Testing Choice Theory Using Discrete Choice Experiments in Swiss Energy Policy

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Chapter 5

Reference Points for the Valuation of Risk Changes in Discrete Choice Experiments[1]

5.1 Introduction

Prospect theory and its variant, cumulative prospect theory, are the most established choice theories that accommodate empirical findings which contradict expected utility theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1991, 1992). The main elements of prospect theory are: (1) the distinction between an editing and a valuation phase in the choice process; (2) the s-shaped utility curve that determines the utility of an outcome; and (3) a weighting function that assigns weights to risky outcomes (Stommel, 2013; Tversky and Kahneman, 1992). The s-shaped utility curve is defined relative to a reference point that is characterized during the editing phase. It is concave for gains and convex for losses, implying diminishing sensitivity to both, and it is steeper for losses than for gains, reflecting loss aversion (Kahneman and Tversky, 1979). Some argue that dependency on reference points, i.e. stimuli that other stimuli are seen in relation to (Rosch, 1975), is the most novel element of prospect theory compared with earlier theories of choice behavior (Wakker, 2010).

The general acknowledgment of the importance of reference points, and the extensively investigated question of how people react to changes from an assumed reference point, stands in contrast to the lack of theory that explains the formation and determination of reference points (e.g. Koszegi and Rabin, 2006;

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[1]This chapter has been submitted to a journal for review.

Schmidt, 2003; Stommel, 2013). Most of the literature focuses on the effect of a specific reference point on choice. The reference point is usually defined in advance and assumed to be exogenously given (Stommel, 2013). A common problem of studies on reference points is that, in general, the reference point is unknown. Even if a hypothesis on the nature of a reference point exists in a specific situation, it may be difficult to empirically test for it, since the reference point itself is usually not directly observable. Most of the studies furthermore simply assume that the reference point equals the status quo (Arkes et al., 2008; Chen and Rao, 2002; De Moraes Ramos, Daamen, and Hoogendoorn, 2013; Genesove and Mayer, 2001; Hansson and Lagerkvist, 2014; He and Zhou, 2014; Hess, Rose, and Hensher, 2008; Heyman et al., 2004; Koetse and Brouwer, 2015; Odean, 1998; Seiler and Luchtenberg, 2014; Weber and Camerer, 1998). More recent theoretical advances focus on reference points that are based on subjective expectations about outcomes (Koszegi and Rabin, 2006), although a majority of the empirical studies that investigate expectations about outcomes precede this theoretical foundation (Abeler et al., 2011; Bartol and Martin, 1998; Chapman, 2000; Crawford and Meng, 2011; Hack and Bieberstein, 2014; Medvec, Madey, and Gilovich, 1995; Mellers, Schwartz, and Ritov, 1999; Ordóñez, 1998; Post et al., 2008; Saqib and Chan, 2015; Winer, 1986). Other studies define reference points as, among others, aspiration levels (Bogliacino and González-Gallo, 2015; Camerer et al., 1997; Fehr and Goette, 2007; Hack, Bieberstein, and Kraiczy, 2015; Heath, Huddart, and Lang, 1999; Heath, Larrick, and Wu, 1999; Lant and Mezias, 1992; Park, 2007; Sullivan and Kida, 1995); social comparisons (Fafchamps, Kebede, and Zizzo, 2015; Fiegenbaum, 1990); historical peaks (Annaert et al., 2008; Baker, Pan, and Wurgler, 2010; Gneezy, 2005; Phillips and Pohl, 2014); norms and ideals (Gómez-Mejía et al., 2007); or self-esteem (Gau and Viswanathan, 2008).

This study explores the existence of reference points other than the status quo in the context of a discrete choice experiment (DCE) involving the valuation of risk changes. Reference points in DCEs have frequently been studied in terms of the specifications of attribute levels and choice alternatives. Some studies, for example, have focused on attribute levels that are pivoted around an actual experience of respondents (e.g. Hess, Rose, and Hensher, 2008; Rose et al., 2008). Another stream of literature has examined the effect of a monetary attribute that is framed as either a cost or a gain (e.g. De Borger and Fosgerau, 2008; Koetse and Brouwer, 2015; Lanz et al., 2010; Stathopoulos and Hess, 2012; Viscusi and Huber, 2012). In contrast to the bulk of the literature, our study explores the importance of reference points that are induced independently before the actual

choice task. More specifically, we display two different risk ladders to two samples of respondents before asking them to value changes in risks in a DCE. We postulate that design features of these risk ladders serve as reference points. Risk ladders depict the risk in question together with other risks, covering different magnitudes of risk probabilities. These other risks serve for comparison and facilitate the assessment of the risk in question.

The use of risk ladders, and visual aids more generally, for the communication of risk probabilities to survey respondents is underresearched in the context of DCEs (Logar and Brouwer, 2017). It has been shown that graphical displays of actual risk levels enhance risk understanding, especially for risks with low probabilities (e.g. Bier, 2001; Viscusi, 1998). Various devices for the visual representation of risk have been tested in the stated preference literature (e.g. Corso, Hammitt, and Graham, 2001; Dekker et al., 2011; Lipkus and Hollands, 1999; Loomis and DuVair, 1993), of which the use of a risk ladder proved to be one of the most promising in terms of providing information on relative risks (e.g. Botzen and Bergh, 2012; Loomis and DuVair, 1993). Only a few studies examine the effect of different characteristics of risk ladders. Examples include Keller, Siegrist, and Visschers (2009), who study the effect of risk ladders that contain comparative risks compared with ladders that do not, and Sandman, Weinstein, and Miller (1994), who examine the effect of the relative location of the risk in question on the ladder. Although the latter authors found this effect to be significant, they were unable to distinguish this location effect from the effect of using different comparative risk levels, since both the location of the risky events and the range of comparative risk probabilities were altered simultaneously.

Our study setup allows us to isolate the effect of using different ranges of probabilities of comparative risks in risk ladders. The status quo probabilities of the risks to be valued are the same for both ladders that are shown to respondents, while the range of probabilities of the comparative risks varies. This enables us to attribute any possible differences between the two samples of respondents to the ranges of probabilities of comparative risks shown on the risk ladders, while controlling for the status quo risk level as a reference point. In this sense, the experiment tests for reference points other than the status quo. We hypothesize that other, comparative risks shown on the risk ladders serve as reference points, and hence argue for the existence of multiple reference points besides the status quo risk level of the actual risk valued.

The remainder of this study is structured as follows: Section 5.2 explains the theoretical background and specifies the hypotheses. Section 5.3 describes the

case study and the DCE design. Section 5.4 presents the econometric modeling framework and Section 5.5 the results. Finally, Section 5.6 closes with a discussion and conclusions.

5.2 Theoretical framework and hypotheses

Following the original text of Kahneman and Tversky (1979), which states that reference points do not necessarily have to coincide with the status quo, but can be influenced by offered prospects, expectations, comparisons and contextual factors (Carter and McBride, 2013), we posit that the comparative risks shown in a risk ladder serve as reference points, as suggested by Keller, Siegrist, and Visschers (2009) and Lipkus and Hollands (1999). Therefore, we expect that also the comparative risks influence individuals' perception of the risk in question and hence the welfare estimates for a change in this risk.

Figure 5.1 schematically illustrates how different risk ladders may provide different reference points. The risk ladders in Figure 5.1 differ with respect to the range of comparative risks they display. Risk ladder (a) in Figure 5.1 has a wide range of comparative risks and reaches a high risk endpoint (the risk shown on top of the ladder), whereas risk ladder (b) has a narrow range of comparative risks and only rises to a low risk endpoint. Both ladders start from the same risk levels depicted at the bottom of the ladders. Since we argue that comparative risks serve as reference points, we expect to find differences in public preferences and welfare estimates of the risks in question between individuals who are subjected to a risk ladder as in (a) and respondents presented with a ladder as in (b). A comparison of the two risk ladder treatments allows us to isolate the effect of comparative risks from the positioning of the risks that are to be valued in the risk ladders, which are kept constant in both risk ladders. This is in contrast to the experiment by Sandman, Weinstein, and Miller (1994), who simultaneously change the range of risk probabilities shown in the ladder and the location of the risks that were valued.

Figure 5.2 illustrates the effects that different risk ladders, as shown in Figure 5.1, are expected to have on utility. Graph (a) represents the situation in which the status quo is used as a reference point, and graphs (b) and (c) show the cases of high and low comparative risk probabilities which serve as reference points. The graphs in Figure 5.2 depict our main hypothesis for the case of an increase and a reduction in risk that is to be valued. The main driver of differences between the graphs is the position of the reference point, i.e. the intersection of the
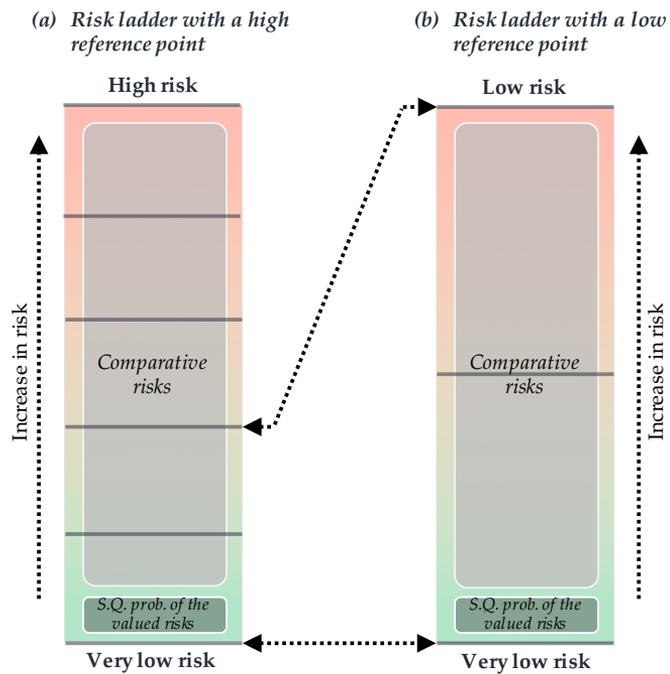
(a) *Risk ladder with a high reference point*

(b) *Risk ladder with a low reference point*

FIGURE 5.1: Schematic illustration of two risk ladders that differ in the range of comparative risks

same s-shaped utility curve with the x-axis (RP_{SQ}, RP_H, RP_L). Although the reference points separate gains from losses in all graphs, their magnitudes, i.e. the associated risk probabilities, differ between the graphs. Graph (a) depicts the changes in utility that are expected under the traditional assumption that the status quo of the risk to be valued serves as a reference point (RP_{SQ}). An increase in risk from RP_{SQ} to r_1 results in a deterioration compared with the status quo, i.e. the increase in risk is perceived as a loss. The opposite holds for a decrease in risk from RP_{SQ} to r_2. The latter is a positive change from the SQ reference point, and is therefore located in the gains domain. In other words, such a reference point divides not only mental gains from losses, but also the actual risk gains (decrease in risk) from the actual risk losses (increase in risk). The differences in the risk ladders as schematically shown in Figure 5.1 are not expected to affect the utility in graph (a) of Figure 5.2, since the ladders do not differ with respect to the status quo levels of the valued risks. Our alternative hypothesis is schematically depicted in graphs (b) and (c) in Figure 5.2. The comparative risks of the risk ladders are assumed to serve as reference points for the valuation of changes in the risks of importance. High and low comparative risks are hence expected to have different impacts on utility. U_H in graph (b) represents the utility function that corresponds to (a risk ladder with) a high risk reference point (RP_H) (such as risk ladder (a) in Figure 5.1). A decrease in risk from SQ to r_2 and an increase in risk from SQ to r_1 result in a change in utility equal to the magnitude $u_3 - u_4$ and $u_4 - u_5$, respectively. In contrast, U_L in graph (c) is associated with (a risk ladder with) a low risk reference point (RP_L), that is, the risk has a relatively low probability of occurrence (such as risk ladder (b) in Figure 5.1). In this case, a decrease and an increase in risk result in a change of utility of $u_6 - u_7$ and $u_7 - u_8$, respectively. The comparison of graphs (b) and (c) shows that equal changes in risk ($r_1 - SQ$ and $SQ - r_2$) are expected to result in stronger effects on utility in the case of a low risk reference point compared with a high risk reference point, i.e. $u_6 - u_7 > u_3 - u_4$ and $u_7 - u_8 > u_4 - u_5$. In order to empirically assess this effect, we first test for equality of the entire vector of estimated preference parameters between the samples using the Swait-Louviere test procedure:

