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Income effects in choice experiments

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Abstract

In a choice experiment we test income effects for different attributes and we test the effect of stated expected changes in future income on stated WTP. We find both present and future income to be significant determinants of stated WTP when included in the same model. We also find that the less use-related the attribute, the stronger the income dependency, both in terms of present and future income. The finding that expectations concerning future income affects WTP seem to suggest relevance of the life cycle-permanent income hypothesis also for environmental goods, and it suggest that the current practice of testing for income effects using current income only is likely to be flawed. This may be particular true if the good in question and/or the payment vehicle used have long time horizons.

Keywords: Stated preferences, income elasticity, life time income, environmental valuation, wildlife

1. Introduction

Do emphasis on environmental goods and services increase with increasing income, and if so is this reflected in an increased willingness to pay for improvements in such goods? It is widely believed to be the case and in fact income sensitivity of WTP-measures is often seen as an indicator of validity and reliability (Mitchell & Carson 1989) of stated preference studies, as it may indicate whether respondents take the budget constraint serious. Many studies fail to find such a relationship (Jacobsen & Hanley, 2008), and even where found, the actual - often small size - has caused a debate on how large it should be (Bateman et al. 2002). Arguments have been given for environmental goods to be progressively, with an income elasticity of WTP larger than one, but more often they seem to be regressively distributed (Kriström & Riera, 1996), implying that even if WTP increases by income this is less than proportional. However, this does not explain why there are so many studies in which an income effect seem absent.

A potential reason for this, which we focus on here, is that the income measure commonly applied, which is current income as reported by respondents, may in fact not be the one respondents have in mind. In particular, invoking the general thoughts of the life cycle-permanent income hypothesis (Friedman 1957), we may expect respondents to take future income into account when answering hypothetical WTP questions. When the payment vehicle used furthermore suggests that payments will continue either for a specified amount of years (e.g. Amigues et al, 2002) or an unspecified period (e.g. Jacobsen et al., 2008a) into the future, such considerations may be even more likely than for once-and-for-all payments. Furthermore, environmental protection often has a very long time perspective, especially for non-use values such as existence values and bequest values. Thus, as also the derived benefits for the individual reaches into the future, it could be argued that the payment period has to be in accordance with the benefit period (for the individual) and if so, also the considered income.

These considerations leads to the main hypothesis tested in this paper: Do respondents consider future income as well as current income when they answer WTP questions? By the use of a choice experiment (CE) with follow-up questions concerning current income level in quantitative terms and their expected future income relative to current income, we are able to test this hypothesis for attributes with different degrees of use and non-use values. We also discuss the size of the income effect in relation to income elasticity of WTP for different attributes.

1.1 Literature

In most stated preference studies it is tested whether the results are sensitive to income, and it is often also reported. Examples of significant income parameters are Riera et al. (2008), Bandera and Tisdell (2004), Sattout et al. (2007) and examples of insignificant parameters are Holmes et al. (2004), Jacobsen et al. (2008a), Leon (1996). In a meta-analysis Schläpfer et al (2006) find that 63% of the studies, which report income effects, found positive effects. In another meta-analysis Jacobsen and Hanley (2008) find that 56 of 145 data points reported internal significance of income as an explanatory factor for WTP, whilst 39 reported insignificant effects. Thus even if income effects are seen as a test of validity, studies failing this test still get published.

A reason for this may be due to the lack of consensus concerning the theoretical dependency of WTP-measures on income. It has long been argued that environmental quality is a luxury good, with an income elasticity of demand greater than one (Kriström and Riera, 1996). If this is so, then demand for environmental goods, manifested either as consumers buying greener products, or demanding tougher environmental legislation, will grow disproportionately quickly as incomes rise. However, both

Kriström and Riera (1996) and Hökby and Söderqvist (2003) question this assumption and find regressive distributions.

Most goods valued using the kind of stated preference methods upon which Kriström and Riera base their conclusions are public goods which are in fixed (rationed) quantities from the perspective of the individual, so that the individual cannot continuously vary the quantity of goods he or she demands. Thus instead of using the measure of income elasticity of demand, the measure of income elasticity of WTP is used (for descriptions see (Flores and Carson, 1997; Hökby and Söderqvist, 2003). For non-use values derived from public goods, this seem particularly compelling, but also use-based recreational values limited by e.g. access rights cannot be freely on the demand side. The environmental improvements described for respondents in this study largely have these characteristics, and hence we focus on the income sensitivity of the WTP-measure.

