* ) | Nature is sacred because it is created by God. | 0.59 | **0.506** | **3.7±0.63** |
| | Nature has its own right of existence; therefore it is not allowed to destroy nature anywhere for human needs. | 0.497 | | |
| | Nature is sensitive to any kind of interference. Even small interference can lead to big and irreversible damage. | 0.453 | | |
| | The earth is like a spaceship with only limited room and resources. | 0.429 | | |
| **Robustness and non-spirituality (***human domination)* | Humans have the right to use natural resources of any kind they want to. | 0.677 | **0.596** | **2.3±0.62** |
| | Nature is important, but neither has a soul nor is sacred. | 0.588 | | |
| | Plants and animals do exist primarily for human use. | 0.581 | | |
| | Nature always recovers (by itself), no matter what humans do. | 0.573 | | |
| | Not humans can protect nature; only God has the power to do so. | 0.486 | | |

Five images of nature dimensions can be grouped into two categories: four of them are more harmonious human-nature relation orientation and the robustness and non-spirituality dimension is more human domination orientation.

By average, respondents have a high level agreement with *harmonious human-nature relation* value (dimension mean raw score: 4.3, 4.3, 4.4 and 3.7 out of 5). As for the *human domination* dimension, the average respondents do not really support the *robustness and non-spirituality* dimension (dimension mean raw score: 2.3 out of 5).

### *4.4    Correlation between attitudinal dimensions and images of nature dimensions*

Table 5. Correlations between attitudinal dimensions and images of nature dimensions

| Images of nature dimension | Attitudinal dimension | | |
| --- | --- | --- | --- |
| | Conservative sustainable development *positive* | Concern for socio-ecological development *positive* | Sceptical attitude *negative* |
| Equality and harmony *Harmonious human-nature relation* | 0.584** | 0.416** | 0.09* |
| Respect and protection value *Harmonious human-nature relation* | 0.638** | 0.53** | |
| Consequence and personal connecton *Harmonious human-nature relation* | 0.493** | 0.438** | |
| Spirituality and fragility *Harmonious human-nature relation* | 0.401** | 0.359** | 0.148** |
| Robustness and non-spirituality *Human domination* | | 0.202** | 0.297** |

**: correlation is significant at the 0.01 level (2-tailed); *: correlation is significant at the 0.05 level (2-tailed); no significance, no indications (blank space).

As demonstrated in Table 5, in the bigger shaded area, eight terms from 8 possible correlations are significant, also with materially high correlation coefficient between 0.359-0.638. Also there is highly significant and medially strong correlation between the *robustness and non-spirituality* images of nature and the *sceptical attitude* (0.297). In contrast, the correlations between the *robustness and non-spirituality* and the *concern for socio-ecological development* attitude (0.202), as well as correlations between the *sceptical attitude* and the

*equality and harmony* images of nature (0.09), and the *spirituality and fragility* (0.148) images of nature are clearly weaker than the others.

In sum, the *positive* attitudinal dimensions are strongly related to the *harmonious human-nature relation* images of nature dimensions, while the *sceptical attitude* dimension has the strongest correlation with the *human domination* dimension.

### 4.5    Correlation of attitudinal dimensions with socio-demographics

Table 6 displays attitudinal dimensions correlations with socio-demographics. The *conservative sustainable development* is positively related to age, education and self-perceived social status but negatively correlated with gender (1: male). The *concern for socio-ecological development* dimension is positively related to the age but negatively related to the residency (1: Beijing). The *sceptical attitude* dimension is negatively related to education, monthly income, annual travel expenditure and self-perceived social status. The respondents with stronger *sceptical* attitude have lower education, less monthly income and annual travel expenditure, and lower self-perceived social status.

Table 6. Correlations between attitude toward sustainable tourism dimensions and socio-demographics

| Attitude towards sustainable tourism dimensions | Residency | Gender | Age | Education | Monthly income | Annal   travel expenditure | Self-perceived social status |
|---|---|---|---|---|---|---|---|
| Conservative sustainable development (*positive*) | | -0.145** | 0.103* | 0.12** | | | 0.081* |
| Concern for socio-ecological development (*positive*) | -0.09* | | 0.143** | | | | |
| Sceptical attitude (*negative*) | | | | -0.164** | -0.167** | -0.192** | -0.179** |

\*\* Correlation is significant at the 0.01 level (2-tailed); \* Correlation is significant at the 0.05 level (2-tailed). No significance: blank space.

### *4.6    Destination choice base model*

Table 7 presents the influences of six destination attributes on respondent preferences for destination attributes.   All six attributes have significant influences concerning destination choice. *Convenience, cultural and natural attractions* have highly significant and positive influences. The coefficients of the *tarnished nature experiences* and the *sustainable tourism services* are significant and negative. Higher successive levels of the *tarnished nature experiences* and *sustainable tourism services* negatively impact respondent preferences. *Cost* is most highly significant and negative. It suggests that the respondents prefer cheaper trip cost generally. The negative sign for the ASC suggests that respondents associate an additional negative effect with choosing Card A or Card B – i.e. a trip to southwestern China of the type offered – above what can be explained by the explicit destination attributes.

As a cross-check, Annex 1 elaborates the precise levels of each attribute which significantly influences preference for destination attribute (effect coding analysis). The *convenience*, *tarnished nature experience*, *cultural attractions* attribute levels demonstrate coherent linear preference patterns with Table 7. However, the *sustainable tourism services* and *natural attractions* attributes display non-linear preference patterns. In the *sustainable tourism services* attribute, the *limited* level gets positively significant (p=0.03) and the *none* level has a weak tendency toward positive significance (p=0.1). Different from Table 5 results suggested, it is not the *none* level is highly appreciated, but the *limited sustainable tourism services* level. There is an agreement that the *extensive sustainable tourism services* level has considerable disutility. In *natural attractions*, two components, *landscape* and *species* attractions are included. Only the *species* level does not get any significance while the *none* level is negatively significant (p<0.001) and the *landscape* (p=0.03) and *both* levels (p<0.001) are positively significant.

Table 7. Nested logit model result for destination attributes

| Attribute | Coefficient | P |
|---|---|---|
| Convenience | 0.1067*** | 0.0000 |
| Tarnished nature experience | -0.0652** | 0.0031 |
| Sustainable tourism services | -0.0623* | 0.0309 |
| Cultural attractions | 0.1884*** | 0.0000 |
| Natural attractions | 0.4242*** | 0.0000 |
| Cost [1,000RMB] | -0.1958*** | 0.0000 |
| [Non-status quo ASC] | -0.2482* | 0.0346 |
| Log likelihood function | -4933.26 | |
| Pseudo-$R^2$ (constant only)[§] | 0.071 | |
| Inclusive value (IV) | 0.842 | |
| Observations (choices) | 4928 | |

***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05. The non-status quo ASC in brackets as it is a NL model predictor of destination choice but not a destination attribute. [§]Pseudo $R^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to $R^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistic is significantly different from 1; n=616.