$$H_0^1 : \hat{\beta}_{RP_H} = \hat{\beta}_{RP_L}. \tag{5.1}$$

More specifically, a larger change in utility is expected to be reflected in a higher marginal willingness-to-pay (MWTP) for a change in risk. Therefore, we subsequently also test the hypothesis, applying the Poe, Girarud, and Loomis (2005) test procedure, that the wider the range of probabilities of comparative risks on
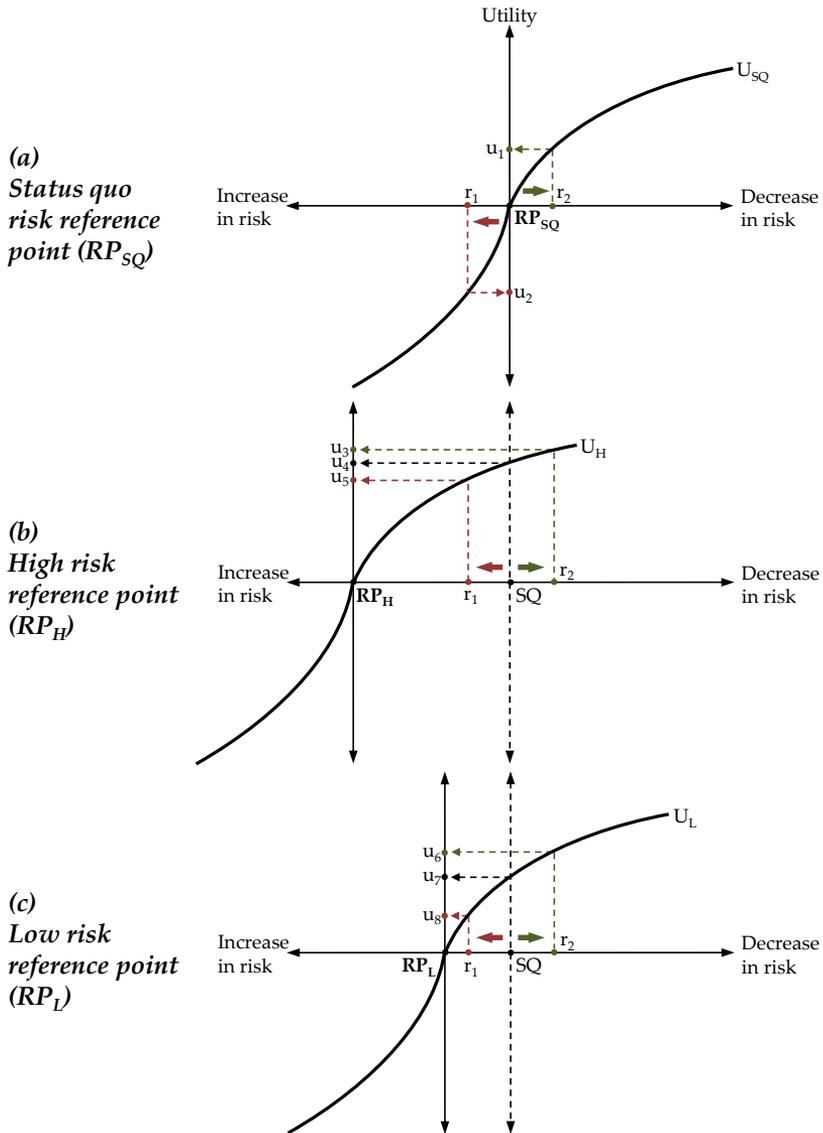
FIGURE 5.2: Expected changes in utility associated with a status quo reference point (a), a high risk reference point (b), and a low risk reference point (c)

a risk ladder, with the position of the status quo risk remaining fixed, the lower the MWTP for a change in risk, ceteris paribus. The null hypothesis is specified as follows:

$$H_0^2 : MWTP_{RP_H} \geq MWTP_{RP_L}. \tag{5.2}$$

5.3   Case-study description

5.3.1   Choice experiment

An online DCE was developed that was directly related to Swiss energy policy which aims to replace nuclear power with other energy sources, including hydropower (SFOE, 2012). The DCE pivots on the external effects of a hypothetical expansion of hydropower, which is the most established renewable source of electricity in the country. The set of choice attributes reflects direct environmental externalities associated with hydropower, and indirect external effects caused by the phasing out of nuclear power.

The DCE design includes three choice alternatives: two hydropower expansion scenarios and a status quo alternative. The expansion scenarios are unlabeled. The alternatives are characterized by four attributes with the corresponding attribute levels as summarized in Table 5.1.

The first attribute describes the type of hydropower expansion, i.e. whether the expansion is based on constructing new hydropower plants or extending existing facilities. This attribute is closely related to the negative environmental impacts of hydropower. It was explained to respondents that new constructions result in stronger environmental externalities than the extension of existing facilities. Two attributes describe the expected lifetime risk of dying resulting from an accident in an electricity production facility. The first is the (increase in the) risk of a dam breach that would result if hydropower electricity production were expanded. It was explained to the respondents that the risk of a dam breach would be higher if the expansion were based on hydropower plants involving only dams (40% increase), whereas a smaller risk increase would result if the expansion were based on a combination of plants with and without dams (20% increase). The second risk attribute is the (decrease in the) lifetime risk from a nuclear accident, which is an indirect externality of expanding hydropower production. Again, two levels are included in the expansion alternatives. A decrease in nuclear risk by 30% implies that the three oldest (out of a total of five) nuclear power stations in Switzerland are switched off. A decrease in nuclear risk by 60%

TABLE 5.1: Attributes and attribute levels in the DCE

Attribute	Attribute levels in hypothetical alternatives	Attribute levels in status quo alternative
Type of hydropower expansion	Extending existing hydropower plants	No hydropower expansion
	Construction of new hydropower plants	
Lifetime risk of death from a dam breach	20% increase in risk (1 in 750,000 people are expected to die)	Current risk (1 in 900,000 people are expected to die)
	40% increase in risk (1 in 650,000 people are expected to die)	
Lifetime risk of death from a nuclear accident	60% decrease in risk (1 in 7 million people are expected to die)	Current risk (1 in 3 million people are expected to die)
	30% decrease in risk (1 in 4 million people are expected to die)	
Increase in household's annual electricity bill (CHF)	100, 200, 300, 400, 500, 600	No change in the annual electricity bill

means that all five Swiss nuclear power reactors are switched off. Since there are two reactors in France that are located within a distance of less than 40km to the Swiss border, the resulting lifetime risk levels from a nuclear accident do not reduce to zero. The lifetime risk levels are calculated based on risk estimates provided by Burgherr and Hirschberg (2008, 2014) and Hirschberg et al. (2016). Adjusting these estimates for the GWyr of electricity produced in Switzerland by hydropower and nuclear power, as well as for the size and life expectancy of the Swiss population, gives the estimates of the lifetime risk of dying for an average Swiss person from a hydropower or a nuclear power accident. The final attribute is an increase in a household's yearly electricity bill, with levels ranging from 100 Swiss Francs (CHF) to 600 CHF[2]. Figure 5.3 shows an example of a choice task.

5.3.2 Risk ladders

Figure 5.4 shows the two actual risk ladders that were developed and presented to the two samples of respondents in order to enhance their understanding of the current risks of a dam breach and a nuclear accident. The ladders were shown

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[2]1 CHF equaled roughly 1 United States Dollar (USD) in 2016 (OECD, 2017). The average annual electricity bill per household in Switzerland was 930 CHF in 2015 (Elcom, 2014).

	A) Expansion	B) Expansion	C) No expansion
Type of hydropower expansion	New construction	Extension	No expansion
Risk of dying from a dam breach	+40% risk (1 in 650,000 people)	+20% risk (1 in 750,000 people)	Current risk (1 in 900,000 people)
Risk of dying from a nuclear accident	-30% risk (1 in 4,000,000 people)	-60% risk (1 in 7,000,000 people)	Current risk (1 in 3,000,000 people)
Increase in your household's yearly electricity bill	+200 CHF/year	+300 CHF/year	+0 CHF/year

FIGURE 5.3: Choice task example

before the DCE and used in combination with textual information, as this has proven to be one of the most effective forms to communicate the risks involved (Connelly and Knuth, 1998). The textual information explained that the risks shown on the risk ladder are scientific estimates of average risks that consider both the immediate and the long-term effects. The same risk ladder was shown to respondents three times: (i) when the current risk level of a nuclear accident and a dam failure was introduced; (ii) when the change in hydropower risk resulting from a hydropower expansion was explained; and (iii) again when the change in nuclear risk due to such an expansion was described. In the last two cases, an arrow next to the current hydropower or nuclear risks indicated the direction of a risk change in case a hydropower expansion would take place, as shown in Figure 5.4.
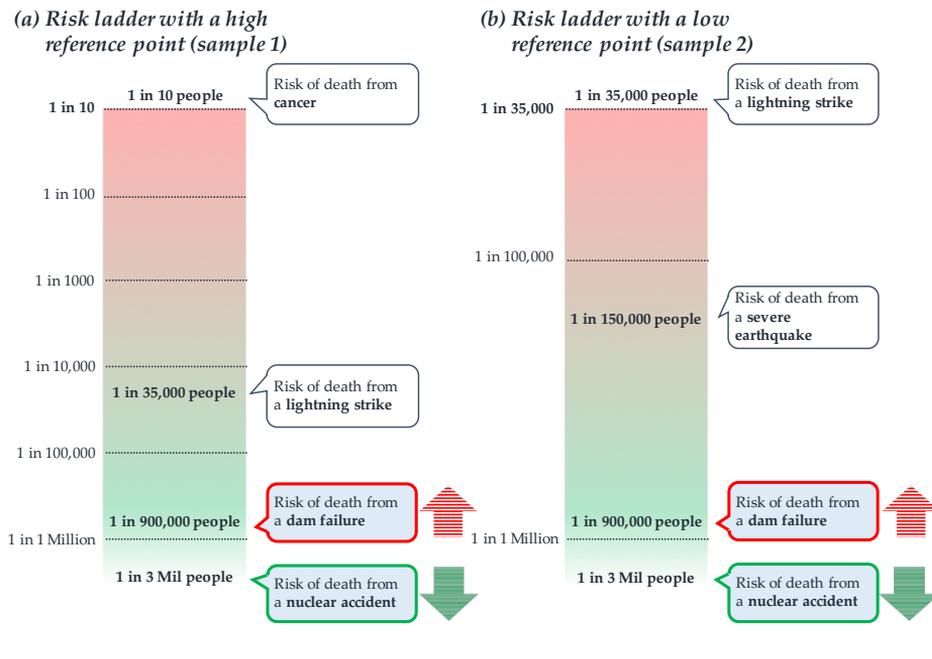

FIGURE 5.4: Risk ladders shown to sample 1 (a) and sample 2 (b)

Since we aim to isolate the effect of the range of probabilities of the comparative risks presented on the risk ladders, half of the respondents received risk ladder (a) in Figure 5.4 (sample 1) and the other half was shown risk ladder (b) in Figure 5.4 (sample 2). Both risk ladders apply a logarithmic scale, and show

the lifetime risk from a dam failure and a nuclear accident in the same location, i.e. at the bottom of the ladder. Both also compare the status quo risks of dying from a dam failure and a nuclear accident with two other commonly known risks, one of which is positioned at the top of the risk ladder (endpoint risk) and another at an intermediate level between the upper endpoint and the status quo levels of hydropower and nuclear risks (middle point risk). The main difference between the two risk ladders is the range of probabilities of these comparative risks. The endpoint risk probabilities on the risk ladders are 1 in 10 and 1 in 35,000 in sample 1 and 2, respectively, while the midpoint risk probabilities are 1 in 35,000 and 1 in 150,000[3], respectively.

The comparative risks on the two risk ladders differ with respect to the nature of the risks involved. In order to ensure that the risk ladders are comparable and that the findings can be traced back to the intended treatment effect, i.e. the differences in the range of probabilities of the comparative risks, we carefully selected comparative risks that are as similar as possible in terms of other factors that explain public risk perception. One such key determinant is controllability (Slovic, 1987). We control for this by asking respondents about their perceived degree of controllability of the comparative risks shown on the risk ladders. Although there is some evidence in the value of statistical life (VSL) literature that respondents may be willing to pay a cancer premium (e.g. Alberini and Ščasný, 2011, 2013; Van Houtven, Sullivan, and Dockins, 2008; Viscusi, Huber, and Bell, 2014), just as many studies have failed to find such an effect or found mixed results (see McDonald et al. (2016) or Tsuge, Kishimoto, and Takeuchi (2005) for a review). Cancer was included as a high endpoint risk because it is commonly known.

Hence, with the exception of the two different risk ladders, all other features of the DCE and the accompanying survey were identical.

5.3.3 Covariates

In addition to the stated choice data and respondents' sociodemographic characteristics and environmental behavior, and following Hartmann et al. (2013), the survey gathered information on risk attitudes, perceptions and fears of hydropower and nuclear power accidents. Hartmann et al. (2013) link perceived threat level, coping efficacy, fear arousal, and fear control associated with opposition to nuclear power and support for green energy based on the psychological frameworks of Protection Motivation Theory (PMT) (Maddux and Rogers, 1983; Rogers, 1983), the Extended Parallel Processing Model (EPPM) (Witte, 1992), and

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[3]These risks were calculated based on data from the Swiss Federal Statistical Office (2014), the Swiss Seismological Service (2016), and a review paper on lightning risks (Ritenour et al., 2008).

theories including affective drivers (e.g. Dillard, 1994; Peters and Slovic, 1996; Slovic et al., 2007). There exists a large number of other studies focusing on the relationship between the perceived threat of nuclear power and nuclear power adoption (e.g. Greenberg and Truelove, 2011; Hartmann et al., 2013; Stoutenborough, Sturgess, and Vedlitz, 2013; Tanaka, 2004; Visschers, Keller, and Siegrist, 2011; Whitfield et al., 2009) and the role of affect associated with nuclear power acceptance (e.g. Finucane et al., 2000; Peters and Slovic, 1996, 2007; Slovic et al., 2007; Visschers, Keller, and Siegrist, 2011). However, Hartmann et al. (2013) is the only study we know that considers the relationship between attitudes, perceptions and fear associated with nuclear power and the preferences for renewable sources of energy. Contrary to Hartmann et al. (2013), we assess the influence of these factors on hydropower expansion choices in a DCE. The most important variables that are used in the choice models are described in Table 5.2.