In all the studies mentioned above where income was insignificant the duration of the payment was infinite (payment per year for an undefined time) and the good in question was mainly related to non-use values with a long time horizon. Furthermore, in all the studies, the income measure used for estimating income effects is current income. This stands in strong contrast to the general economic literature on consumption, income and wealth, where consumption propensities are only rarely believed to be dependent only on current income levels. This economic literature takes its theoretical starting point from Friedman's (1957) permanent income hypothesis, which was immediately put to test and disputed (Houthakker 1958a, b; Eisner 1958; Friedman 1958). Since then the framework has been extended and known as the life-cycle permanent income hypothesis and put to several tests (Hall 1978; Campbell 1987; Gourinchas and Parker 2002), and is now widely acknowledged as a theoretical cornerstone in trying to understand consumption choices. According to the hypothesis, consumers form expectations of their ability to consume in the long run, and then set their current consumption to what they think is the appropriate fraction of the long-run expectations. Empirical tests of this hypothesis have obviously struggled with the definition of variables capturing consumers' long-run expectations, and the hypothesis is still contested on its predictive power.

To us, however, it seems reasonable that stated WTP for environmental services could in fact also reflect such considerations. Note that if this is the case then this could perhaps explain the often weak or non-existent sensitivity of WTP to income found in environmental valuation literature. The reason is that current income is for some groups a poor predictor of long-run consumption options. In the low income brackets we find young people, e.g. university students and the like, which have a low current income but may expect future income to be much higher. Thus, their

WTP may be relatively higher than their low income would suggest. Similarly, we may find in the high income brackets people who are thinking of their retirement age and pension funds. Their WTP may be relatively lower than their high income would indicate. It is easy to see that such a systematic variation could be devastating for any income sensitivity of WTP to materialise it self. To test this hypothesis: That WTP reflects not only current income but also expectations concerning future income, we perform two quite crude and simple test: First, in addition to asking respondents for their current income, we ask them to indicate if they think their future income will be lower, similar or higher than their current income level. We apply this information in an analysis of the WTP sensitivity to both measures simultaneously. Secondly, we single out respondents that are either students or in an age bracket likely to be working but facing retirement in not too many years. We explore the WTP patterns of these groups relative to other respondents.

2. Material and Method

In a CE study of environmental goods, respondents are asked to choose between sets of pre-defined alternatives, with changes in attributes of the environmental good, where each alternative is connected with different cost levels. Respondents are requested to select their preferred alternative, and under the assumption that the individuals make choices to maximise their utility, subject to resource constraints, the method gives a very powerful framework for creating economic models of choice and eliciting WTP for preferences (Wooldridge, 2002). The CE method was originally developed for market analysis (Louviere et al., 2000) and it relies on McFadden's (1974) random utility model, where the utility of a good is described as a function of its attributes and people choose among complex goods by evaluating their attributes. Since observation of utility can only be made imperfectly, the random utility model is the fundament for estimation and can formally be described as:

$$U_{ij} = V_{ij}\left(y_i - t_j, x_j, z_i,\right) + \varepsilon_{ij} \qquad (1)$$

The term U_{ij} is the i'th individual's utility of paying t_j out of individual income y_i for the good described by alternative j. V_{ij} is a deterministic term depending on the alternatives' attributes x_j, the individual's characteristics, z_i. The term ε_{ij} is stochastic in the sense that its variation cannot be observed by the analyst. Faced with the choice between two alternatives, the probability that the respondent will choose alternative k (over alternative j) can then be described as:

$$\Pr_{ki} = \Pr\left(U_{ki}\left(y_i - t_k, x_j, z_i, \varepsilon_{ki}\right) > U_{ji}\left(y_i - t_j, x_j, z_i, \varepsilon_{ji}\right) \ \ \forall j \neq k \right). \qquad (2)$$

Here U_{ki} is the utility of alternative k, U_{ji} of alternative j. The other parameters are as above. It is assumed that U is linear in income and the remaining known variables of U_{ki} are replaced with $\beta' x_{ki}$, where x_{ki} represents a vector of variables related to alternative k that we are able to observe. Also, assuming that ε_{ki} is IID extreme value distributed the probability of an individual i choosing alternative k can be defined by the Conditional Logit model:

$$\Pr(ki) = \frac{\exp^{\beta' x_{ki}}}{\sum_{j}^{J} \exp^{\beta' x_{ji}}} \tag{3}$$