## 4.7    Attitudinal dimensions influences on destination choice

Table 8 shows the interaction results between attitudes toward sustainable tourism dimensions and NL base model. Each line represents results from an independent NL model that inserted the interaction term into the base model. The *conservative sustainable development* dimension only has significant influences on the *convenience* attribute (p<0.001). The *concern for socio-ecological development* dimension has positive influences concerning the *convenience* attribute (p<0.001) but negative influence with regard to ASC (p=0.002). It suggests that the respondents who are more supportive of the *positive* dimensions demonstrate higher preferences for better *convenience*. The respondents who have higher scores in *concern for socio-ecological development* dimension are less interested in taking trips to visit southwestern China. The *sceptical attitude* dimension has negative impacts on the *cultural* (p=0.03) and *natural attractions* (p=0.02) attributes, and the *cost* attribute (p=0.002). In contrast, the *sceptical attitude* displays a tendency toward significance on ASC with positive sign (p=0.06).

In Annex 2, the influences of attitudinal dimensions on the attribute levels are presented. In principle, two models (Table 8 and Annex 2) reinforce each other regarding the estimation. The noticeable result displays in Annex 2 is that *sceptical attitude* has a tendency toward significance concerning the *limited level* of sustainable tourism services (p=0.072, negative sign of coefficient). Otherwise the results of the interactions with the effect-coded attributes (Annex 2) do not provide additional insights.

Table 8. Summary of influences of attitude toward sustainable tourism dimensions on destination choice

| Attitude towards sustainable tourism dimensions | Coefficient | Convenience | Tarnished nature experiences | Sustainable tourism services | Cultural attractions | Natural attractions | Cost | [Non-status quo ASC] |
|---|---|---|---|---|---|---|---|---|
| Conservative sustainable development | Attribute | -0.6948*** | | | | | | |
| | Interaction | 0.062*** | | | | | | |
| | Log likelihood | -4922.66 | | | | | | |
| | Pseudo-R$^2$ (constant only) | 0.073 | | | | | | |
| Concern for socio-ecological development | Attribute | -0.4711** | | | | | | 2.1954** |
| | Interaction | 0.0679*** | | | | | | -0.2876** |
| | Log likelihood | -4922.65 | | | | | | |
| | Pseudo-R$^2$ (constant only) | 0.073 | | | | | | |
| Sceptical attitude | Attribute | | | | 0.3845*** | 0.7702*** | -0.0444 | -1.297* |
| | Interaction | | | | -0.0273* | -0.0481* | -0.0212** | 0.1463$^+$ |
| | Log likelihood | -4918.43 | | | | | | |
| | Pseudo-R$^2$ (constant only) | 0.073 | | | | | | |

***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; +: significant at p≤0.1. The non-status quo ASC in brackets as it is a NL model predictor of destination choice but not a destination attribute. §Pseudo R$^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to R$^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistics are significantly different from 1; n=616.

## 4.8   *Parsimonious model and WTP calculation*

In parsimonious model presented in Table 9, one of the *positive* attitudinal dimensions, *concern for socio-ecological development,* positively influences preferences for *convenience* (p<0.001) but negatively influences the overall preferences for the trip beyond the CE attributes effects (p<0.001 for ASC). *Sceptical attitude* negatively impacts preference for

*natural attractions (*p=0.025) and *cost (*p<0.001). It displays a tendency toward influence regarding *cultural attractions* (p=0.059), as well as positive influences in regard to ASC (p<0.001). No attitudinal influences were detected in regard to the *tarnished nature experiences* and *sustainable tourism services* attributes.

Table 9. Parsimonious model and marginal willingness-to-pay

| Attribute/interaction | Coefficient | Sample mean of the dimension score | Coefficient for WTP calculation | Marginal WTP [RMB] | Aggregated marginal WTP[RMB] |
|---|---|---|---|---|---|
| **Convenience** | -0.5673*** | | -0.5673 | -2900 | |
| Concern for socio-ecological development*convenience | 0.079*** | 8.5237 | 0.6734 | 3443 | 543 |
| **Tarnished nature experience** | -0.0681** | | -0.0681 | -348 | -348 |
| **Sustainable tourism services** | -0.0661* | | -0.0661 | -338 | -338 |
| **Cultural attractions** | 0.3416*** | | 0.3416 | 1746 | |
| Sceptical attitude*cultural attractions | -0.0215+ | 7.19 | -0.1546 | -790 | 956 |
| **National attractions** | 0.6962*** | | 0.6962 | 3559 | |
| Sceptical attitude*natural attractions | -0.0383* | 7.19 | -0.2754 | -1408 | 2,151 |
| Concern for socio-ecological development***Non-status quo ASC** | -0.1959*** | 8.5237 | -1.6698 | -8537 | -1,151 |
| Sceptical attitude***Non-status quo ASC** | 0.201*** | 7.19 | 1.4452 | 7386 | |
| Sceptical attitude***cost** | -0.0272*** | 7.19 | -0.1956 | | |
| **Obervations** | 4928 | | | | |
| **Log likelihood** | -4912.89 | | | | |
| **Pseudo-R$^2$ (constant only)** | 0.075 | | | | |
| **Inclusive value (IV)** | 0.8476 | | | | |

***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; +: significant at p≤0.1. §Pseudo R$^2$ values in reference to a constant only model-values between 0.08-0.1 correspond to R$^2$ values of 0.24 to 0.28 value in for the linear model equivalent (Hensher et al.2005:338); IV statistics are significantly different from 1; n=616.

Marginal WTP for one level improvement in five destination attributes are also displayed in Table 9. For the *convenience* attribute, aggregated marginal WTP is 543 RMB (~54 €). It consists of two components: a negative individually constant contribution of -2,900 RMB (~ -290 €) from the non-interacted *convenience* attribute, and plus 3,443 RMB (~344 €) from interaction term with *concern for socio-ecological development*. A one level improvement of the *tarnished nature experience* and *sustainable tourism services* receive marginal WTP of -348 RMB (~-35 €) and of -338 RMB (~-34 €), respectively. Marginal WTP for one level improvement of *cultural attractions* and *natural attractions* are 956 RMB (~95 €) and 2,151RMB (~215 €). Two components contribute to the aggregated WTP: positive WTP of

1,746 RMB (∼175 €) (*cultural attractions*) and 3,559 RMB (∼356 €) (*natural attractions*) from the non-interacted attributes, and negative WTP of -790 RMB (∼-79 €) (*cultural attractions*) and -1,408 RMB (∼-141 €) (*natural attractions*) from interaction terms with the *sceptical attitude*. The aggregated marginal WTP for ASC is -1,151RMB (∼-115 €). It consists of two counterbalanced components: negative WTP of -8,537 RMB (∼ 854 €) from interaction term with the *concern for socio-ecological development,* and positive WTP of 7,386 RMB (∼ 739 €) from interaction term with the *sceptical attitude*.