5.3.4 Design generation and data collection

A series of pretests were conducted before the main survey. First, a sample of 20 participants were asked to answer a paper-and-pencil version of the survey followed by a personal interview. In the second stage of the pretest series, a representative sample of 220 respondents from the German-speaking part of Switzerland were asked to complete a first version of the online survey, followed by a second final online pretest round with a new sample of 350 respondents. The respondents for the pretests and the main survey were recruited by Intervista AG, a market research company with a panel of 50,000 registered individuals throughout Switzerland. Apart from testing public understanding of the survey as a whole, and the DCE in particular, the main goal of the online pretests was to derive prior estimates for the attribute coefficients.

A D-efficient DCE design was generated for the final survey in Ngene version 1.1.2. Efficient designs have been shown to be superior to orthogonal designs in terms of either improving the reliability of the estimated parameters given a certain sample size or reducing the sample size needed for a given reliability of parameter estimates (e.g. Hensher, Rose, and Greene, 2015; Rose and Bliemer, 2013). Bayesian priors were used, which follow a random instead of a fixed distribution, bounded by the priors obtained from the pretests. In total, two blocks

TABLE 5.2: Explanatory variables included in the choice models

Variables	Questions asked in the survey	Coding of variables
Perceived threat of a dam breach	a) How likely is in your view a dam breach in Switzerland? b) How strongly would you be affected by a dam breach?	0-20 scale constructed by summing up a) and b), both measured on a 0-10 scale where 0='very unlikely/not at all' and 10='very likely/very much'
Perceived threat of a nuclear accident	a) How likely is in your view a nuclear accident in Switzerland? b) How strongly would you be affected by a nuclear accident?	0-20 scale constructed by summing up a) and b), both measured on a 0-10 scale where 0='very unlikely/not at all' and 10='very likely/very much'
Fear of a dam breach	How concerned are you about a dam breach?	0-10 scale where 0='not at all' and 10='very much'
Fear of a nuclear accident	How concerned are you about a nuclear accident?	0-10 scale where 0='not at all' and 10='very much'
Self-reported effect of risk ladder on hydropower risk perception	Has the risk ladder changed your perception of hydropower risk?	1=yes; 0=no
Self-reported effect of risk ladder on nuclear risk perception	Has the risk ladder changed your perception of nuclear risk?	1=yes; 0=no
Risk attitude	Do you consider yourself, in general, a person who takes risks or do you prefer to avoid taking risks?	0-10 scale where 0='not at all willing to take risks' and 10='very willing to take risks'
Endpoint taken into consideration	Have you compared the risks of dying from a dam breach and a nuclear accident with the risk depicted at the endpoint of the risk ladder?	1=yes; 0=no
Middle point taken into consideration	Have you compared the risks of dying from a dam breach and a nuclear accident with the risk depicted in the middle of the risk ladder?	1=yes; 0=no
Member of an environmental organization	Do you or anyone in your household financially support an environmental organization?	1=yes; 0=no
Income	What is your household's gross annual income?	1=higher than the sample average; 0=sample average or lower
Female	What is your gender?	1=female; 0=male
Age	When were you born?	15-84

of choice tasks were designed. These were randomly assigned across respondents. Each respondent answered seven choice tasks. The final DCE was administered in June 2016 to a representative sample of 495 respondents belonging to the German- and French-speaking Swiss population.

5.4 Econometric models and testing procedures

Choice models have their roots in Lancaster's theory of consumer choice, which posits that utility from a good is derived from the good's characteristics or attributes (Lancaster, 1966). Based on this theory, the utility of an alternative in a choice model is defined in terms of its attributes included in the choice tasks (and other variables). The usual econometric specification follows McFadden's random utility theory (McFadden, 1974), which assumes informational asymmetry between the respondent and analyst. More formally, the utility derived by respondent n from alternative i in choice situation t is:

$$U_{nit} = V_{nit} + \varepsilon_{nit},\qquad(5.3)$$

where the error term ε_{nit} is unknown to the analyst. The unknown error term is responsible for the difference between the respondent's actual utility U_{nit} and the utility V_{nit} observed by the analyst. Distributional assumptions about the error term drive the distinction between the different types of models. For our analysis, we use the most commonly assumed iid extreme value distribution. The standard probability representation of the multinomial logit (MNL) is obtained by defining a probabilistic condition for an individual n to choose alternative i over alternative j and combining this condition with equation 5.3. The result is shown in equation 5.4:

$$P_{nit}(\beta) = \frac{e^{\beta\prime_n x_{nit}}}{\sum_j e^{\beta\prime_n x_{njt}}},\qquad(5.4)$$

where the observed utility V_{nit} of equation 5.3 is replaced by a linear specification of a vector of parameters β and observed variables x_{nit}. We estimate mixed logit (MXL) models, which relax the restrictive assumptions that unobservable factors are uncorrelated across alternatives and choice tasks, and allow for taste heterogeneity between respondents:

$$P_{nit}(\beta) = \int \left(\frac{e^{\beta\prime_n x_{nit}}}{\sum_j e^{\beta\prime_n x_{njt}}} \right) f(\beta) d\beta.\qquad(5.5)$$

The density $f(\beta)$ can follow any distribution specified by the analyst. We assume $f(\beta)$ to follow a normal distribution, as this can be motivated by the central limit theorem (Hensher and Greene, 2002). Estimation of equation 5.5 requires simulation. For a predefined number of draws, a value of β is estimated, and a choice probability is calculated. The average of these probabilities is then taken to estimate equation 5.5 (Hensher, Rose, and Greene, 2015; Train, 2009). Finally, the MXL model is estimated employing maximum likelihood estimation on the simulated log-likelihood function.

We apply the test procedure suggested by Swait and Louviere (1993) to test our first hypothesis. The Swait-Louviere procedure tests for equality of the entire vector of preference parameters between our two samples. To assess the second hypothesis: whether the different risk ladders have an effect on welfare estimates for a change in risk, we use the Poe procedure (Poe, Girarud, and Loomis, 2005) to test for differences between MWTP values for a change in hydropower and nuclear power risk derived from the two samples (see Appendix 5.A for details).

5.5 Results

5.5.1 Descriptive statistics

Both samples are drawn from the German- and French speaking population in Switzerland, accounting for roughly 95% of the total Swiss population. 25 respondents who chose the status quo option in all choice tasks were identified as protest responses (e.g. Brouwer and Martín-Ortega, 2012). After excluding these respondents from the analysis, the remaining two samples consist of 470 individuals in total. The survey response rate is 16.3%. Table 5.3 compares the characteristics of the two samples and the target population from which they were drawn. The sociodemographic characteristics of samples 1 and 2 are very similar and representative of the general population due to the applied sampling strategy, which ensured representativeness and similarity with respect to gender, age, linguistic background, and education. There are only minor differences between the two samples and the population from which the samples were drawn, such as the share of students and the share of respondents holding a university degree, which are slightly higher in the two samples compared with the target population, and the slightly lower unemployment rates in the two samples.

The samples' general risk attitudes and hydropower and nuclear power risk perception are presented in Figure 5.5. Figure 5.5 provides two main insights into

TABLE 5.3: Sociodemographic characteristics of the study samples and target population

	Sample 1 (High reference point)	Sample 2 (Low reference point)	Population[a]
Female (%)	53.2	49.8	50.5
Average age	47.2	47.9	41.5
French-speaking origin (%)	22.6	25.5	23.0
Average household size	2.5	2.5	2.3
University degree (Bachelor's, Master's, PhD) (%)	34.5	37.4	27.1
Average annual gross household income (CHF)	98,174[b]	101,523[b]	120,624
Unemployed (%)	1.7	2.1	4.3
Retired (%)	20.0	23.4	17.9
Student (%)	10.6	7.7	5.7
N	235	235	7,887,303

Notes: [a]SFOE (2016).
[b]This is an approximation based on midpoint estimates as respondents were asked to indicate in which income group their gross household income falls.
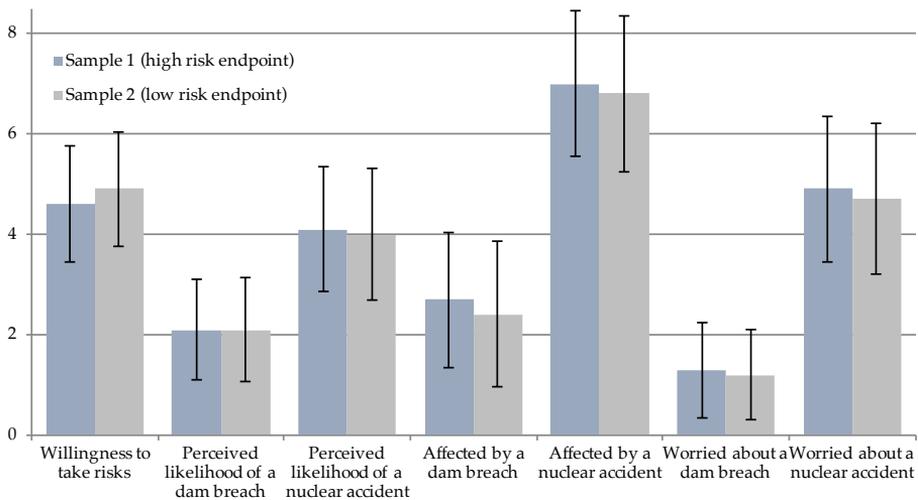

FIGURE 5.5: Descriptive statistics of risk attitudes and perceptions, from 0 (very unlikely / not at all) to 10 (very likely / very much)[4]

public perception of hydropower and nuclear risk. First, the differences between sample 1 and sample 2 seem to be small. The non-parametric Mann-Whitney test cannot reject the equality of all variables between the two samples at the 10% significance level, except for the perceived threat severity of a dam breach (affected by a dam breach). Second, the perceived threat severity, the perceived probability of threat occurrence (likelihood of a dam breach/nuclear accident), and the fear of an accident (worried about a dam breach/nuclear accident) are significantly higher for nuclear power than for hydropower. Respondents' perceived controllability of the comparative risks on the risk ladders was measured on a 5-point Likert scale, and are presented in Table 5.4.

TABLE 5.4: Perceived controllability of the comparative end-point and middle point risks

	To what extent do you agree with the following statement? *'There is nothing I can personally do to reduce the following risks'*			
	Endpoint risk Sample 1 (cancer)	Endpoint risk Sample 2 (lightning strike)	Middle point risk Sample 1 (lightning strike)	Middle point risk Sample 2 (severe earthquake)
Strongly disagree (%)	20.9	21.7	14.9	3.0
Disagree (%)	44.7	40.0	33.6	8.9
Neither agree nor disagree (%)	15.7	9.4	15.3	14.5
Agree (%)	14.0	17.9	21.7	23.4
Strongly agree (%)	4.7	11.1	14.5	50.2

Table 5.4 compares the perceived controllability of the endpoint and the middle point risks displayed on the risk ladders. Although the two endpoint risks differ with respect to their type and probability, the controllability of the two hazards is perceived to be similar: 65.6% and 61.7% of the respondents disagree or strongly disagree with the statement that they cannot do anything to reduce the risk of dying of cancer and dying from a lightning strike in sample 1 and 2, respectively. The share of participants who agree or completely agree with the statement is slightly higher for the risk of a lightning strike (29.0%) than for the risk of cancer (18.7%). More respondents neither agree nor disagree with the statement for the latter risk.

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[4]Error bars reflect one standard deviation.

A somewhat different pattern emerges when comparing the middle point risks of the two risk ladders. More respondents agree or completely agree that they can influence the risk of dying from a severe earthquake than the risk of dying from a lightning strike. The opposite result holds for participants who disagree or strongly disagree with the statement, whereas the share of respondents who neither agree nor disagree is similar for both risks. In conclusion, these results suggest reasonable comparability of the risks shown to the two samples, although the endpoint risks seem to be more comparable than the middle point risks.

After displaying one of the two risk ladders, we asked the survey respondents whether the ladder had changed their perception of hydropower and nuclear power risks. The majority of respondents in both samples stated that the risk ladder had no effect on their risk perception. A similar share of respondents in samples 1 and 2 reported a change in nuclear risk perception induced by the risk ladders: 24.3% and 22.1%, respectively. However, the risk ladder with a wide range of comparative risks (high risk endpoint) had a somewhat stronger effect on hydropower risk perception (21.7% of the respondents report a change in risk perception) than the risk ladder with low comparative risk probabilities (14.9% report a change).

5.5.2 Choice model results

The results of the estimated MXL models are shown in Table 5.5. The second and third column report the results estimated for sample 1, and the fourth and fifth column for sample 2. Both models are estimated using 5,000 Halton draws.