Following Train (2003) the Mixed Logit probabilities can be described as integrals of the standard conditional logit function over the distribution of β. If the distribution of β is specified to be normal the probabilities of the model becomes:

$$\Pr(ki) = \int \left(\frac{\exp^{\beta_i' x_{ki}}}{\sum_{j}^{J} \exp^{\beta_i' x_{ji}}} \right) \phi(\beta | b, W) d\beta \tag{4}$$

where $\phi(\beta|b,W)$ is the distribution function for β, with mean b and covariance W. The analyst chooses the appropriate distribution for each parameter in β. This standard setup is applied to the CE data analysed here.

3. Survey design

The survey used a postal questionnaire and it focused on access to and wildlife in three widespread Danish habitats; forests, open fields, and lakes and streams. Along with the questionnaire, respondents were supplied with an information sheet describing current status of wildlife and access. The questionnaire was designed on the basis of discussions with experts in wildlife and tested in focus groups as well as in individual interviews. The first part of the questionnaire concerned the respondents' attitudes to nature and wildlife and level of recreational use and wildlife experiences. This was followed by the CE part and the third and final part of the questions concerned debriefing and the respondent's socioeconomic characteristics[30].

The CE included 2 × 6 choice sets, where respondents were distributed to two out of three habitats. Across blocks, the combination and order of habitats were distributed systematically to avoid order effects and ensure equal representation. Each choice set consisted of three alternatives, the first alternative always representing the status quo. The attributes describing each alternative included *i*) initiatives to increase population size of wildlife in general, *i*) initiatives to increase population size of endangered

[30] A translated version of the questionnaire can be obtained from the authors upon request.

wildlife and *iii*) various reductions in access to the habitats for the public in order to improve living conditions for wildlife. Respondents were explained that the increased expenses due to improvements would be financed by income taxes. Today, all similar public actions are funded in this way, giving credibility to the choice of payment vehicle in this specific context. The full set of attributes and levels are described in Table I.

Three attributes had three levels of provision and the cost attribute had six levels of provision. A complete factorial design would involve 162 combinations of alternatives for each habitat. We used a fractional factorial design. The same design was used for the three habitats, but allocated to respondents by a cyclic design to even out order and combination effects.

Table I Attributes and levels in the CE questionnaire

ATTRIBUTE	LEVEL	VARIABLE
ACCESS: Access to habitat	Unrestricted access (status quo)	N/A
	Reduced access (No access in 25% of all of the specific habitat from April to November)	*HABITAT_REDACC*
	No access (No access in 25% of all of the specific habitat all year)	*HABITAT_NOACC*
THREATENED: Increases in population size of a threatened species related to the habitat	Threatened with extinction (status quo)	N/A
	Rare, but not threatened with extinction	*SPECIESNAME_RARE or THREATENED_SPECIES_RARE*
	Common	*SPECIESNAME_COMMON or THREATENED_SPECIES_COMMON*
GENERAL WILDLIFE: Increases in population size of general wildlife in the specific habitat	Population size as of today (status quo)	N/A
	Population increase by 25%	*HABITATNAME_25 or GENERAL_WILDLIFE_25*
	Population increase by 50%	*HABITATNAME_50 or GENERAL_WILDLIFE_50*
COST: Annual tax increase	0 (status quo) 100 DKK 250 DKK 500 DKK 1,000 DKK 2,000 DKK	*TAX*

(100 DKK equates approx. 13 Euro)

The design also involved an external test of scope. These results will not be reported here. Furthermore, some respondents received an 'iconised' description, where a specific species was shown as an example of general wildlife (cf. terminology in (Jacobsen et al., 2008a)) and others a more general description of the types of species. Also, the order of the attributes in the choice sets were varied, to even out any order effects. In this paper, we pool the data from the iconised version with the other version and we pool the data across habitats.

The threatened species used for the questionnaire was a Dormouse (*Muscardinus avellanarius*) for the forest, a Barn owl (*Tyto alba*) for the field and the Otter (*Lutra lutra*) for the lakes and streams. The iconised representatives of general wildlife was Hare (Lepus capensis), Great Crested Grebe (Podiceps cristatus) and Great Spotted Woodpecker (Dendrocopos major) The species may not have entirely equal appeal in terms of charisma, but all of them have had some degree of media attention.