For the cross-check of the parsimonious model based on effect coded attributes, please see Annex 3. Both models are coherent with each other.

## 5    Discussion and conclusion

*Positive* attitudes (*conservative sustainable development*, *concern for socio-ecological development*) and a *negative* attitude dimension (*sceptical attitude*) together shape Chinese middle class tourist attitudes toward sustainable tourism. This result is in general agreement with the two *positive* + one *negative* attitude dimensions of the precursor study (Yan et al., accepted), in particular in regard to the *sceptical attitude* dimension.

Judged by mean raw scores in the respective dimensions (all >3.9), average middle class respondents demonstrate rather strong *positive* attitudes toward sustainable tourism. However, in regard to destination choice, there is a clear gap between the *positive* attitudes and the intention of buying *sustainable tourism services*. The *positive* attitude dimensions do not influence preference for *sustainable tourism services* at all, as one may expect. Instead, the *conservative sustainable development* (p<0.001) and the *concern for socio-ecological development* (p<0.001) dimensions, both, only impact preferences for *convenience*. The same results were also observed in the precursor study (Yan et al., accepted).

As reported by other studies, pro-environmental attitudes do not always result in corresponding behaviour. Respondents with strong environmental concern did not actually

take pro-environmental actions, e.g. because respondents perceived individual outcomes as more important than collective outcomes (Bamberg, 2003; Nordlund and Garvill, 2002). Free-rider (Cornes & Sandler, 1996) also provides an explanation to attitude-intention gaps. Respondents may reject the idea of spending their *private* money on sustainable tourism services-while hoping to enjoy the *public* benefits generated by someone else's spending. A recent report on Chinese public awareness of climate change (CYD, 2007) finds that environmental awareness does not inevitably lead to sustainable consumption. Although the public wants to protect the environment and support sustainable consumption, most respondents are not prepared to sacrifice amenities of life, for example, by abstaining from a car purchase. Another reason explaining this attitude-intention gap is reported by studies on Chinese consumers' green purchasing behaviour (Chan, 1999; Chan, 2001; Chan & Lau, 2000). Positive attitudes toward "green purchase" did not effectively translate into green purchasing behaviour. One reason is because respondents doubt the credibility of the environmental claims of the green products. The study from Zhou et al. (2006) also suggested that Chinese tourists were lack of direct experiences of consuming eco-certificated products and knows little about their functions. Price is another major concern for Chinese consumers. Some studies show that tourists/consumers prefer cheaper products regardless of they are "eco-friendly" or not (CYD, 2007; Zhou et al., 2006).

In comparison with the two *positive* dimensions, the *sceptical attitude* has stronger influences concerning destination choice, which is consistent with the precursor study (Yan et al, accepted). *Sceptical attitude* negatively influences preferences for *cultural* (p=0.03) and *natural attractions* (p=0.02). Also, respondents with stronger *sceptical* attitude are more sensitive to the on-site costs of a trip (p=0.002) despite of their stronger interests of travelling to southwestern China (ASC: p=0.06).

In the precursor study, the *sceptic attitude* influenced all six destination attributes. In the main study, the influences of the *sceptical attitude* regarding preferences for *convenience*,

*tarnished nature experiences* and *sustainable tourism services* do not remain in the NL model. In particular, the precursor study result had indicated that preference for *sustainable tourism services* may depend on the scale refraining from the *sceptic attitude*. The results presented here provide only weak evidence for this influence: in the effect coding model (Annex 2), the influences of the *sceptical attitude* on preference for the *limited sustainable tourism services* shows a tendency (p=0.072) toward significance only. Thus, the conclusion is modified by the updated findings that preference for *sustainable tourism services* are low-and appear to be little influenced by attitudes.

To which degree can the documented attitudes be explained by cultural background variables? The *positive* attitudinal dimensions are strongly correlated with the *harmonious human-nature relation* images of nature dimensions; while the *human domination* dimension generates the strongest correlation with the *negative* attitudinal dimension. So respondents with a stronger value orientation toward a *harmonious human-nature relation* more likely hold stronger *positive* attitudes toward sustainable tourism. And respondents with stronger *human domination* images of nature have a stronger *sceptical* attitude toward sustainable tourism services. These results affirm the interpretation that attitudes are an expression of underlying cultural value orientations (value-attitude-behaviour hierarchy, Homer & Kahle, 1988). At least for the *natural* and *cultural attractions* attributes, the *human domination* cultural background variable influences destination attribute highly relevant for the sustainable tourism development of southwestern China destinations.

Due to the restriction of the used quota sampling procedures, the surveyed respondents can not guarantee to be representative for the universe of Chinese middle class tourists. Thus, the reported data on absolute WTP should be treated with caution. However, there are no indications in the sample that the discussed influences on WTP are actually biased. Because of the pioneering character of this study, cautioning comment is necessary. The reliability (Cronbach's Alpha) of the identified attitude dimensions is not psychometrically satisfactory

yet. The interpretation of the reliability measure has to take into account, though, that sustainable tourism development is a highly multi-dimensional issue.

In conclusion, the results of our study show that sustainable tourism development in southwestern China has to face three challenges: low preference for *sustainable tourism services*, an attitudes-intention gap regarding *positive* attitudes, and negative influences of the *sceptical attitude* on preferences for several destination attributes. In addition, the socio-demographic characteristics which correlate with the *sceptical attitude* (lower education, lower income and travel expenditure, as well as lower self-perceived social status) also imply that with improvement of population education and income, the *sceptical attitude* may get fading if foreseeing the long-term development in China. Although the data presented here are not sufficient to predict the future development of consumer demand for sustainable tourism services, the correlations of several socio-demographic variables with the attitude dimensions allow for a brief outlook: with a population that will be better educated, will have higher income and travel expenditures and will have a higher self-perceived social status, preferences for *cultural* and *natural attractions* are likely to rise. This need not necessarily narrow the attitude-intention gap regarding sustainable tourism services, but it should be a good reason for tourism operators to preserve the natural and cultural heritage of southwestern China as a tourism resource nonetheless.