TABLE 5.5: Estimated mixed logit models

Variables	Sample 1: Risk ladder with a high reference point		Sample 2: Risk ladder with a low reference point	
	Coeff.	s.e.	Coeff.	s.e.
Mean estimates of random and non-random parameters				
Alternative-specific constant (ASC)	-2.701**	1.162	-0.483	1.477
Construction of new hydropower plants	-0.446***	0.156	-0.540***	0.157
Increase in risk of dying from a dam breach by 40%	-0.928***	0.282	-1.172***	0.259
Decrease in risk of dying from a nuclear accident by 60%	0.531**	0.252	1.127***	0.287
Increase in annual electricity bill (in 100 CHF)	-0.408***	0.047	-0.354***	0.049

Variables	Sample 1: Risk ladder with a high reference point		Sample 2: Risk ladder with a low reference point	
	Coeff.	s.e.	Coeff.	s.e.
Increase in annual electricity bill * Income above sample average	0.007	0.061	-0.035	0.065
Perceived threat of a dam breach (before the risk ladder)	-0.112*	0.067	-0.161*	0.084
Perceived threat of a nuclear accident (before the risk ladder)	-0.016	0.077	0.142*	0.086
How concerned are you about a dam breach? (before the risk ladder)	-0.235*	0.129	-0.231	0.184
How concerned are you about a nuclear accident? (before the risk ladder)	0.194	0.119	0.304**	0.142
Has the risk ladder changed your perception of the risk of a dam breach? (1=yes, 0=no)	1.631***	0.627	0.032	0.846
Has the risk ladder changed your perception of the risk of a nuclear accident? (1=yes, 0=no)	-1.158**	0.566	-0.260	0.732
Endpoint risk taken into consideration (1=yes, 0=no)	0.284	0.574	0.199	0.967
Middle point risk taken into consideration (1=yes, 0=no)	0.817	1.041	-0.573	0.915
Risk attitude	0.120	0.101	0.095	0.126
Member of an environmental organization (1=yes, 0=no)	1.243***	0.472	2.416***	0.635
Member of an environmental organization * Construction of new hydropower plants	-0.563**	0.231	-0.728***	0.238
Female (1=yes, 0=no)	-0.638	0.477	-1.469**	0.605
Age	0.012	0.014	0.029	0.018
Age * Increase in risk of dying from a dam breach by 40%	0.013**	0.006	0.019***	0.005
Age * Increase in risk of dying from a nuclear accident by 60%	0.004	0.005	-0.008	0.005
Standard deviations of random parameters				
ASC	2.434***	0.285	3.186***	0.357
Construction of new hydropower plants	1.298***	0.140	1.292***	0.144
Increase of risk of dying from a dam breach by 40%	0.847***	0.130	0.555***	0.154
Decrease of risk of dying from a nuclear accident by 60%	0.567***	0.142	0.811***	0.137
Model characteristics				
Number of observations	1645		1645	
Log-likelihood (restricted)	-1807.217		-1807.217	

Variables	Sample 1: Risk ladder with a high reference point		Sample 2: Risk ladder with a low reference point	
	Coeff.	s.e.	Coeff.	s.e.
Log-likelihood (unrestricted)	-1259.635		-1202.615	
AIC/N	1.562		1.493	
BIC/N	1.644		1.575	
McFadden's pseudo R^2	0.303		0.335	

Notes: ***$p<0.01$, **$p<0.05$, *$p<0.1$.
AIC: Akaike Information Criteria; BIC: Bayesian Information Criteria.

The two choice models perform generally well according to the AIC, BIC, and pseudo-R^2 statistics, although the model based on sample 2 has a slightly better fit. The standard deviations of the random parameters are highly significant in both models, suggesting that preferences for the non-monetary choice attributes vary across individual respondents.

Many of the coefficients are similar between the two samples, and reveal common drivers of preferences for the hydropower expansion scenarios. All attributes have the expected signs and are highly significant. Compared with extending existing plants, the construction of new hydropower plants decreases the likelihood of choosing a hydropower expansion scenario, since the construction of new facilities has a stronger detrimental environmental effect than the extension of existing facilities. An increase in the risk of dying from a dam breach by 40% compared with an increase of 20% has a negative effect on the choice probability, whereas a decrease in the risk of dying due to a nuclear accident by 60% compared with 30% increases the probability of choosing a hydropower expansion scenario. Although the price attribute is, as expected, negative and statistically significant, its interaction with a binary variable that equals 1 if a respondent's income is above the sample average is not statistically significance. In other words, the price sensitivity does not seem to depend on a respondent's income, i.e. the choices of respondents with a high income are not significantly differently affected by an increase in the annual electricity bill than choices of respondents with an average or lower than average income. Although the signs of the significant coefficients are as expected, the coefficients for a perceived threat of hydropower and nuclear risks are only weakly significant, or insignificant in the case of a perceived threat of a dam breach in sample 1. They are negative if they relate to hydropower (risk increase) and positive if they relate to nuclear power (risk reduction). Respondents who perceive a dam breach (nuclear power accident) as a high threat are hence less likely (more likely) to choose a

hydropower expansion scenario because it involves an increase (decrease) in hydropower (nuclear power) risk. The same logic holds for the coefficients for how concerned respondents are about a dam breach or a nuclear accident, although this effect is not significant in either sample. Contrary to the perceived risks, general risk attitudes have no significant impact on respondents' choices in the two samples. The higher importance of risk perception than risk attitude has also been reported in previous studies (e.g. Slovic and Weber, 2011; Weber and Milliman, 1997). In order to control for the effect of reference points other than the status quo, we included two binary variables that indicate whether respondents considered the endpoint or middle point risk shown on the risk ladder in their choice process. Neither of these variables has a significant effect on stated choices.

The sociodemographic characteristics reveal that female respondents in sample 2 prefer the status quo to the expansion scenarios. Note that this effect persists even when gender-specific risk effects are controlled for by including interaction terms between gender and the hydropower and nuclear risk attributes, and while controlling for interaction effects between gender and the self-reported effect of the risk ladder on respondents' risk perceptions. All of these interaction terms never reach significance and are not included in the final models. Age interacted with the increase in the risk of a dam breach results in a significant positive coefficient, indicating that older respondents are less concerned about an increase in hydropower risk than younger respondents, possibly reflecting a higher level of trust in hydropower by older generations. Members of an environmental organization have a higher preference for hydropower expansion scenarios than for the status quo. This holds even if an interaction term between membership of an environmental organization and the construction of new hydropower plants (involving stronger negative environmental effects) is included. This latter interaction term is, as expected, significant and negative.

Turning to the main differences between the two samples, first, the ASC is highly significant and negative for sample 1, but not significant for sample 2. This indicates that respondents in sample 2 are indifferent between the expansion scenarios and the status quo, and made their choice exclusively on the basis of the presented attributes. In contrast, since the ASC was part of the status quo utility specification, respondents in sample 1 prefer an expansion of hydropower over the status quo. This may be an indication for the status quo to be of importance as a reference point in sample 1 but not in sample 2. Second, with the exception of the price attribute, the magnitudes of the attribute coefficients are

higher for sample 2 than for sample 1, suggesting a choice process that is more strongly influenced by the attributes. Nevertheless, the coefficients and their standard errors overlap with the exception of the nuclear risk attribute.

Finally, the coefficients for the variables indicating whether the risk ladder has changed respondents' risk perception are only significant in sample 1. This means that the impact of the risk ladder on risk perception is more relevant for the choice process of respondents in sample 1 than in sample 2, although the difference in the share of respondents who reported a change in risk perception due to the risk ladders is small between the two samples and negligible in the case of nuclear risk (see Section 5.5.1). The change in risk perception induced by the risk ladders has a positive effect on the probability of choosing an expansion scenario in the case of hydropower risk and a negative effect in the case of nuclear risk. This is most likely because a higher share of respondents stated that the risk ladder decreased their risk perception than those who stated the opposite. This holds for both hydropower and nuclear risks. That is, more respondents seemed to initially overestimate the actual risk levels. As a result, if the risk ladder decreased the perception of hydropower risk, a positive effect on choosing an expansion scenario is expected. The opposite effect is expected for nuclear power risk.

5.5.3   Hypotheses test results

Our main hypothesis states that a change in risks depicted on a risk ladder with a narrow range of comparative risks (sample 2) has a larger effect on utility and choices than a change in risks shown on a risk ladder with a wide range of comparative risks (sample 1). As a first test for the equality of the parameters between the two samples, we ran the Swait-Louviere test procedure. The results show that neither the equality of preference parameters nor the equality of scale parameters between samples 1 and 2 can be rejected (the outcome of the LR test statistic is 28.27 and 0.51 with corresponding p-values of 0.35 and 0.47 for the first and second test stage, respectively).

As mentioned, the magnitude of the attribute coefficients are higher for both risks in sample 2 than in sample 1, albeit significantly larger only for the case of nuclear risk. A more formal test of our hypothesis is based on the comparison of MWTP values, since we expect the MWTP for changes in nuclear and hydropower risk to be significantly higher for sample 2 than sample 1. The MWTP values estimated in preference-space based on the choice models are reported

in Table 5.6. The MWTP values correspond to an increase in an average household's annual electricity bill of between 14% and 34%.

TABLE 5.6: MWTP estimates for the risk attributes (CHF per household per year)

Choice attributes	Sample 1: High risk reference point ladder		Sample 2: Low risk reference point ladder	
	MWTP	s.e.	MWTP	s.e.
Increase if the risk of dying from a dam breach by 20% relative to 40%	227.33***	73.95	313.39***	86.80
Decrease in the risk of dying from a nuclear accident by 60% relative to 30%	130.01**	65.42	318.62***	96.63

Notes: ***$p<0.01$, **$p<0.05$, *$p<0.1$.
          Standard errors are based on the Krinsky and Robb (1986) method using 10,000 draws.

At first sight, Table 5.6 supports our hypothesis, since the MWTP values for the risk attributes in sample 2 are consistently higher than those of sample 1. To test whether the differences are statistically significant, we apply the complete combinatorial method suggested by Poe, Girarud, and Loomis (2005). The outcome of this test indicates that our null hypothesis of equality of the MWTP values between the two samples can be rejected for the nuclear risk attribute (p=0.061) but not for the hydropower risk attribute (p=0.239). Therefore, the two different risk ladders only seem to have a significantly different effect on MWTP for a change in nuclear risk.

5.6   Discussion and conclusions

The results obtained in this study are partly in line with our theoretical expectations of comparative risk probabilities in risk ladders to serve as reference points. Specifically, we expect the effect of a risk ladder with a wide range of comparative risks (sample 1) to have a smaller effect on respondents' choice than a risk ladder with a narrow range of comparative risks (sample 2). This is confirmed by the MWTP values for identical changes in risk which are smaller in sample 1 than in sample 2. However, the differences in estimated coefficients and MWTP values between the two samples are only significant for the nuclear risk attribute. The estimated choice models suggest a possible explanation for this outcome:

the reduction in risk perception induced by the risk ladder with high comparative risks affects respondents' choices more strongly, and hence results in lower MWTP values than the reduction in risk perception induced by the risk ladder with low comparative risks. The Swait-Louviere test is not able to reject the null hypothesis of equality of preference parameters between the two samples, but this is considered a weaker test in view of the fact that this test refers to differences in the full set of preference coefficient estimates.

A further interesting finding is that the ASC is highly significant in the model based on sample 1 but does not reach significance in the model based on sample 2. This suggests that, at least for sample 1 and its high comparative risks, the status quo also serves as a reference point. Note that this result needs to be interpreted with care for two reasons: First, the coefficient for the ASC reflects the impact of the status quo levels of all attributes included and not only of the risk-related attributes; and, second, it may be confounded with the effect of omitted variables not captured by the choice attributes and other explanatory factors. In conclusion, our null hypothesis of equal MWTP values irrespective of the relative risks displayed on the risk ladder is rejected for the change in nuclear risk, but not for the change in hydropower risk. At the same time, and at least for the sample with the wide range of comparative risks, it is unlikely that the comparative risks on the risk ladders serve as unique reference points.

The conclusions that can be drawn from this study highlight the prevalence of multiple reference points in DCEs besides the status quo. This contradicts part of the existing literature that typically focuses on a single reference point. We find empirical support for the untested expectation in Sandman, Weinstein, and Miller (1994) that not only the location of the risk that is valued matters, but also the range of values on the risk ladder. We are unable to conclude whether a risk ladder with comparative risks that are more or less similar in probability to the risk in question performs better in terms of risk communication, but our results indicate that comparative risks which are closer in probability to the risks in question result in higher MWTP values.

The implications of our main findings for the valuation literature which investigates reference points highlight the need for a broader perspective. Contrary to the common notion that design elements of DCEs serve as reference points and introduce procedural bias, we show that there may be additional elements related to the accompanying survey that also serve as reference points, in casu, the role of risk ladder design. However, the importance of comparative risks as reference points may also be valid for situations involving other,

graphical or textual, risk communication devices. Hence, a careful construction and pretesting of such devices seems necessary. More research is needed to determine the relative importance of the different possible reference points in risk communication devices. A promising path for future research may be to combine research on the effects of risk communication device specifications with a tool to monitor the visual information acquisition process of respondents, such as eye-tracking or mouse-tracking.

5.A   Poe-test

The complete combinatorial approach suggested by Poe, Girarud, and Loomis (2005) is based on the more complex convolution approach (Ohdoko, 2008; Poe, Severance-lossin, and Welsh, 1994), but similarly provides an unbiased assessment of the statistical significance of differences in two simulated distributions. In order to calculate the Poe-test statistic, we start with simulating a distribution of the MWTP values for a change in risk for sample 1 and sample 2, denoted by $\hat{X}$ and $\hat{Y}$, respectively. Both distributions are based on 1000 random and normally distributed draws with the means and standard deviations of the estimated MWTP values. The null hypothesis that is to be tested is the following:

$$H_0 : \hat{X} - \hat{Y} = 0. \tag{5.6}$$

The test statistic for H_0 is the empirical cumulative distribution function at zero:

$$\hat{Y} = \big(\#(x_i - y_j \leq 0)\big)/(m * n), \tag{5.7}$$

with $\#$ denoting the number of differences that meet the contained condition and m and n to equal the number of draws of $\hat{X}$ and $\hat{Y}$; respectively (Ohdoko, 2008; Poe, Girarud, and Loomis, 2005). The test statistic in equation 5.7 functions identically as a p-value: It indicates the probability that expresses the rejection area of the null hypothesis (Ohdoko, 2008).