At the end of the questionnaire respondents were asked to state their present household income level by ticking suitable quantitative brackets. Furthermore, they were asked to indicate if they expected their household's aggregate income before tax in ten years time to either be lower than, equal to or higher than the household's current income level.

In Denmark there is a fairly open access to most habitats for ordinary recreational activities like walks and biking along paths etc. Therefore, we expect respondents to react with demands of compensation for reductions in their access to habitats, even if explicitly motivated by concerns for wildlife protection, e.g. moderate reductions during the breeding season. Such reductions in access are commonly implemented in various specific localities, and thus this attribute should add plausibility to the overall case description.

The questionnaire was sent out to a representative sample of 1,800 people in May 2005 and 862 questionnaires were completed and returned which equals an overall response rate of almost 48 per cent. 116 of these dealt with the external scope test and is thus excluded in the analysis here. The full sample thus consists of 746 respondents answering 8,447 choice questions, as not all respondents completed all 12 choices.

4. Results

The results presented below are based on all habitats pooled together. Analyses on each habitat was also performed and showed the same results, although many of the parameters were insignificant due to fewer observations. No systematic difference was seen across the habitats for the patterns analysed here.

Initially the results were analysed by a conditional logit. Performing a Hausman test of elimination of the status quo showed that there were problems with IAA, and consequently random parameter logit estimation was performed instead. However, results of coefficient values do not differ much between the two models.

Stated household income was tried modelled both on a continuous scale of income groups in intervals of 100,000 DKK from DKK 0 to above DKK 700,000 and in three groups, below DKK 300,000, DKK 300,000-

700,000 and above 700,000. Results for the grouped model are used in the following. The continuous scale model also showed similar significant effects.

Expected changes in future income were dummy-coded if expected to be higher or smaller (as opposed to unchanged). Both present income and expected change in future income is crossed with each attribute, resulting in the estimates shown in Table 2 below. Only access crossed with future income is eliminated as they are non-significant and causes other variables to be less significant.

Table 2. Parameter estimates for a mixed model with present and future income parameters

LL	-8349.13			
χ^2	15.89			
P> χ^2	0.725			
	Coefficient	**Std.error**	**Z**	**P> |z|**
ASC	0.110	0.068	1.63	0.10
Price	-0.146	0.005	-27.15	0.00
Red. Access whole year	-0.523	0.081	-6.42	0.00
-heterogeneity	0.006	0.362	0.02	0.99
Red. Access summer	-0.290	0.073	-3.94	0.00
-heterogeneity	0.052	1.006	0.05	0.96
Common wildlife + 25%	0.639	0.091	7.00	0.00
-heterogeneity	0.004	0.539	0.01	0.99
Common wildlife + 50%	0.552	0.091	6.07	0.00
-heterogeneity	0.027	0.404	0.07	0.95
End. Wildlife threatened	1.145	0.100	11.40	0.00
-heterogeneity	0.121	0.892	0.14	0.89
End. Wildlife common	0.870	0.095	9.13	0.00
-heterogeneity	0.650	0.513	1.27	0.21
Low income x				
Red. access whole year	0.324	0.124	2.62	0.01
-heterogeneity	0.006	0.362	0.02	0.99
Red. access summer	0.080	0.109	0.73	0.46
-heterogeneity	0.052	1.006	0.05	0.96
Common wildlife + 25%	-0.457	0.102	-4.50	0.00
-heterogeneity	0.004	0.539	0.01	0.99
Common wildlife + 50%	-0.691	0.099	-6.99	0.00
-heterogeneity	0.027	0.404	0.07	0.95
End. Wildlife threatened	-0.554	0.116	-4.79	0.00
-heterogeneity	0.121	0.892	0.14	0.89
End. Wildlife common	-0.427	0.123	-3.48	0.00
-heterogeneity	0.650	0.513	1.27	0.21
High income x				
Red. access whole year	-0.029	0.140	-0.21	0.84
-heterogeneity	0.129	1.782	0.07	0.94