# Annex

Annex 1. NL destination choice base model with effect coding attributes

| Attribute | Level | Coefficient |
|---|---|---|
| **Convenience** | Limited | 0.2515*** |
| | Developed | 0.3035*** |
| **Tarnished nature experiences** | Virgin land | 0.217*** |
| | Basic | 0.1965** |
| **Sustainable tourism services** | None | 0.0872+ |
| | Limited | 0.1388* |
| **Cultural attractions** | Modernized | 0.3597*** |
| | Original | 0.5465*** |
| **Natural attractions** | None | -0.3905*** |
| | Landscape | 0.1561* |
| | Both | 0.3644*** |
| **Cost** | | -0.193*** |
| **[Non-status quo ASC]** | | -1.6363*** |
| **Obervations** | 4928 | |
| **Log likelihood** | -4928.48 | |
| **Pseudo-R$^2$ (constant only)** | 0.072 | |
| **Inclusive value (IV)** | 0.91 | |

***: significant at $p \leq 0.001$; **: significant at $p \leq 0.01$; *: significant at $p \leq 0.05$. The non-status quo ASC in brackets as it is a NL model predictor of destination choice but not a destination attribute. Pseudo $R^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to $R^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistic is significantly different from 1; n=616.

## Annex 2. NL Interaction models between attitudinal dimensions and NL base model with effect coding model

| Attitude towards sustainable tourism dimension | Coefficient | Convenience developed level | Tarnished nature experiences | Sustainable tourism services limited level | Cultural attractions original level | Natural attracions none level | Cost | [Non-status quo ASC] |
|---|---|---|---|---|---|---|---|---|
| **Conservative sustainable development** | Attribute§ | -1.7138** | | | | | | 2.686 |
| | Interaction$ | 0.1559*** | | | | | | -0.3336* |
| Log likelihood function | | -4918.64 | | | | | | |
| Pseudo-$R^2$ (constant only) | | 0.073 | | | | | | |
| Inclusive value | | 0.9025 | | | | | | |
| **Concern for socio-ecological development** | Attribute§ | -1.5283** | | | -0.5295 | 0.5676 | | |
| | Interaction$ | 0.2151*** | | | 0.1269* | -0.1125* | | |
| Log likelihood function | | -4913.94 | | | | | | |
| Pseudo-$R^2$ (constant only) | | 0.074 | | | | | | |
| Inclusive value | | 0.9114 | | | | | | |
| **Sceptical attitude** | Attribute§ | | | 0.6984* | 1.1369*** | | -0.0204 | -4.421*** |
| | Interaction$ | | | -0.0766+ | -0.0819* | | -0.024** | 0.3834* |
| **Observations** | | 4928 | | | | | | |
| **Log likelihood function** | | -4912.3 | | | | | | |
| **Pseudo-$R^2$ (constant only)** | | 0.075 | | | | | | |
| **Inclusive value** | | 0.9103 | | | | | | |

***: significant at $p \leqslant 0.001$; **: significant at $p \leqslant 0.01$; *: significant at $p \leqslant 0.05$; +: significant at $p \leq 0.1$; no indication: not significant. §coefficient of attribute without interactions; $coefficient of interaction term with attribute; Pseudo $R^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to $R^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistics are significantly different from 1; n=616.

Annex 3. Parsimonious model with effect coding attributes

| Attribute | Level/Interaction term | Coefficient |
|---|---|---|
| **Convenience** | **Limited level** | 0.2469*** |
| | **Developed level** | -1.5117*** |
| | Conservative sustainable development***developed level** | 0.1404*** |
| **Tarnished nature experiences** | **Virgin land level** | 0.23*** |
| | **Basic level** | 0.2066** |
| **Sustainable tourism services** | **Limited level** | 0.0863[+] |
| **Cultural attractions** | **Modernized level** | 0.3728*** |
| | Concern for socio-ecological development***original level** | 0.1188*** |
| | Sceptical attitude***original level** | -0.0662* |
| **Natural attractions** | **None level** | 0.3511[+] |
| | **Landscape level** | 0.152* |
| | **Both level** | 0.3707*** |
| | Concern for socio-ecological development***none level** | -0.0878** |
| **[Non-status quo ASC]** | Conservative sustainable development***Non-status quo ASC** | -0.2022*** |
| | Sceptical attitude***Non-status quo ASC** | 0.1601*** |
| **Cost** | sceptical attitude***cost** | -0.0271*** |
| **Observations** | 4928 | |
| **Log likelihood function** | -4909.36 | |
| **Pseudo-R$^2$ (constant only)** | 0.076 | |
| **Inclusive value (IV)** | 0.89 | |

***: significant at p≤0.001; **: significant at p≤0.01; *: significant at p≤0.05; [+]: significant at p≤0.1. [§] coefficient of attribute without interactions; [$]coefficient of interaction term with attribute; Pseudo R$^2$ values in reference to a constant only model-values between 0.07-0.08 correspond to R$^2$ values of 0.22 to 0.24 value in for the linear model equivalent (Hensher et al.2005:338); IV statistics are significantly different from 1; n=616.

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# References

Adamowicz, W., Louviere, J. & Williams, M. (1994). Combing revealed and stated preference method for valuing environmental amenities. Journal of Environmental Economics and Management, 26, 271-291.

Apostolakis, A. and Jaffry, S. (2005). A choice modelling application for Greek heritage attractions. Journal of Travel Research, 43, 309-318.

Ajzen, I., and Driver, B. L. (1992a). Contingent value measurement: on the nature and meaning of willingness-to-pay. Journal of Consumer Psychology, 1, 297-316.

Ajzen, I., and Driver, B. L. (1992b). Application of the theory of planned behaviour to leisure choice. Journal of Leisure Research, 24 (3), 207-224.

Bao, J., Zheng, H. & Dai, G. (2002). The Evolvement of Spatial Structure and the Significance of Guilin's Domestic Tourist Origins. ACTA Geographica Sinica, 57(1), 96-106.

Bamberg, S. and Schmidt, P. (2003). Incentives, morality, or habit? Predicting students' car use of university routes with the models of Ajzen, Schwartz, and Triandis. Environment and Behaviour, 35, 264-285.

Barkmann, J., De Vries, K., Dietrich, N., Glenk, K., Keil, A., Leemhuis, C., and Marggraf, R. (accepted). Confronting Unfamiliarity with Ecosystem Functions: The Case for an Ecosystem Service Approach to Environmental Valuation with Stated Preference Methods. Ecological Economics, accepted.

Bateman, I.J., Carson, R.T., Day, B., Hanemann, M., Hanley, N., Hett, T., Jones-Lee, M., Loomes, G., Mourato, S., Ozdemiroglu, E., Pearce, D.W., Sugden, R., and Swanson, J. (2002). Economic Valuation with Stated Preference Techniques – A Manual, Edward Elgar Publishing Limited, Cheltenham.