Bibliography

Abeler, Johannes et al. (2011). "Reference points and effort provision". *American Economic Review* 101 (2), pp. 470–492.

Alberini, Anna and Milan Ščasný (2011). "Context and the VSL: Evidence from a Stated Preference Study in Italy and the Czech Republic". *Environmental and Resource Economics* 49 (4), pp. 511–538.

— (2013). "Exploring heterogeneity in the value of a statistical life: Cause of death v. risk perceptions". *Ecological Economics* 94, pp. 143–155.

Alemu, Mohammed Hussen et al. (2013). "Attending to the Reasons for Attribute Non-attendance in Choice Experiments". *Environmental and Resource Economics* 54 (3), pp. 333–359.

Alvarez-Farizo, Begona and Nick Hanley (2002). "Using conjoint analysis to quantify public preferences over the environmental impacts of wind farms. An example from Spain". *Energy Policy* 30, pp. 107–116.

Annaert, Jan et al. (2008). *Disposition bias and overconfidence in institutional trades*. URL: http://www.fma.org/Prague/Papers/Paper_disposition_bias_and_overconfidence_in_institutional_trades.pdf.

Aravena, Claudia, W. George Hutchinson, and Alberto Longo (2012). "Environmental pricing of externalities from different sources of electricity generation in Chile". *Energy Economics* 34 (4), pp. 1214–1225.

Arkes, Hal R. et al. (2008). "Reference point adaptation: Tests in the domain of security trading". *Organizational Behavior and Human Decision Processes* 105 (1), pp. 67–81.

Arrow, Kenneth et al. (1993). *Report of the NOAA Panel on Contingent Valuation*. URL: https://sites.google.com/site/economiayambiente/PanelNOAA.pdf.

Arrow, Kenneth J. and Gerard Debreu (1954). "Existence of an Equilibrium for a Competitive Economy". *Econometrica* 22 (3), pp. 265–290.

Baker, Malcolm, Xin Pan, and Jeffrey Wurgler (2010). "A Reference Point Theory of Mergers and Acquisitions". *AFA 2010 Atlanta Meetings Paper*. URL: http://www.nber.org/papers/w15551.pdf.

Balcombe, Kelvin, Michael Burton, and Dan Rigby (2011). "Skew and attribute non-attendance within the Bayesian mixed logit model". *Journal of Environmental Economics and Management* 62 (3), pp. 446–461.

Balcombe, Kelvin, Iain Fraser, and Eugene McSorley (2015). "Visual Attention and Attribute Attendance in Multi-Attribute Choice Experiments". *Journal of Applied Econometrics* 30 (3), pp. 447–467.

Barros, Nathan et al. (2011). "Carbon emission from hydroelectric reservoirs linked to reservoir age and latitude". *Nature Geoscience* 4, pp. 593–596.

Barry, Michael et al. (2015). "The Future of Swiss Hydropower. A Review on Drivers and Uncertainties". URL: https://fonew.unibas.ch/fileadmin/fonew/redaktion/Paper/FoNEW_2015_01.pdf.

Bartol, Kathryn M. and David C. Martin (1998). "Applicant Referent Information at Hiring Interview and Subsequent Turnover among Part-Time Workers". *Journal of Vocational Behavior* 53 (3), pp. 334–352.

Bateman, Ian J. and Roy Brouwer (2006). "Consistency and construction in stated WTP for health risk reductions: A novel scope-sensitivity test". *Resource and Energy Economics* 28 (3), pp. 199–214.

Bateman, Ian J., Alistair Munro, and Gregory L. Poe (2008). "Decoy effects in choice experiments and contingent valuation: asymmetric dominance". *Land Economics* 84 (1), pp. 115–127.

Bateman, Ian J. et al. (2002). *Economic Valuation with Stated Preference Techniques*. Cheltenham UK: Edward Elgar.

Beck, Matthew J., Simon Fifer, and John M. Rose (2016). "Can you ever be certain? Reducing hypothetical bias in stated choice experiments via respondent reported choice certainty". *Transportation Research Part B: Methodological* 89, pp. 149–167.

Beck, Matthew J., John M. Rose, and David A. Hensher (2013). "Consistently inconsistent: The role of certainty, acceptability and scale in choice". *Transportation Research Part E: Logistics and Transportation Review* 56, pp. 81–93.

Bergland, Olvar (1998). *Valuing Aesthetical Values of Weirs in Watercourses with Hydroelectric Plants - Verdsetjing av estetiske verdiar i tilknytning til tersklar i regulerte vassdrag*. Oslo: Norwegian Water Resources and Energy Directorate (NVE).

Bergmann, Ariel, Sergio Colombo, and Nick Hanley (2008). "Rural versus urban preferences for renewable energy developments". *Ecological Economics* 65, pp. 616–625.

Bergmann, Ariel, Nick Hanley, and Robert Wright (2006). "Valuing the attributes of renewable energy investments". *Energy Policy* 34 (9), pp. 1004–1014.

Bier, V.M (2001). "On the state of the art: risk communication to the public". *Reliability Engineering & System Safety* 71 (2), pp. 139–150.

Biro, Yasemin E. K. (1998). "Valuation of the Environmental Impacts of the Kayraktepe Dam/Hydroelectric Project, Turkey: An Exercise in Contingent Valuation". *Ambio* 27 (3), pp. 224–229.

Bliem, Markus, Michael Getzner, and Petra Rodiga-Laßnig (2012). "Temporal stability of individual preferences for river restoration in Austria using a choice experiment". *Journal of Environmental Management* 103, pp. 65–73.

Bogliacino, Francesco and Iván González-Gallo (2015). "Aspirations, Prospect Theory and entrepreneurship: evidence from Colombia". *International Review of Economics* 62 (3), pp. 271–290.

Born, Stephen M. et al. (1998). "Socioeconomic and Institutional Dimensions of Dam Removals: The Wisconsin Experience". *Environmental Management* 22 (3), pp. 359–370.

Bothe, David (2003). *Environmental Costs due to the Karahnjukar Hydro Power Project on Iceland*. University of Cologne: Department of Economic and Social Geography, Cologne, Germany.

Botzen, W. J. W. and J. C. J. M. van den Bergh (2012). "Risk attitudes to low-probability climate change risks: WTP for flood insurance". *Journal of Economic Behavior and Organization* 82 (1), pp. 151–166.

Box, G. E. P. and D. R. Cox (1964). "An Analysis of Transformations". *Journal of the Royal Statistical Society. Series B (Methodological)* 26 (2), pp. 211–252.

Boyd, James and Spencer Banzhaf (2007). "What are ecosystem services? The need for standardized environmental accounting units". *Ecological Economics* 63 (2-3), pp. 616–626.

Brander, Luke, Roy Brouwer, and Alfred Wagtendonk (2013). "Economic valuation of regulating services provided by wetlands in agricultural landscapes: A meta-analysis". *Ecological Engineering* 56, pp. 89–96.

Brouwer, Roy (2000). "Environmental Value Transfer: State of the Art and Future Prospects". *Ecological Economics* 32 (1), pp. 137–152.

Brouwer, Roy, Ivana Logar, and Oleg Sheremet (2016). "Choice Consistency and Preference Stability in Test-Retests of Discrete Choice Experiment and Open-Ended Willingness to Pay Elicitation Formats". *Environmental and Resource Economics*, pp. 1–23.

Brouwer, Roy and Julia Martín-Ortega (2012). "Modeling self-censoring of polluter pays protest votes in stated preference research to support resource damage estimations in environmental liability". *Resource and Energy Economics* 34 (1), pp. 151–166.

Brouwer, Roy et al. (2010). "Choice Certainty and Consistency in Repeated Choice Experiments". *Environmental and Resource Economics* 46, pp. 93–109.

Brown, Thomas C. et al. (2008). "Reliability of individual valuations of public and private goods: Choice consistency, response time, and preference refinement". *Journal of Public Economics* 92 (7), pp. 1595–1606.

Bruce, Amanda, John Crespi, and Jayson Lusk (2015). "The behavioral and neuroeconomics of food and brand decisions: Executive summary". *Journal of Agricultural and Food Industrial Organization* 13 (1), pp. 1–4.

Bruno, Maria Cristina et al. (2009). "Impact of hydropeaking on hyporheic invertebrates in an Alpine stream (Trentino, Italy)". *International Journal of Limnology* 45 (3), pp. 157–170.

Burgherr, Peter and Stefan Hirschberg (2008). "A Comparative Analysis of Accident Risks in Fossil, Hydro, and Nuclear Energy Chains". *Human and Ecological Risk Assessment: An International Journal* 14 (5), pp. 947–973.

— (2014). "Comparative risk assessment of severe accidents in the energy sector". *Energy Policy* 74, S45–S56.

Camerer, Colin et al. (1997). "Labor Supply of New York City Cabdrivers: One Day at a Time". *The Quarterly Journal of Economics* 112 (2), pp. 407–441.

Cameron, A. Colin and Pravin K. Trivedi (2005). *Microeconometrics: Methods and Applications*. New York, NY: Cambridge University Press.

Campbell, Danny (2007). "Willingness to pay for rural landscape improvements: Combining mixed logit and random-effects model". *Journal of Agricultural Economics* 58 (3), pp. 467–483.

Campbell, Danny, David A. Hensher, and Riccardo Scarpa (2011). "Non-attendance to attributes in environmental choice analysis: a latent class specification". *Journal of Environmental Planning and Management* 54 (8), pp. 1061–1076.

Campbell, Danny, W. George Hutchinson, and Riccardo Scarpa (2008). "Incorporating discontinuous preferences into the analysis of discrete choice experiments". *Environmental and Resource Economics* 41 (3), pp. 401–417.

Campbell, Danny, Morten Raun Mørkbak, and Søren Bøye Olsen (2017). "Response time in online stated choice experiments: the non-triviality of identifying fast and slow respondents". *Journal of Environmental Economics and Policy* 6 (1), pp. 17–35. URL: `http://dx.doi.org/10.1080/21606544.2016.1167632`.

Carlsson, Fredrik, Mitesh Kataria, and Elina Lampi (2010). "Dealing with ignored attributes in choice experiments on valuation of Sweden's environmental quality objectives". *Environmental and Resource Economics* 47 (1), pp. 65–89.

Carlsson, Fredrik, Morten Raun Mørkbak, and Søren Bøye Olsen (2012). "The first time is the hardest: A test of ordering effects in choice experiments". *Journal of Choice Modelling* 5 (2), pp. 19–37.

Carson, Richard T. (1997). "Contingent valuation surveys and tests of insensitivity to scope". *Determining the Value of Non-Marketed Goods: Economic, Psychological, and Policy Relevant Aspects of Contingent Valuation Methods.* Ed. by R.J. Kopp, W.W. Pommerehne, and N. Schwarz. Boston, MA: Kluwer Academic Publishers.

Carson, Richard T. and Robert C. Mitchell (1993). "The Issue of Scope in Contingent Valuation Studies". *American Journal of Agricultural Economics* 75 (5), pp. 1263–1267.

Carter, Steven and Michael McBride (2013). "Experienced utility versus decision utility: Putting the 'S' in satisfaction". *Journal of Socio-Economics* 42, pp. 13–23.

Chapman, Gretchen B. (2000). "Preferences for improving and declining sequences of health outcomes". *Journal of Behavioral Decision Making* 13, pp. 203–218.

Charness, Gary and Uri Gneezy (2012). "Strong Evidence for Gender Differences in Risk Taking". *Journal of Economic Behavior and Organization* 83 (1), pp. 50–58.

Chen, Haipeng (Allan) and Akshay R. Rao (2002). "Close Encounters of Two Kinds: False Alarms and Dashed Hopes". *Marketing Science* 21, pp. 178–196.

ChoiceMetrics (2012). *Ngene Manual 1.1.2. User Manual & Reference Guide*. URL: `http://www.choice-metrics.com/download.html`.

Collins, Andrew T., John M. Rose, and David A. Hensher (2013). "Specification issues in a generalised random parameters attribute nonattendance model". *Transportation Research Part B: Methodological* 56, pp. 234–253.

Colombo, Sergio, Michael Christie, and Nick Hanley (2013). "What are the consequences of ignoring attributes in choice experiments? Implications for ecosystem service valuation". *Ecological Economics* 96, pp. 25–35.

Colombo, Sergio, Klaus Glenk, and Beatriz Rocamora-Montiel (2016). "Analysis of choice inconsistencies in on-line choice experiments: impact on welfare measures". *European Review of Agricultural Economics* 43 (2), pp. 271–302.

Connelly, Nancy A. and Barbara A. Knuth (1998). "Evaluating risk communication: examining target audience perceptions about four presentation formats for fish consumption health advisory information." *Risk analysis* 18 (5), pp. 649–659.

Corso, Phaedra S., James K. Hammitt, and John D. Graham (2001). "Valuing Mortality-Risk Reduction: Using Visual Aids to Improve the Validity of Contingent Valuation". *Journal of Risk and Uncertainty* 23 (2), pp. 165–184.