Red. access summer	-0.046	0.114	-0.41	0.69
-heterogeneity	0.002	0.665	0.00	1.00
Common wildlife + 25%	0.039	0.109	0.36	0.72
-heterogeneity	0.011	0.505	0.02	0.98
Common wildlife + 50%	-0.088	0.101	-0.87	0.39
-heterogeneity	0.088	0.739	0.12	0.91
End. Wildlife threatened	-0.057	0.124	-0.46	0.65
-heterogeneity	1.063	0.324	3.28	0.00
End. Wildlife common	-0.109	0.122	-0.89	0.37
-heterogeneity	0.345	0.757	0.46	0.65
Lower future income x				
Common wildlife + 25%	-0.015	0.099	-0.15	0.88
-heterogeneity	0.083	0.534	0.16	0.88
Common wildlife + 50%	-0.079	0.118	-0.67	0.50
-heterogeneity	0.857	0.319	2.69	0.01
End. Wildlife threatened	-0.294	0.108	-2.74	0.01
-heterogeneity	0.789	0.367	2.15	0.03
End. Wildlife common	-0.252	0.113	-2.24	0.03
-heterogeneity	1.277	0.380	3.36	0.00
Higher future income x				
Common wildlife + 25%	0.126	0.093	1.36	0.17
-heterogeneity	0.016	0.359	0.05	0.96
Common wildlife + 50%	0.175	0.095	1.84	0.07
-heterogeneity	0.704	0.292	2.42	0.02
End. Wildlife threatened	0.280	0.093	3.00	0.00
-heterogeneity	0.530	0.374	1.42	0.16
End. Wildlife common	0.263	0.090	2.92	0.00
-heterogeneity	0.631	0.375	1.68	0.09

It is seen that all main-effect attributes have the expected sign. The main effects attributes crossed with current income level results in parameters indicating that high current income groups do not differ much from the average group. The low current income groups on the other hand do differ from the others, as their WTP is lower for the protection attributes in particular, but only slightly so for the access attributes.

Regarding expected changes in future income we see that, respondents who expect a lower future income state a lower WTP for increased populations of endangered species as well as general wildlife, but the latter not being significant. Conversely, the respondents expecting a higher future income tend to state a higher WTP for increased populations of endangered species as well as general wildlife, again the latter not being significant at the 95% level.

Note that most of the heterogeneity parameters are non-significant, but most notably not for the respondents stating a lower future income. This indicates that there is some variability in group expecting a lower future income, which have not been captured by the current split into current and future income.

In order to analyse further if expected changes in future income can have an influence we grouped respondents being students, which are likely to expect a higher future income, and also respondents close to retirement, defined as being above 58 years and not yet retired. Result for this analysis is shown below for a conditional logit model. It is seen that students do tend to state a higher WTP mainly for the wildlife attributes. The ones close to pension seems to take changes in future income less into account, and only for endangered wildlife is the coefficient significant.

Table 3. Conditional logit parameter estimates for a model with income effects and grouping of students and almost retired respondents.

Log likelihood	-8359.5			
Likelihood ratio X2	2537.48			
P>X2	0			
PseudoR2	0.1318			
	Coefficient	**Std.error**	**z**	**P> |z|**
ASC	0.135	0.061	2.230	0.026
Price	-0.135	0.004	-37.740	0.000
Red. access whole year	-0.424	0.076	-5.590	0.000
Red. access summer	-0.244	0.070	-3.510	0.000
Common wildlife + 25%	0.600	0.069	8.760	0.000
Common wildlife + 50%	0.521	0.066	7.960	0.000
End. Wildlife threatened	1.054	0.076	13.960	0.000
End. Wildlife common	0.858	0.072	11.950	0.000
Low income x				
Red. access whole year	0.283	0.115	2.470	0.013
Red. access summer	0.089	0.102	0.880	0.380
Common wildlife + 25%	-0.447	0.093	-4.790	0.000
Common wildlife + 50%	-0.637	0.086	-7.380	0.000
End. Wildlife threatened	-0.536	0.104	-5.130	0.000
End. Wildlife common	-0.386	0.105	-3.660	0.000
High income x				
Red. access whole year	-0.018	0.116	-0.150	0.878
Red. access summer	-0.007	0.102	-0.070	0.943
Common wildlife + 25%	0.008	0.095	0.090	0.931
Common wildlife + 50%	-0.089	0.087	-1.030	0.303
End. Wildlife threatened	-0.058	0.105	-0.550	0.581
End. Wildlife common	-0.129	0.106	-1.220	0.223
Studying x				
Red. access whole year	-0.028	0.158	-0.170	0.862
Red. access summer	-0.064	0.145	-0.440	0.658
Common wildlife + 25%	0.186	0.130	1.430	0.154
Common wildlife + 50%	0.350	0.122	2.860	0.004