Braun, O., Lohmann, M., Maksimovic, O., Meyer, M., Merkovic, A., Messerschmidt, E., Riedel, A. and Turner, M. (1999). Potential Impact of Climate Change Effects on Preferences for Tourism Destinations. A Psychological Pilot study. Climate Research, 11(3), 247-254.

China Central Government (CCG) (2007). Minorities living in China. Online document at URL http://www.gov.cn/test/2006-04/17/content_255861.htm. Accessed July 3rd, 2007.

Cerda, C., Barkmann, J.  and Marggraf, R. (2006). Economic Non-market Valuation of Biological Diversity of Navarino Island, Patagonia (Chile) in the Context of The CBD Ecosystem Approach, in C. Cerda, (doctoral dissertation), Valuing Biological Diversity in Navarino Island, Cape Horn Archipelago, Chile-A Choice Experiment Approach (pp. 94-133), Georg-August-Universität Göttingen, Germany.

Chan, R.Y.K. (2001). Determinants of Chinese consumers' green purchase behaviour. Psychology & Marketing, 18(4), 389-413.

Chan, R.Y.K. (1999). Environmental attitudes and behaviour of consumers in China: survey findings and implications. Journal of International Consumer Marketing, 11(4), 25-52.

Chan, R.Y.K. and Lau, L.B.Y. (2000). Antecedents of green purchases: a survey in China. Journal of Consumer Marketing, 17(4), 338-357.

China National Tourism Administration (CNTA) (2006). Major statistics of China domestic tourism 2006. Online document at URL http://www.cnta.gov.cn/news_detail/newsshow.asp?id=A2007361050143901487. Accessed June 19th, 2007.

China National Bureau of Statistics (CNBS) (2006a). Per capital annual income of urban household by source and region.  China Statistical Yearbook 2006, China Statistics Press, Beijing.

China National Bureau of Statistics (CNBS) (2006b). Population by sex, education attainment and region.  China Statistical Yearbook 2006, China Statistics Press, Beijing.

China Youth Daily (CYD) (2007). Cooler living for China's youth? Online document at URL http://www.chinadialogue.cn/article/show/single/en/1278-Cooler-living-for-China-s-youth-. Accessed on Sep. 6th, 2007.

Cornes, R. and Sandler, T. (1996). The theory of externalities, public goods and club goods, (2nd ed.), Cambridge University Press, Cambridge (UK).

Crano, W. and Prislin, R. (2006). Attitudes and Persuasion. Annual Review of Psychology, 57(1), 345-374.

Dunlap, R.E., Van Liere, K.D., Mertig, A.G. and Jones, R.E. (2000). Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale. Journal of Social Issues, 56, 425-442.

Eymann, A. and Ronning, G. (1997). Microeconometric Models of Tourists' Destination Choice. Regional Science & Urban Economics, 27, 735-761.

Farrell, D., Gersch, U., & Stephenson, E. (2006). The value of China's emerging middle class. McKinsey Quarterly; 2006 Special Edition, 60-69.

Floyd, D. L., Steven, P. D. and Rogers, R.W. (2000). A Meta-analysis of Research on Protection Motivation Theory. Health Education & Behaviour, 27(5), 591-615.

Ge, Q. S. (2002). Strategy of Exploring Tourism in Western China, Chinese Tourism Press, Beijing.

Graefe, A.R. (1998). Determining Future Travel Behaviour from Past Travel Experience and Perceptions of Risk and Safety. Journal of Travel Research, 37(2), 171-177.

Gramann, J.H., Bonifield, R.L. and Kim, Y. (1995). Effect of Personality and Situational Factors on Intentions to Obey Rules in Outdoor Recreation Areas. Journal of Leisure Research, 27(4), 326-343.

Groot, J.D. and Steg, L. (2007). General beliefs and the theory of planned behaviour: the role of environmental concerns in the TPB. Journal of Applied Social Psychology, 37(8), 1817-1836.

Haener, M., Boxall, P. and Adamowicz, W. (2001). Modelling Recreation Site Choice: Do Hypothetical Choices Reflect Actual Behaviour? American Journal of Agricultural Economics, 83, 629-642.

Hanley, N., Wright, R.E.and Koop, G. (2002). Modelling Recreation Demand Using Choice Experiments: Climbing in Scotland. Environmental and Resource Economics, 22(3), 449-466.

Hass, J.W., Bagley, G.S. and Rogers, R.W. (1975). Coping with the Energy Crisis: Effects of Fear Appeals upon Attitudes toward Energy Consumption. Journal of Applied Psychology, 60 (6), 754-756.

Hearne, R. and Salinas, Z.M. (2002). The Use of Choice Experiments in the Analysis of Tourist Preferences for Ecotourism Development in Costa Rica. Journal of Environmental Management, 65, 153-163.

Hensher, D. A., Rose, J. M. and Greene, W. (2005). Applied Choice Analysis: a Primer, Cambridge University Press, Cambridge (UK).

Hines, J.M., Hungerford, H.R. & Tomera, A.N. (1987). Analysis and synthesis of research on responsible environmental behaviour: a meta-analysis. Journal of Environmental Education, 18, 1-8.

Homburg, A. and Stolberg, A. (2006). Explaining Pro-environmental Behaviour with a Cognitive Theory of Stress. Journal of Environmental Psychology, 26 (1), 1-14.

Homer, P.M. and Kahle, L.R. (1988). A structural equation test of the value-attitude-behaviour hierarchy. Journal of Personality and Social Psychology, 54(4), 638-646.

Huybers, T. (2003). Domestic tourism destination choices-a choice modelling analysis. International Journal of Tourism Research, 5, 445-459.

Kelly, J., Haider, W., Williams, P. W. and Englund, K. (2007). Stated Preferences of Tourist for Eco-efficient Destination Planning Options. Tourism Management, 28(2), 377-390.

Kotchen, M.J. & Reiling, S.D. (2000). Environmental attitudes, motivations, and contingent valuation of nonuse values: a case stude involving endangered species. Ecological Economics, 32, 93-107.

Kroemker, D. (2004). Naturbilder, Klimaschutz und Kultur: Psychologie Forschung aktuell, Weinheim, Basel, Berlin.

Li, C.L. (2003). The structure and proportion of China's middle class. Population Science of China (in Chinese), 6, 25-32.

Li, J. (2005). On Chinese Ecotourist Characteristics and Motivational Factors: Making the Shanxi Taibai National Park as an Example. Economic Geography（in Chinese), 25(5), 720-727.

Li, Y., and Cai, Y. (2004). A study on Ecotourists' Behavioural Characteristics in Beijing: A Case Study In Baihuashan Nature Reserve. Geographical Research (in Chinese), 23(6), 863-874.