Crawford, Vincent P. and Juanjuan Meng (2011). "New York City Cabdrivers' Labor Supply Revisited: Reference-Dependence Preferences with Rational-Expectations Targets for Hours and Income". *American Economic Review* 101, pp. 1912–1932.

De Bekker-Grob, Esther W., Mandy Ryan, and Karen Gerard (2012). "Discrete Choice Experiments in Health Economics: A Review of the Literature". *Health economics* 21, pp. 145–172.

De Borger, Bruno and Mogens Fosgerau (2008). "The trade-off between money and travel time: A test of the theory of reference-dependent preferences". *Journal of Urban Economics* 64 (1), pp. 101–115.

De Moraes Ramos, Giselle, Winnie Daamen, and Serge Hoogendoorn (2013). "Modelling travellers' heterogeneous route choice behaviour as prospect maximizers". *Journal of Choice Modelling* 6, pp. 17–33.

Debreu, Gerard (1959). *Theory of Value*. New York: John Wiley.

Dekker, Thijs, Paul Koster, and Roy Brouwer (2014). "Changing with the tide: Semi-parametric estimation of preference dynamics". *Land Economics* 90 (4), pp. 717–745.

Dekker, Thijs et al. (2011). "The Effect of Risk Context on the Value of a Statistical Life: A Bayesian Meta-model". *Environmental and Resource Economics* 49 (4), pp. 597–624.

Dekker, Thijs et al. (2016). "Decision uncertainty in multi-attribute stated preference studies". *Resource and Energy Economics* 43, pp. 57–73.

Delsontro, Tonya et al. (2010). "Extreme Methane Emissions from a Swiss Hydropower Reservoir: Contribution from Bubbling Sediments". *Environmental Science & Technology* 44, pp. 2419–2425.

Desvousges, William, Kristy Mathews, and Kenneth Train (2012). "Adequate responsiveness to scope in contingent valuation". *Ecological Economics* 84, pp. 121–128.

Determann, Domino et al. (2017). "Impact of Survey Administration Mode on the Results of a Health-Related Discrete Choice Experiment: Online and Paper Comparison". *Value in Health (in press)*.

Devine-Wright, Patrick (2005). "Beyond NIMBYism: towards an Integrated Framework for Understanding Public Perceptions of Wind Energy". *Wind Energy* 8, pp. 125–139.

Dillard, James Price (1994). "Rethinking the Study of Fear Appeals: An Emotional Perspective". *Communication Theory* 4, pp. 295–323.

Efron, Bradley and Gail Gong (1983). "A leisurely look at the bootstrap, the jackknife, and cross-validation". *The American Statistician* 37 (1), pp. 36–48.

Ehrlich, Üllas and Mart Reimann (2010). "Hydropower versus Non-market Values of Nature : A Contingent Valuation Study of Jägala Waterfalls , Estonia". *International Journal of Geology* 4 (3), pp. 59–63.

Ek, Kristina (2006). "Quantifying the environmental impacts of renewable energy: the case of Swedish wind power". *Environmental Valuation in Develped Countries: Case Studies*. Ed. by David Pearce. Cheltenham, UK: Edward Elgar Publishing Limited, pp. 181–212.

Ek, Kristina and Lars Persson (2014). "Wind farms – Where and how to place them? A choice experiment approach to measure consumer preferences for characteristics of wind farm establishments in Sweden". *Ecological Economics* 105, pp. 193–203.

ElCom (2014). *Strompreise 2015: Durchschnittlich steigende Tarife für Haushalte und mittlere Betriebe*. Bern. URL: https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-54336.html.

Fafchamps, Marcel, Bereket Kebede, and Daniel John Zizzo (2015). "Keep up with the winners: Experimental evidence on risk taking, asset integration, and peer effects". *European Economic Review* 79, pp. 59–79.

Faiers, Adam and Charles Neame (2006). "Consumer attitudes towards domestic solar power systems". *Energy Policy* 34 (14), pp. 1797–1806.

Fehr, Ernst and Lorenz Goette (2007). "Work More if Wages Are High ? Evidence from a Randomized Field Experiment". *The American Economic Review* 97 (1), pp. 298–317.

Fiegenbaum, Avi (1990). "Prospect theory and the risk-return association". *Journal of Economic Behavior and Organization* 14 (2), pp. 187–203.

Filippini, Massimo, Loa Buchli, and Silvia Banfi (2003). "Estimating the benefits of low flow alleviation in rivers: the case of the Ticino River". *Applied Economics* 35, pp. 585–590.

Finucane, Melissa L. et al. (2000). "The affect heuristic in judgments of risks and benefits". *Journal of Behavioral Decision Making* 13 (1), pp. 1–17.

Foster, V. and Susana Mourato (2002). "Testing for consistency in contingent ranking experiments". *Journal of Environmental Economics and Management* 44, pp. 309–328.

Gau, R. and M. Viswanathan (2008). "The Retail Shopping Experience for Low-Literate Consumers". *Journal of Research for Consumers* 15, pp. 1–8.

Genesove, David and Christopher Mayer (2001). "Loss Aversion and Seller Behavior: Evidence from the Housing Market". *Quarterly Journal of Economics* 116, pp. 1233–1260.

Getzner, Michael (2015). "Importance of Free-Flowing Rivers for Recreation: Case Study of the River Mur in Styria, Austria". *Journal of Water Resources Planning and Management* 141 (2), p. 04014050.

Gneezy, Uri (2005). "Updating the Reference Level: Experimental Evidence". *Experimental Business Reserach*. Ed. by R. Zwick and A. Rapoport. Netherlands: Springer, pp. 263–284.

Gogniat, Sandra (2011). *Estimating the Benefits of an Improvement in Water Quality and Flow Regulation : Case study of the Doubs*. Master's Thesis, Université de Neuchâtel, Neuchâtel, Switzerland. URL: `https://www.unine.ch/files/live/sites/iaf/files/shared/documents/Seminairesenfinance/Seminaireseconomieetfinance/SG_Thesis_final.pdf`.

Gómez-Mejía, Luis R. et al. (2007). "Socioemotional Wealth and Business Risks in Family-controlled Firms: Evidence from Spanish Olive Oil Mills". *Administrative Science Quarterly* 52, pp. 106–137.

Greenberg, Michael and Heather Barnes Truelove (2011). "Energy choices and risk beliefs: Is it just global warming and fear of a nuclear power plant accident?" *Risk Analysis* 31 (5), pp. 819–831.

Greene, William H (2012). *LIMDEP Version 10 Econometric Modeling Guide*. URL: `http://people.stern.nyu.edu/wgreene/DiscreteChoice/Software/LIMDEP10ModelingGuide.pdf`.

Guo, Xiurui et al. (2014). "Willingness to pay for renewable electricity: A contingent valuation study in Beijing, China". *Energy Policy* 68, pp. 340–347.

Hack, Andreas and Frauke von Bieberstein (2014). "How expectations affect reference point formation: an experimental investigation". *Review of Managerial Science* 9, pp. 33–59.

Hack, Andreas, Frauke von Bieberstein, and Nils D. Kraiczy (2015). "Reference point formation and new venture creation". *Small Business Economics* 46 (3), pp. 447–465.

Håkansson, Cecilia (2009). "Costs and benefits of improving wild salmon passage in a regulated river". *Journal of Environmental Planning and Management* 52 (3), pp. 345–363.

Hamilton, L. C. (2012). *Statistics with STATA Version 12*. Boston, MA: Cengage Learning.

Han, Sang-Yong, Seung-Jun Kwak, and Seung-Hoon Yoo (2008). "Valuing environmental impacts of large dam construction in Korea: An application of choice experiments". *Environmental Impact Assessment Review* 28 (4-5), pp. 256–266.

Hanley, Nick and Ceara Nevin (1999). "Appraising renewable energy developments in remote communities: the case of the North Assynt Estate, Scotland". *Energy Policy* 27 (9), pp. 527–547.

Hanley, Nick, Robert E. Wright, and Vic Adamowicz (1998). "Using Choice Experiments to Value the Environment". *Design Issues, Current Experience and Future Prospects* 11 (3-4), pp. 413–428.

Hanley, Nick, Robert E. Wright, and Gary Koop (2002). "Modelling recreation demand using choice experiments: Climbing in Scotland". *Environmental and Resource Economics* 22 (3), pp. 449–466.

Hansesveen, H. and G. Helgas (1997). *Environmental Costs of Hydropower Development – Estimering av miljokostnader ved en vannkraftutbygging i Ovre Otta*. Norwegian University of Life Sciences, As, Norway.

Hansson, Helena and Carl Johan Lagerkvist (2014). "Decision Making for Animal Health and Welfare: Integrating Risk-Benefit Analysis with Prospect Theory". *Risk Analysis* 34 (6), pp. 1149–1159.

Harbord, Roger M. and Julian P. T. Higgins (2008). "Meta-regression in Stata". *The Stata Journal* 8 (4), pp. 493–519.

Harrison, Glenn W., Morten I. Lau, and B. Melonie (2000). "Estimating Individual Discount Rates in Denmark: A Field Experiment". *Business* 92 (5), pp. 1606–1617.

Hartmann, Patrick et al. (2013). "Nuclear power threats, public opposition and green electricity adoption: Effects of threat belief appraisal and fear arousal". *Energy Policy* 62, pp. 1366–1376.

He, Xue Dong and Xun Yu XY Zhou (2014). "Myopic loss aversion, reference point, and money illusion". *Quantitative Finance* 14 (9), pp. 1541–1554.

Heath, Chip, Steven Huddart, and Mark Lang (1999). "Psychological Factors and Stock Option Exercise". *Quarterly Journal of Economics* 114, pp. 601–627.

Heath, Chip, Richard P Larrick, and George Wu (1999). "Goals as Reference Points". *Cognitive Psychology* 38, pp. 79–109.

Helena, Annina et al. (2015). "Renewable Energy, Authenticity, and Tourism: Social Acceptance of Photovoltaic Installations in a Swiss Alpine Region". *Mountain Research and Development* 35 (2), pp. 161–170.

Hensher, D. A. and William H. Greene (2002). "The Mixed Logit Model: The State of Practice". *Transportation* 30, pp. 133–176.

Hensher, David A., Andrew T. Collins, and William H. Greene (2013). "Accounting for attribute non-attendance and common-metric aggregation in a probabilistic decision process mixed multinomial logit model: A warning on potential confounding". *Transportation* 40 (5), pp. 1003–1020.

Hensher, David A. and William H. Greene (2010). "Non-attendance and dual processing of common-metric attributes in choice analysis: a latent class specification". *Empirical Economics* 39 (2), pp. 413–426.

Hensher, David A. and John M. Rose (2009). "Simplifying choice through attribute preservation or non-attendance: Implications for willingness to pay". *Transportation Research Part E: Logistics and Transportation Review* 45 (4), pp. 583–590.

Hensher, David A., John M. Rose, and Matthew J. Beck (2012). "Are there specific design elements of choice experiments and types of people that influence choice response certainty?" *Journal of Choice Modelling* 5 (1), pp. 77–97.

Hensher, David A., John M. Rose, and Tony Bertoia (2007). "The implications on willingness to pay of a stochastic treatment of attribute processing in stated choice studies". *Transportation Research Part E: Logistics and Transportation Review* 43 (2), pp. 73–89.

Hensher, David A., John M. Rose, and William H. Greene (2005). "The implications on willingness to pay of respondents ignoring specific attributes". *Transportation* 32 (3), pp. 203–222.

— (2012). "Inferring attribute non-attendance from stated choice data: Implications for willingness to pay estimates and a warning for stated choice experiment design". *Transportation* 39 (2), pp. 235–245.

— (2015). *Applied Choice Analysis*. Cambridge UK: Cambridge University Press.

Hess, Stephane and David A. Hensher (2010). "Using conditioning on observed choices to retrieve individual-specific attribute processing strategies". *Transportation Research Part B: Methodological* 44 (6), pp. 781–790.

— (2013). "Making use of respondent reported processing information to understand attribute importance: A latent variable scaling approach". *Transportation* 40 (2), pp. 397–412.

Hess, Stephane, John M. Rose, and David A. Hensher (2008). "Asymmetric preference formation in willingness to pay estimates in discrete choice models". *Transportation Research Part E: Logistics and Transportation Review* 44, pp. 847–863.

Hess, Stephane et al. (2013). "It's not that I don't care, I just don't care very much: Confounding between attribute non-attendance and taste heterogeneity". *Transportation* 40 (3), pp. 583–607.

Heyman, James et al. (2004). "I was pleased a moment ago: How pleasure varies with background and foreground reference points". *Motivation and Emotion* 28 (1), pp. 65–83.

Hirschberg, Stefan et al. (2016). "Health effects of technologies for power generation: Contributions from normal operation, severe accidents and terrorist threat". *Reliability Engineering & System Safety* 145, pp. 373–387.

Hökby, Stina and Tore Söderqvist (2003). "Elasticities of Demand and Willingness to Pay for Environmental Services in Sweden". *Environmental and Resource Economics* 26 (3), pp. 361–383.

Hole, Arne Risa (2011). "A discrete choice model with endogenous attribute attendance". *Economics Letters* 110 (3), pp. 203–205.

Hole, Arne Risa, Julie Riise Kolstad, and Dorte Gyrd-Hansen (2013). "Inferred vs. stated attribute non-attendance in choice experiments: A study of doctors' prescription behaviour". *Journal of Economic Behavior and Organization* 96, pp. 21–31.