End. Wildlife threatened	0.516	0.152	3.390	0.001
End. Wildlife common	0.538	0.150	3.600	0.000
Near retirement x				
Red. access whole year	-0.167	0.161	-1.030	0.301
Red. access summer	0.056	0.141	0.400	0.691
Common wildlife + 25%	0.169	0.129	1.310	0.189
Common wildlife + 50%	0.122	0.119	1.020	0.307
End. Wildlife threatened	-0.107	0.145	-0.730	0.463
End. Wildlife common	-0.483	0.147	-3.280	0.001

4. Discussion

The present study addresses the identification of income effects on WTP-measures in environmental valuation studies. We have formulated the hypothesis that respondents' stated WTP for environmental goods is based not only on their current income levels, but also on their expectations concerning their future household income. This hypothesis has found strong support in the results reported here. The implications of this are quite strong. First, it suggests that the widespread difficulties in identifying a significant and positive income may simply reflect that the income measure applied in such tests, i.e. current income levels of the individuals or households addressed, is simply a too poor representation of the income measure on which respondents base their answers. Secondly, the results raise the question of which income measure is to replace current income if better estimates of income effects are to be obtained. The current study has used a qualitative assessment of expectations of future income levels. This has the advantage of being un-provoking and easy to answer. Respondents may have difficulties in giving exact answers to this type of questions, and in fact may base their decisions on expectations as imprecise as the one suggested to them in this study. Nevertheless, future research should pursue the option of having respondents address their expected future income level in absolute or relative, quantitative measures. Thirdly, the role of wealth needs perhaps exploration too, as this also affects the consumption options over the life cycle. For example, the reason why we see little WTP-deviations for the group about to retire may be that even though this group faces decreases in annual income, they may wealth that compensates for this decrease and affects their WTP positively.

In the present study the cross-effect between the different attributes and current income groups is significant with the expected sign for some of the attributes. Most notably it is seen that WTP for the wildlife attributes is significantly lower for low income groups than for middle and high income groups, indicating that for these attributes WTP seems to increase by income but only until a certain level at which it stagnates. For the access attributes, the effect is not significant, indicating that access is less income dependent. This means that for the use-related attribute, access, there is hardly any income effect, thus the importance of this attribute is relatively larger among lower income groups than among higher groups as they state a significantly lower WTP for the wildlife preservation attributes. Opposite for the wildlife attributes, here WTP increases with income and more for the endangered species than for the common, i.e. more the less use-related the attribute. It is also worth noticing that relative to income, the high income group does not seem to gain more than poorer groups (expressed as WTP), thus relative to their income protection of wildlife and access to nature is relatively less important to them than to the rest of the population, and i.e. it is regressively distributed.

The future income effect is also seen to be highest and positive for the wildlife attributes, higher for the endangered than for the general wildlife, and not at all present for access. Again it indicates a regressive distribution, especially for the use related attribute. For future income effects we see that expected increases tend to be more important than expected decreases – a pattern which is mirrored in the analysis with students and almost retired respondents.

5. Concluding remarks

We formulated the hypothesis that respondents' stated WTP for environmental goods is based not only on their current income levels, but also on their expectations concerning their future household income. This hypothesis has found strong support in the results reported here, and the implications of this are strong. It suggests that the widespread difficulties in identifying a significant and positive income may simply reflect that the income measure applied in such tests has, i.e. current income levels of the individuals or households addressed, is simply a too poor representation of the income measure on which respondents base their answers.

The results furthermore raise the question of which income measure is to replace current income. This question is not addressed directly in this study, where a qualitative assessment of expectations of future income levels has been used. However, future research should pursue the option of having respondents address their expected future income level in absolute or relative, quantitative measures. In addition the role of wealth needs exploration too

Apart from these results, this study also carefully analyses the effects of current income and expected changes in future income on stated WTP for the different attributes. We find WTP to increase with income, but only until a certain income level and this effect is more pronounced for protection of endangered wildlife than general wildlife, which is again more pronounced than for access. This indicates that especially access is relatively more important to low-income groups. We also find future income to be relatively more important for stated WTP for the protection of wildlife attributes, but not for access. The effect is largest and positive if future income is expected to increase.

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