Louviere, J., Hensher, D. A. and Swait, J. D. (2000). Stated Choice Methods: Analysis and Application, Cambridge University Press, Cambridge (UK).

Luzar, E.J., Diagne, A., Ecgan, C., and Henning, B.R. (1998). Profiling the Nature-based Tourist: A Multinomial Logit Approach. Journal of Travel Research, 37, 48-55.

Machairas, I. & Hovardas, T. (2005). Determining visitors' dispositions toward the designation of a Greek national park. Environmental Management, 36 (1), 73-88.

Mao, D., Zhang, J. and Bao, H. (2005). A Tourist Destination Choice Model Based on Lancasterian Characteristics Theory and Destination Image Theory: Theoretical Analysis and Case Study. Geographical Research (in Chinese), 24(6), 992-999.

Martens, T. and Rost, J. (1998). The Relationship between the Perceived Threat of Environmental Problems and the Formation of Action Intention. Zeitschrift fur Experimentelle Psychologie, 45(4), 345-364.

Menzel, S. (2003). Der Beitrag der Protection Motivation Theory für die Zahlungsbereitschaftsäusserungen zur Erhaltung biologischer Vielfalt. Umweltpsychologie, 7, 92-112.

Morley, C. (1994). Experimental Destination Choice Analysis. Annals of Tourism Research, 21(4), 780-791.

Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B. and Kent, J. (2000). Biodiversity hotspots for conservation priorities. Nature, 403, 853-858.

Naidoo, R. and Adamowicz, W. L. (2005). Biodiversity and nature based tourism at forest reserve in Uganda. Environment and Development Economics, 10, 159-178.

Nianyong, H. and Zhuge, R. (2001). Ecotourism in China's nature reserves: opportunities and challenges. Journal of Sustainable Tourism, 9(3), 228-242.

Nordlund, A.M. and Garvill, J. (2002). Value structures behind pro-environmental behaviour. Environment and Behaviour, 34(6), 740-756.

Obua, J. & Harding, D. (1996). Visitor characteristics and attitudes towards Kibale National Park, Uganda. Tourism Management, 17, 495-505.

Pettersson, R. (2001). Sami tourism in northern Sweden: measuring tourists' options using stated preference methodology. Tourism and Hospitality Research, 3(4), 357-369.

Rogers, R. and Prentice-Dunn, S. (1997). Protection Motivation Theory, in D. Gochman (eds.) Handbook of Health Behaviour Research: Vol. 1. Determinants of Health Behaviour: Personal and Social, Plenum, New York.

Shaw, G. and Williams, A. M. (2002). Critical Issues in Tourism: A Geographical Perspective. (2nd ed.), Blackwell Publisher, Oxford.

Shin, W.S. & Jaakson, R. (1997). Wilderness quality and visitors' wilderness attitudes: management implications. Environmental Management, 21(2), 225-232.

Stern, P.C., Dietz, T. and Guagnano, G.A. (1995). The new ecological paradigm in social-psychological context. Environment and Behaviour, 27(6), 723-743.

Tanner, J. F., Hunt, J.B. and Eppright, D. R.  (1991). The Protection Motivation Model: A Normative Model of Fear Appeals. Journal of Marketing, 55, 36-45.

United Nations Educational, Scientific and Cultural Organizations (UNESCO) (2007). China UNESCO world heritage. Online document at URL http://whc.unesco.org/en/list. Accessed June 26, 2007.

Um, S. & Crompton, J.L. (1990). Attitude determinants in tourism destination choice. Annals of Tourism Research, 17, 432-448.

Verplanken, B., Aarts, H., Vanknippenberg, A.  and Vanknippenberg, C. (1994). Attitude versus General Habit-Antecedents of Travel Mode Choice. Journal of Applied Social Psychology, 24(4), 285-300.

Wen, J. (1998). Evaluation of tourism and tourism resources in China. International Journal of Social Economics, 25, 467-485.

Widegren, O. (1998). The new environmental paradigm and personal norms. Environment and Behaviour, 30 (1), 75-100.

Wight, P. (1993). Ecotourism: Ethics or Eco-Sell? Journal of Travel Research, 31(3), 3-9.

WTO (World Tourism Organisation) (2004). Sustainable Development of Tourism Conceptual Definition: World Tourism Organization, online document at URL: http://www.world-tourism.org/sustainable/concepts.htm, accessed September 2, 2006.

Wu, B. & Cai, L. (2005). Spatial Modelling - Suburban Leisure in Shanghai. Annals of Tourism Research, 33 (1), 179-198.

Yan, J., Barkmann, J., Zschiegner, A. and Marggraf, R. (accepted). The sceptics' challenge for sustainable tourism in the Southwestern China biodiversity hotspot: a choice experiment approach. China Tourism Research.

Yan, J., Barkmann, and Marggraf, R. (in preparation). Harmony vs. domination: Chinese tourist images of nature and their influences on preferences for nature-based destinations in southwestern China.

Yau, O.H.M. (1988). Chinese cultural values: their dimensions and marketing implications. European Journal of Marketing, 22, 44-57.

Zhang, G.R. (2003). Tourism Research in China, in A. A. Lew, L. Yu, J. Ap and G. Zhang, (eds.), Tourism in China (pp. 67-81), The Haworth Hospitality Press, New York, London, Oxford.

Zhang, J., Du, J., Zhou, Y. and Gan, M. (1999). The Travel Patterns and Travel Distance of Tourists to National Parks in China. Asia Pacific Journal of Tourism Research, 4(2), 27-34.

Zhong, Li., Buckley, R. & Xie, T. (2007). Chinese perspectives on tourism eco-certification. Annuals of Tourism Research, 34(3), 808-811.

Zhou, L., Cheng, X. & Zhou, T. (2006). A Research on the willingness to pay for certificated ecotourism product-the empirical analysis based on the tourists of Zhejiang's four scenic spots. Economic Geography (in Chinese), 26(1), 141-144.

Zhu, R. (2001). Report on the 10th Five-year plan for the national economy and social development of China central government. People's Daily (in Chinese), March 17, 2001, Beijing.

Zografos, C. and Allcroft, D. (2007). The Environmental Values of Potential Ecotourists: A Segmentation Study. Journal of Sustainable Tourism, 15(1), 44-66.

Zschiegner, A. K. (2006). Influences of 'Harmony'-based Chinese Tourists' Images of Nature on Attitudes Towards Sustainable Tourism and on Destination Choice. Diploma Thesis, Institute of Geography, Georg-August Universität Göttingen, Göttingen (Germany).