Hynes, Stephen and Nick Hanley (2006). "Preservation versus development on Irish rivers: whitewater kayaking and hydro-power in Ireland". *Land Use Policy* 23 (2), pp. 170–180.

IAEA (International Atomic Energy Agency) (2015). *Nuclear Power Reactors in the World*. URL: http://www-pub.iaea.org/MTCD/Publications/PDF/rds2-35web-85937611.pdf.

IEA (International Energy Agency) (2010). *Renewable Energy Essentials: Hydropower*. URL: http://www.iea.org/publications/freepublications/publication/Hydropower_Essentials.pdf.

— (2014a). *Energy Statistics of Non-OECD Countries*. Paris. URL: http://www.oecd-ilibrary.org/energy/energy-statistics-of-non-oecd-countries-2014_energy_non-oecd-2014-en.

— (2014b). *Energy Statistics of OECD Countries*. Paris. URL: http://www.oecd-ilibrary.org/energy/energy-balances-of-oecd-countries-2014_energy_bal_oecd-2014-en.

— (2017). *IEA finds CO2 emissions flat for third straight year even as global economy grew in 2016*. URL: https://www.iea.org/newsroom/news/2017/march/iea-finds-co2-emissions-flat-for-third-straight-year-even-as-global-economy-grew.html.

IMF (International Monetary Fund) (2014). *Proposed New Grouping in WEO Country Classifications: Low-Income Developing Countries. IMF Policy Paper.* Washington, DC. URL: https://www.imf.org/external/np/pp/eng/2014/060314.pdf.

— (2017). *World Economic Outlook Update January 2017*. URL: https://www.imf.org/external/pubs/ft/weo/2017/update/01/.

Jacobson, Mark Z. and Mark A. Delucchi (2009). "A Path to Sustainable Energy by 2030". *Scientific American* 301, pp. 58–65.

Jehle, Geoffrey and Philip Reny (2001). *Advanced Microeconomic Theory*. Boston: Addison Wesley.

Johansson, Maria and Thorbjörn Laike (2007). "Intention to respond to local wind turbines: The role of attitudes and visual perception". *Wind Energy* 10 (5), pp. 435–451.

Johnston, Robert J. et al. (2017). "Contemporary Guidance for Stated Preference Studies". *Journal of the Association of Environmental and Resource Economists* 4 (2), pp. 319–405.

Kahneman, Daniel and Amos Tversky (1979). "Prospect Theory: An Analysis of Decision under Risk". *Econometrica* 47 (2), pp. 263–292.

Kataria, Mitesh (2009). "Willingness to pay for environmental improvements in hydropower regulated rivers". *Energy Economics* 31 (1), pp. 69–76.

Kehlbacher, Ariane, Kelvin Balcombe, and Richard Bennett (2013). "Stated attribute non-attendance in successive choice experiments". *Journal of Agricultural Economics* 64 (3), pp. 693–706.

Keller, Carmen, Michael Siegrist, and Vivianne Visschers (2009). "Effect of risk ladder format on risk perception in high- and low-numerate individuals". *Risk Analysis* 29 (9), pp. 1255–1264.

Kirby, Kris N. and R. J. Herrnstein (1995). "Preference Reversals Due To Myopic Discounting of Delayed Reward". *Psychological Science* 6 (2), pp. 83–89.

Klinglmair, Andrea and Markus Bliem (2013). *Die Erschliessung vorhandener Wasserkraftpotenziale in Österreich im Spannungsfeld von Energiepolitik und ökologischen Schutzzielen*. 8. Internationale Energiewirtschaftstagung an der TU Wien. URL: `http://eeg.tuwien.ac.at/eeg.tuwien.ac.at_pages/events/iewt/iewt2015/uploads/fullpaper/P_146_Klinglmair_Andrea_8-Jan-2013_10:59.pdf`.

Klinglmair, Andrea, Markus Bliem, and Roy Brouwer (2012). *Public Preferences for Urban and Rural Hydropower Projects in Styria using a Choice Experiment*. IHS Kärnten Working Paper. URL: `http://www.carinthia.ihs.ac.at/HydroVal/files/working_paper.pdf`.

Koetse, Mark J. and Roy Brouwer (2015). "Reference Dependence Effects on WTA and WTP Value Functions and Their Disparity". *Environmental and Resource Economics* 65, pp. 723–745.

Komarek, Timothy M., Frank Lupi, and Michael D. Kaplowitz (2011). "Valuing energy policy attributes for environmental management: Choice experiment evidence from a research institution". *Energy Policy* 39 (9), pp. 5105–5115.

Kosenius, Anna-Kaisa (2009). "Causes of Response uncertainty and its Implications for WTP Estimation in Choice Experiment". *Discussion Papers No. 29, University of Helsinki*.

Kosenius, Anna-Kaisa and Markku Ollikainen (2013). "Valuation of environmental and societal trade-offs of renewable energy sources". *Energy Policy* 62, pp. 1148–1156.

Kosz, M (1996). "Valuing riverside wetlands: the case of the "Donau-Auen" national park". *Ecological Economics* 16, pp. 109–127.

Koszegi, Botond and Matthew Rabin (2006). "A Model of Reference-Dependent Preferences". *The Quarterly Journal of Economics* 121 (4), pp. 1133–1165.

Kragt, Marit E. (2013). "Stated and inferred attribute attendance models: A comparison with environmental choice experiments". *Journal of Agricultural Economics* 64 (3), pp. 719–736.

Krinsky, Itzhak and A. Leslie Robb (1986). "On Approximating the Statistical Properties of Elasticities". *The Review of Economics and Statistics* 68 (4), pp. 715–719.

Ku, Se-Ju and Seung-Hoon Yoo (2010). "Willingness to pay for renewable energy investment in Korea: A choice experiment study". *Renewable and Sustainable Energy Reviews* 14 (8), pp. 2196–2201.

Ladenburg, Jacob and Alex Dubgaard (2007). "Willingness to pay for reduced visual disamentities from offshore wind farms in Denmark". *Energy Policy* 35, pp. 4059–4071.

Ladenburg, Jacob and Søren Bøye Olsen (2008). "Gender-specific starting point bias in choice experiments: Evidence from an empirical study". *Journal of Environmental Economics and Management* 56 (3), pp. 275–285.

Lagarde, Mylene (2010). "Investigating attribute non-attendance and its consequences in choice experiments with latent class models". *Health economics* 22, pp. 554–567.

Lahey, Joanna N. and Douglas Oxley (2016). "The Power of Eye Tracking in Economics Experiments". *American Economic Review* 106 (5), pp. 309–313.

Lancaster, Kevin J. (1966). "A New Approach to Consumer Theory". *The Journal of Political Economy* 74 (2), pp. 132–157.

Lancsar, Emily and Jordan Louviere (2006). "Deleting 'irrational' responses from discrete choice experiments: A case of investigating or imposing preferences?" *Health Economics* 15 (8), pp. 797–811.

Lant, Theresa K. and Stephen J. Mezias (1992). "An Organizational Learning Model of Convergence and Reorientation". *Organization Science* 3 (1), pp. 47–71.

Lanz, Bruno et al. (2010). "Investigating Willingness to Pay - Willingness to Accept Asymmetry in Choice Experiments". *Choice modeling: The state-of-the-art and the state-of-practice*. Ed. by Stephane Hess and Andrew Daly. Bingley, UK: Emerald Group Publishing Limited.

Liebe, Ulf, Jürgen Meyerhoff, and Volkmar Hartje (2012). "Test-Retest Reliability of Choice Experiments in Environmental Valuation". *Environmental and Resource Economics* 53 (3), pp. 389–407.

Lienhoop, Nele and Douglas MacMillan (2007). "Valuing wilderness in Iceland: Estimation of WTA and WTP using the market stall approach to contingent valuation". *Land Use Policy* 24 (1), pp. 289–295.

Lipkus, I. M. and J. G. Hollands (1999). "The visual communication of risk." *Journal of the National Cancer Institute. Monographs* 27701 (25), pp. 149–163.

Lipsey, Mark W. and David B. Wilson (2001). *Practical Meta-Analysis*. Thousand Oaks, London, New Delhi: Sage Publications.

Logar, Ivana and Roy Brouwer (2017). "The Effect of Risk Communication on Choice Behavior, Welfare Estimates and Choice Certainty". *Water Resources and Economics* 18, pp. 34–50.

Lohse, Gerald L. and Eric J. Johnson (1996). "A Comparison of Two Process Tracing Methods for Choice Tasks". *Organizational Behavior and Human Decision Processes* 68 (1), pp. 28–43.

Longo, Alberto, Anil Markandya, and Marta Petrucci (2008). "The internalization of externalities in the production of electricity: Willingness to pay for the attributes of a policy for renewable energy". *Ecological Economics* 67 (1), pp. 140–152.

Loomis, John (1996). "Measuring the economic benefits of removing dams and restoring the Elwha River: Results of a contingent valuation survey". *Water Resources Research* 32 (2), pp. 441–447.

— (2002). "Quantifying recreation use values from removing dams and restoring free-flowing rivers: A contingent behavior travel cost demand model for the Lower Snake River". *Water Resources Research* 38 (6), pp. 2–1.

Loomis, John, Cindy Sorg, and Dennis Donnelly (1986). "Economic Losses to Recreational Fisheries due to Small-head Hydro-power Development: a Case Study of the Henry's Fork in Idaho". *Journal of Environmental Management* 22 (1), pp. 85–94.

Loomis, John B. and Pierre H. DuVair (1993). "Evaluating the Effect of Alternative Risk Communication Devices on Willingness to Pay: Results from a Dichotomous Choice Contingent Valuation Experiment". *Land Economics* 69 (3), pp. 287–298.

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

Lundhede, Thomas Hedemark et al. (2009). "Handling respondent uncertainty in Choice Experiments: Evaluating recoding approaches against explicit modelling of uncertainty". *Journal of Choice Modelling* 2 (2), pp. 118–147.

Lusk, Jayson L. et al. (2016). "Neural antecedents of a random utility model". *Journal of Economic Behavior & Organization* 132, Part, pp. 93–103.

Maddux, James E. and Ronald W. Rogers (1983). "Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change". *Journal of Experimental Social Psychology* 19 (5), pp. 469–479.

Mas-Colell, Andreu and Michael D. Whinston (1995). *Microeconomic Theory*. New York: Oxford University Press.

Mattmann, Matteo, Ivana Logar, and Roy Brouwer (2016a). "Hydropower externalities: A meta-analysis". *Energy Economics* 57, pp. 66–77.

— (2016b). "Wind power externalities: A meta-analysis". *Ecological Economics* 127, pp. 23–36.

McDonald, Rebecca L. et al. (2016). "Dread and latency impacts on a VSL for cancer risk reductions". *Journal of Risk and Uncertainty* 52 (2), pp. 137–161.

McFadden, Daniel (1974). "Conditional logit analysis of qualitative choice behaviour". *Frontiers in econometrics*. Ed. by P. Zarembka. New York: Academic Press.

— (1979). "Quantitative Methods for Analyzing Travel Behaviour on Individuals: Some Recent Developments". *Behavioral Travel Modelling*. Ed. by David A. Hensher and Peter R. Stopher. Kent: Croom Helm, pp. 279–318.

— (2001). "Economic Choices". *The American Economic Review* 91 (3), pp. 351–378.

Medvec, Victoria Husted, Scott F. Madey, and Thomas Gilovich (1995). "When less is more: Counterfactual thinking and satisfaction among olympic medalist". *Journal of Personality and Social Psychology* 69 (4), pp. 603–610.

Meissner, Martin, Sören W. Scholz, and Reinhold Decker (2010). "Using Eye Tracking and Mouselab to Examine how Respondents process Information in CBC". *Proceedings of the Sawtooth Software Conference*, pp. 151–171.

Mellers, Barbara, Alan Schwartz, and Ilana Ritov (1999). "Emotion-Based Choice". *Journal of Experimental Psychology: General* 128 (3), pp. 332–345.

Menegaki, Angeliki N., Søren Bøye Olsen, and Konstantinos P. Tsagarakis (2016). "Towards a common standard – A reporting checklist for web-based stated preference valuation surveys and a critique for mode surveys". *Journal of Choice Modelling* 18, pp. 18–50.

Meyers-Levy, Joan (1989). "Gender differences in information processing: a selective interpretation". *Cognitive and Affective Responses to Advertising*. Ed. by Patricia Cafferata and Alice M. Tybout. Lanham, Maryland: Lexington.

Meyers-Levy, Joan and Barbara Loken (2015). "Revisiting gender differences: What we know and what lies ahead". *Journal of Consumer Psychology* 25 (1), pp. 129–149.

Mørkbak, Morten Raun and Søren Bøye Olsen (2015). "A within-sample investigation of test-retest reliability in choice experiment surveys with real economic incentives". *Australian Journal of Agricultural and Resource Economics* 59 (3), pp. 375–392.

Navrud, Ståle (1995). *Hydro Fuel Cycle. Part II (p.127-249) in European Commission DG XII Science Research and Innovation (1995): ExternE: Externalities of Energy. Volume 6: Wind and Hydro. EUR 16525 EN, European Comission Publishing*. Luxembourg.

— (2001). "Environmental costs of hydro compared with other energy options". *Hydropower and Dams* 8 (2), pp. 44–48.

— (2004). *Environmental Costs of Hydropower, Second Stage - Miljøkostnadsprosjektet Trinn 2*. EBL report 181.