# Appendix

## Appendix 1: Questionnaire



Researchers: Yan Jiong, Dr. Jan Barkmann, Prof. Rainer Marggraf

Dear madam/sir:

We are conducting an investigation on Chinese tourists' preference. The purpose of the research is to find out what Chinese tourists are really interested in when they go travelling to nature/landscape destinations. We will mainly ask questions on your preference of a trip to southwest China. The results will be used to improve tourism planning in that region.

You are not answering a commercial questionnaire. This is an academic research project. The research is conducted under an official cooperation agreement between Georg-August-University Goettingen, Germany, and the Center for Tourism Research and Planning, Institute of Geographic Science and Natural Resources Research, China Academy of Sciences, Beijing.

All the respondents of our investigation are chosen randomly. The whole interview may take you around 20 minutes. With agreeing to participate in the interview, you will greatly improve the prospects for a good tourism development in Sichuan and Yunnan provinces.

All the information you give to us during interview will be treated confidentially. All personal data will only be used for scientific research and will not be released to any third party.

We highly appreciate your participation in our investigation.

# Answer Sheet (Beijing)

| Interview date： | Interview location： |
|---|---|
| Interviewer： | Beginning time： |
| | Ending time： |

**1. Gender**：☐F      ☐M

**2. Age**：☐20-25    ☐26-30    ☐31-35    ☐36-40   ☐41-45    ☐ 46-50    ☐ 51-55

☐56-60    ☐61-65    ☐older than 65

**3. Which transportation would you like to you take if you take a private vacation to Southwest China (e.g. Beijing to Chengdu)?**

☐    Drive by yourself        ☐    Taking the flight (RMB2880 for round trip)

☐    Taking the train (RMB1000-1600 for round trip: hard sleeper to soft sleeper)

**4. How often do you take part in outdoor sports clubs activities (e.g. hiking, horse riding, cycling, rock climbing, tracking stream, etc)?**

☐once a week  ☐twice a month  ☐once a month  ☐once every two month  ☐once a quarter

☐three times a year ☐twice a year ☐once a year ☐never

**5. Is your work related to environmental protection/biology/geography/gardening/outdoor business/botanical garden/zoo, etc?**

☐yes          ☐No

**6. Your monthly income (before tax) range-including salary and other sources income：**

☐1,500－2,500RMB    ☐2,501－3,500RMB ☐3,501－4,500RMB    ☐4,501－5,500RMB

☐5,501－7,000RMB    ☐7,001－8,500RMB ☐8,501－10,000RMB ☐10,001-13,000RMB

☐13,001-16,000RMB ☐16,001-19,000RMB ☐ab 19,000RMB

**7**．    ☐Convenience and comfortable of transportation and lodging        ☐Experience nature

**8**．    ☐Prefer cultural attraction        ☐Prefer nature attraction

**Please mark the choices of respondents in the table below：**

### Block 1

| Set number | Place A | Place B | Option C |
|---|---|---|---|
| Sample card | | | |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 1 1 | | | |
| 2 3 | | | |

### Block 2

| Set number | Place A | Place B | Option C |
|---|---|---|---|
| Sample card | | | |
| 8 | | | |
| 9 | | | |
| 1 0 | | | |
| 1 2 | | | |
| 1 3 | | | |
| 1 4 | | | |
| 1 5 | | | |
| 2 4 | | | |

### Block 3

| Set number | Place A | Place B | Option C |
|---|---|---|---|
| Sample card | | | |
| 7 | | | |
| 1 6 | | | |
| 1 7 | | | |
| 1 8 | | | |
| 1 9 | | | |
| 2 0 | | | |
| 2 1 | | | |
| 2 2 | | | |

**Please choose one option which you agree mostly in each expression:**

| | Totally agree ++ | Agree + | Neutral O | Disagree - | Totally disagree - - |
|---|---|---|---|---|---|
| 1. I am really afraid of loosing the future opportunity for travel enjoyment in southwest China if the tourism development is not done in a sustainable manner. | | | | | |
| 2. Humans should protect nature because it is useful and provides a lot of advantages for us. | | | | | |
| 3. Ignoring the law of the nature will eventually bring the disaster to humans. | | | | | |
| 4. Making sure the members of local community can run tourism related businesses is essential for harmonious tourism development in southwest China. | | | | | |
| 5. It is better to keep processes in nature under control in order to not endanger human security. | | | | | |
| 6. The earth is like a spaceship with only limited room and resources. | | | | | |
| 7. In many scenic and historical/cultural sites, restrictions of entering certain area and stepping on/touching objects are a nuisance for me. | | | | | |
| 8. I feel threatened by the ongoing destruction of nature. | | | | | |
| 9. Human and nature, including animals and plants have the equal right to exist. | | | | | |
| 10. It would be a big financial burden for me to pay more for tourism. | | | | | |
| 11. Nature is sacred because it is created by God. | | | | | |
| 12. Humans can discover the law of nature. But humans cannot change the law of the nature. | | | | | |
| 13. Without a scientific conservation program in place, many natural destinations in southwest China are in danger of losing their natural attractions. | | | | | |
| 14. Nature has its own right of existence; therefore it is not allowed to destroy nature anywhere for human needs. | | | | | |
| 15. Without humans, nature would not be complete. | | | | | |
| 16. Having garbage cans is important to protect the beauty of the natural and cultural attractions in southwest China. | | | | | |
| 17. Humans should protect nature because it enriches our lives by its wonderful magnificence. | | | | | |
| 18. Nature always recovers (by itself), no matter what humans do. | | | | | |
| 19. Putting a lot of members of local communities in charge of tourism businesses can have bad impact on service quality and trip experience. | | | | | |
| 20. Not humans can protect nature; only God has the power to do so. | | | | | |
| 21. Humans should protect nature because it provides exciting challenges and adventures. | | | | | |
| 22. My friends and family expected me to feel | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| responsible for maintain the attraction of the site. | | | | | |
| 23. As the supreme beings on earth, human should not tarnish nature. | | | | | |
| 24. Nature is important, but neither has a soul nor is sacred. | | | | | |
| 25. Local government should make sure that growth of tourism in southwest China does not damage natural and cultural heritages. | | | | | |
| 26. Humans belong to nature the same way as animals and plants do. | | | | | |
| 27. Human should protect nature because it has a right of existence in itself in the same way that all and everything living does. | | | | | |
| 28. In the grand design of world, humans have the same value with other living beings. | | | | | |
| 29. In my opinion, extra charge for tourism services such as green buses is just an excuse to charge more (rip off tourist). | | | | | |
| 30. Plants and animals do exist primarily for human use. | | | | | |
| 31. Humans must follow the law of nature in order to live in harmony. | | | | | |
| 32. If I know for sure that the facilities in a tourist site benefit the local environment, I would pay more for such facilities. | | | | | |
| 33. Humans should protect nature because it provides recreation and quietness. | | | | | |
| 34. Humans have the right to use natural resources of any kind they want to. | | | | | |
| 35. I would be very sad if local cultures in southwest China would lose some of their originality because of tourism development. | | | | | |
| 36. Nature is sensitive to any kind of interference. Even small interference can lead to big and irreversible damage. | | | | | |
| 37. It would be a shame if the local people in southwest China would not benefit the most from tourism development in that region. | | | | | |
| 38. When human interfere with nature, they should follow the law of proper proportion. | | | | | |

**9. Profession: (retired people is classified according to the professions before retirement)**

☐Government/agencies official　　　☐Managers　　☐Private Enterprise Owner

☐Professionals　　　☐Staff in government/agencies ☐Self-hired businessman

☐Workers in service industries ☐Workers in industry　　　☐Workers in agriculture

☐Unemployment/half unemployment　　　☐Military/policeman ☐Housewife　☐Student

**10. Educational background：**

☐under B.A ☐B.A　　　☐M.A　　　☐PhD ☐Above PhD

**11. How much do you spend in travelling by average a year (including weekends trips)?**

☐Below 500RMB     ☐500-1,000RMB     ☐1001-1,500RMB     ☐1,501-2,000RMB

☐2,001-3,000RMB  ☐3,001-4,000RMB   ☐4,001-5,000RMB     ☐5,001-7,000RMB

☐7,001-9,000RMB  ☐9,001-11,000RMB  ☐ab 11,000RMB

**12. Based on your current conditions, what is your self-perceived social status?**

☐lower          ☐middle-lower          ☐middle          ☐middle-upper ☐upper

☐unsure

**Interviewer notes**：Feedbacks from the respondents：

**Appendix 2: Example of choice set with visual aid (Chinese and English version)**

| Place A | | |
|---|---|---|
| Convenience at place just outside of attraction site |  | - difficult motor access;<br>- simple hostels/hotels |
| | Possibility of experiencing nature | - at times, some basic tourism infrastructure (restaurants, stores, toilets) visible;<br>- meet other people every hour |
| | Sustainable tourism services | - freely visit every place;<br>- no resource saving;<br>- no community involvement |
| Natural attractions |  | - ordinary landscapes;<br>- no precious or nice species; |
| Cultural attractions | | None |
| Cost (including entrance fee, local transportation, lodging and food, etc) | | 4200 RMB |

| Place B | | |
|---|---|---|
| **Convenience at place just outside of attraction site** |  | - difficult motor access<br>- simple hostels/hotels |
| **Possibility of experiencing nature** | | - sense of solitude and tranquility;<br>- no tourism infrastructure;<br>- no other visitors |
| **Sustainable tourism services** | | - scientific conservation program for core area and buffer zone (e.g. wild animal monitoring and protection);<br>- green bus, bio energy use;<br>- local community participation |
| **Cultural attractions** |  | - well preserved traditional architectures;<br>- temples (alive);<br>- original customs and culture |
| **Natural attractions** |  | - magnificent awe-inspiring natural landscapes;<br>- many precious species and very abundant/rich species-rich biodiversity (Panda, Golden Monkey) |
| **Cost (including entrance fee, local transportation, lodging and food, etc)** | | 7200 RMB |

## Option C



I would rather like to spend my money on a better trip offered, and have my vacation enjoyment on another trip.

| 景区 A | |
|---|---|
| 景区外的硬件设施  | – 崎岖颠簸的简易车道；<br>– 有简易的小旅馆或当地人家的家庭旅馆； |
| 体验自然的可能性 | – 有时看到一些基本的旅游基础设施（如饭店，卫生间或商店）；<br>– 每小时遇到其他游客； |
| 生态旅游发展程度 | – 可自由进入景区任何地点；<br>– 无环卫和资源再利用设施；<br>– 当地居民没有参与旅游业发展； |
| 自然风光吸引力  | – 普通的自然风景；<br>– 无珍稀动植物； |
| 人文吸引力 | 无 |
| 价格（在当地的门票，交通费，食宿及其它费用） | 4 200 元 |

| 景区 B | |
|---|---|
| 景区外的<br>硬件设施<br> | – 崎岖颠簸的简易车道；<br>– 有简易的小旅馆或当地人家的家庭旅馆； |
| 体验自然的可能性 | – 宁静和远离喧嚣的感觉；<br>– 没有任何旅游基础设施；<br>– 没有其他游客； |
| 生态旅游发展程度 | – 有缓冲区；<br>– 缓冲区和核心区有科学研究项目（如野生动物监测保护等）；<br>– 有绿色大巴，生物能利用（沼气，太阳能，风能等）和废水处理设施等；<br>– 当地居民可参与当地发展和旅游经营的决策 |
| 人文<br>吸引力<br> | – 保存完好的老房子；<br>– 寺庙里有僧人，寺庙在当地人的生活中有重要作用；<br>– 原生态的本地文化和民俗。 |
| 自然风光<br>吸引力<br> | – 美丽壮观的自然风景；<br>– 有许多珍稀动植物（如大熊猫，金丝猴等） |
| 价格（在当地的门票，交通费，食宿及其它费用） | 7 2 00 元 |

选择 C



我更愿意花钱去一个更好的地方
旅游和度假。

## Appendix 3: Curriculum vitae

**Personal information**

Name:                          Jiong Yan

Date/place of birth:   July 17, 1972. Gansu province, P.R. China


**Education**

10/2004-02/2008      PhD student-Environment and Resource Economics major, Department
of Agricultural Economics and Rural Development, Georg-August-
Universität Göttingen. Chair: Prof. Dr. Rainer Marggraf

09/1998-06/2001      Master student- Department of Sociology and Public Administration,
Sichuan University, China. M.A.    Sociology      June 2001

9/1990-7/1994          Bachelor student-Department of Social Sciences, Sichuan University,
China. B.A.    Philosophy      July 1994

**Working experience**

12/2001-09/2004      Program Manager, Environmental Education (EE) Program
US Peace Corps China office

12/2000-12/2001      Program Assistant, EE Program, Peace Corps China

12/1999-12/2000      Assistant  Manager,  Graduate  Student  Education  &  Administration
Sector, Student General Affairs Office, Sichuan University

07/1994-12/1999      Lecturer,  Undergraduate  Student  Education  Sector,  Student  General
Affairs Office, Sichuan University

**Special Programs**

11/2002-04/2004      Leadership for Sustainable Development Program, Cohort 10, China

06/2003                   Overseas Staff Training, Peace Corps, USA

01/2002                   Project Learning Tree and Project WET, China

07/2000-08/2000      Rural development survey in Tibetan region of Sichuan province, China


Jiong Yan

Göttingen, December, 2007