Nelson, Jon P. and Peter E. Kennedy (2008). "The Use (and Abuse) of Meta-Analysis in Environmental and Natural Resource Economics: An Assessment". *Environmental and Resource Economics* 42 (3), pp. 345–377.

Nguyen, Thanh Cong et al. (2015). "Attribute non-attendance in discrete choice experiments: A case study in a developing country". *Economic Analysis and Policy* 47, pp. 22–33.

Odean, T. (1998). "Are Investors Reluctant to Realise their Losses?" *The Journal of Finance* 53 (5), pp. 1775–1798.

OECD (2014). *OECD. Statistics (database)*. URL: http://www.oecd-ilibrary.org/statistics.

— (2017). *Exchange rates (indicator)*. URL: https://data.oecd.org/conversion/exchange-rates.htm.

Ohdoko, Taro (2008). "Comparison of Complete Combinatorial and Likelihood Ratio Tests: Empirical Findings from Residential Choice Experiments". *Selected paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Orlando, FL, July 27–29, 2008*.

Ojea, Elena and Maria L. Loureiro (2011). "Identifying the scope effect on a meta-analysis of biodiversity valuation studies". *Resource and Energy Economics* 33 (3), pp. 706–724.

Olsen, Søren Bøye et al. (2011). "Tough and Easy Choices: Testing the Influence of Utility Difference on Stated Certainty-in-Choice in Choice Experiments". *Environmental and Resource Economics* 49 (4), pp. 491–510.

Ordóñez, Lisa (1998). "The Effect of Correlation between Price and Quality on Consumer Choice." *Organizational behavior and human decision processes* 75 (3), pp. 258–273.

Orquin, Jacob L. and Simone Mueller Loose (2013). "Attention and choice: A review on eye movements in decision making". *Acta Psychologica* 144 (1), pp. 190–206.

Osborne, Jason W. (2010). "Improving your data transformations: Applying the Box-Cox transformation". *Practical Assessment, Research & Evaluation* 15 (12), pp. 1–9.

Özdemir, Semra et al. (2010). "Who pays Attention in Stated-choice Surveys?" *Health economics* 19, pp. 111–118.

Paish, Oliver (2002). "Small hydro power: Technology and current status". *Renewable and Sustainable Energy Reviews* 6 (6), pp. 537–556.

Park, K. M. (2007). "Antecedents of Convergence and Divergence in Strategic Positioning: The Effects of Performance and Aspiration on the Direction of Strategic Change". *Organization Science* 18 (3), pp. 386–402.

PBL (Netherlands Environmental Assessment Agency) (2016). *Trends in global CO2 emissions 2016 report*. PBL Netherlands Environmental Assessment Agency. URL: http://edgar.jrc.ec.europa.eu/news_docs/jrc-2016-trends-in-global-co2-emissions-2016-report-103425.pdf.

Peters, Ellen and Paul Slovic (1996). "The Role of Affect and Worldviews as Orienting Dispositions in the Perception and Acceptance of Nuclear Power". *Journal of Applied Social Psychology* 26 (16), pp. 1427–1453.

— (2007). "Affective asynchrony and the measurement of the affective attitude component". *Cognition & Emotion* 21 (2), pp. 300–329.

Phillips, Peter J. and Gabriela Pohl (2014). "Prospect theory and terrorist choice". *Journal of Applied Economics* 17 (1), pp. 139–160.

Poe, Gregory L., Kelly L. Girarud, and John B. Loomis (2005). "Computational Methods for Measuring the Difference of Empirical Distributions". *American Journal of Agricultural Economics* 87 (2), pp. 353–365.

Poe, Gregory L., Eric K. Severance-lossin, and Michael P. Welsh (1994). "Measuring the Difference (X - Y) of Simulated Distributions: A Convolutions Approach". *American Journal of Agricultural Economics* 76 (4), pp. 904–915.

Ponce, Roberto D. et al. (2011). "Estimating the Economic Value of Landscape Losses Due to Flooding by Hydropower Plants in the Chilean Patagonia". *Water Resources Management* 25 (10), pp. 2449–2466.

Post, Thierry et al. (2008). "Deal or No Deal? Decision Making under Risk in a Large-Stake TV Game Show and Related Experiments". *American Economic Review* 98 (1), pp. 38–71.

Prognos AG (2012). *Die Energieperspektiven für die Schweiz bis 2050*. Basel. URL: http://www.bfe.admin.ch/php/modules/publikationen/stream.php?extlang=de&name=de_564869151.pdf.

Puckett, Sean M. and David A. Hensher (2008). "The role of attribute processing strategies in estimating the preferences of road freight stakeholders". *Transportation Research Part E: Logistics and Transportation Review* 44 (3), pp. 379–395.

— (2009). "Revealing the extent of process heterogeneity in choice analysis: An empirical assessment". *Transportation Research Part A: Policy and Practice* 43 (2), pp. 117–126.

Rabin, Matthew (1998). "Psychology and Economics". *Journal of Economic Literature* 36 (1), pp. 11–46.

Reisen, Nils, Ulrich Hoffrage, and Fred W Mast (2008). "Identifying decision strategies in a consumer choice situation". *Judgment and Decision Making* 3 (8), pp. 641–658.

Rigby, Dan, Michael Burton, and Jo Pluske (2016). "Preference Stability and Choice Consistency in Discrete Choice Experiments". *Environmental and Resource Economics* 65 (2), pp. 441–461.

Ringquist, Evan J. (2013). *Meta-Analysis for Public Management and Policy*. San Francisco: Jossey-Bass.

Ritenour, Amber E. et al. (2008). "Lightning injury: A review". *Burns* 34 (5), pp. 585–594.

Robbins, Jesse Lance and Lynne Y. Lewis (2009). "Demolish it and they will come: Estimating the economic impacts of restoring a recreational fishery". *Journal of the American Water Resources Association* 44 (6), pp. 1488–1499.

Rogers, R. W. (1983). "Cognitive and physiological processes in attitude change: A revised theory of protection motivation". *Social Psychophysiology*. Ed. by J. Cacioppo and R.E. Petty. New York: Guilford, pp. 153–176.

Rosch, R. (1975). "Cognitive reference points". *Cognitive Psychology* 7, pp. 532–547.

Rose, John M. and Michiel C. J. Bliemer (2013). "Sample size requirements for stated choice experiments". *Transportation* 40 (5), pp. 1021–1041.

Rose, John M. et al. (2008). "Designing efficient stated choice experiments in the presence of reference alternatives". *Transportation Research Part B: Methodological* 42 (4), pp. 395–406.

Rosenberger, Randall S. and Tom D. Stanley (2006). "Measurement, generalization, and publication: Sources of error in benefit transfers and their management". *Ecological Economics* 60 (2), pp. 372–378.

Rulleau, Bénédicte and Jeanne Dachary-Bernard (2012). "Preferences, rational choices and economic valuation: Some empirical tests". *Journal of Socio-Economics* 41 (2), pp. 198–206.

Ryan, Mandy and Verity Watson (2009). "Comparing Welfare Estimates from Payment Card Contingent Valuation and Discrete Choice Experiments". *Health economics* 18 (11), pp. 389–401.

Samuelson, Paul A. (1937). "A Note on Measurement of Utility". *The Review of Economic Studies* 4 (2), pp. 155–161.

San Miguel, Fernando, Mandy Ryan, and Mabelle Amaya-Amaya (2005). "'Irrational' stated preferences: A quantitative and qualitative investigation". *Health Economics* 14 (3), pp. 307–322.

Sandman, Peter M., Neil D. Weinstein, and Paul Miller (1994). "High Risk or Low: How Location on a "Risk Ladder" Affects Perceived Risk". *Risk Analysis* 14 (1), pp. 35–45.

Saqib, Najam U. and Eugene Y. Chan (2015). "Time pressure reverses risk preferences". *Organizational Behavior and Human Decision Processes* 130, pp. 58–68.

Sawe, Nik (2017). "Using neuroeconomics to understand environmental valuation". *Ecological Economics* 135, pp. 1–9.

Sawe, Nik and Brian Knutson (2015). "Neural valuation of environmental resources". *NeuroImage* 122, pp. 87–95.

Scarpa, R., M. Thiene, and David A. Hensher (2010). "Monitoring Choice Task Attribute Attendance in Nonmarket Valuation of Multiple Park Management Services: Does It Matter?" *Land economics* 86 (4), p. 817.

Scarpa, Riccardo, Danny Campbell, and W. George Hutchinson (2007). "Benefit Estimates for Landscape Improvements : Sequential Bayesian Design and Respondents' Rationality in a Choice Experiment". *Land Economics* 83, pp. 617–634.

Scarpa, Riccardo et al. (2009). "Modelling attribute non-attendance in choice experiments for rural landscape valuation". *European Review of Agricultural Economics* 36 (2), pp. 151–174.

Scarpa, Riccardo et al. (2013). "Inferred and stated attribute non-attendance in food choice experiments". *American Journal of Agricultural Economics* 95 (1), pp. 165–180.

Schaafsma, Marije et al. (2014). "Temporal stability of preferences and willingness to pay for natural areas in choice experiments: A test-retest". *Resource and Energy Economics* 38, pp. 243–260.

Schmidt, Ulrich (2003). "Reference dependence in cumulative prospect theory". *Journal of Mathematical Psychology* 47 (2), pp. 122–131.

Schulte-Mecklenbeck, Michael, Ryan O. Murphy, and Florian Hutzler (2011). "Flashlight - Recording information acquisition online". *Computers in Human Behavior* 27 (5), pp. 1771–1782.

SED (Swiss Seismological Service) (2016). *Basel 1356*. URL: `http://www.seismo. ethz . ch / de / knowledge / earthquake – country – switzerland / historical–earthquakes/basel–1356/`.

Seiler, Michael J. and Kimberly F. Luchtenberg (2014). "Do Institutional and Individual Investors Differ in Their Preferences for Financial Skewness". *Journal of Behavioral Finance* 15 (4), pp. 299–311.

SFOE (Swiss Federal Office of Energy) (2012). *Wasserkraftpotential der Schweiz. Abschätzung des Ausbaupotenzials der Wasserkraftnutzung im Rahmen der Energiestrategie 2050*. URL: `http://www.bfe.admin.ch/themen/00490/00491/ index.html?lang=de&dossier_id=00803`.

— (2013). *Energieperspektiven 2050. Zusammenfassung*. URL: `http://www.bfe. admin.ch/energiestrategie2050/index.html?lang=de`.

— (2016). *Schweizerische Elektrizitätsstatistik 2015*. URL: `http : / / www . bfe . admin . ch / php / modules / publikationen / stream . php ? extlang = de&name=de_816097016.pdf&endung=SchweizerischeElektrizitatsstatistik`

— (2017). *Elektrizitätserzeugung- und verbrauch 2016*. URL: `http://www.bfe. admin . ch / energie / 00588 / 00589 / 00644 / index . html ? lang = de & msg–id=66433`.

SFSO (Swiss Federal Statistical Office) (2014). *Spezifische Todesursachen*. URL: `https: //www.bfs.admin.ch/bfs/de/home/statistiken/gesundheit/ gesundheitszustand/sterblichkeit-todesursachen/spezifische. html`.

— (2016). *Statistik der Bevölkerung und der Haushalte (STATPOP)*. URL: `https: //www.bfs.admin.ch/bfs/de/home/statistiken/bevoelkerung/ erhebungen/statpop.html`.

Shannon, Claude E. (1948). "A mathematical theory of communication". *The Bell System Technical Journal* 27, pp. 379–423.

Slovic, Paul (1987). "Perception of risk". *Science* 236 (4799), pp. 280–285.

Slovic, Paul and Elke U. Weber (2011). "Perception of risk posed by extreme events". *Regulation of Toxic Substances and Hazardous Waste. 2nd Edition.* Ed. by John S. Applegate et al. New York: Foundation Press.

Slovic, Paul et al. (2007). "The affect heuristic". *European Journal of Operational Research* 177 (3), pp. 1333–1352.

Smith, V. Kerry and Laura L. Osborne (1996). "Do contingent valuation estimates pass a "scope" test? A meta-analysis". *Journal of Environmental Economics and Management* 31 (3), pp. 287–301.

Smith, V. Kerry and Subhrendu K. Pattanayak (2002). "Is meta-analysis a Noah's ark for non-market valuation?" *Environmental and Resource Economics* 22 (1), pp. 271–296.

Soliño, Mario et al. (2012). "Generating electricity with forest biomass: Consistency and payment timeframe effects in choice experiments". *Energy Policy* 41, pp. 798–806.

Soofi, Ehsan S. (1994). "Capturing the Intangible Concept of Information". *Journal of the American Statistical Association* 89 (428), pp. 1243–1254.

Spinks, Jean and Duncan Mortimer (2016). "Lost in the crowd? Using eye-tracking to investigate the effect of complexity on attribute non-attendance in discrete choice experiments". *BMC Medical Informatics and Decision Making* 16:14, pp. 1–13.

Stathopoulos, Amanda and Stephane Hess (2012). "Revisiting reference point formation, gains-losses asymmetry and non-linear sensitivities with an emphasis on attribute specific treatment". *Transportation Research Part A* 46 (10), pp. 1673–1689.

Sternberg, R. (2008). "Hydropower: Dimensions of social and environmental coexistence". *Renewable and Sustainable Energy Reviews* 12, pp. 1588–1621.

— (2010). "Hydropower's future, the environment, and global electricity systems". *Renewable and Sustainable Energy Reviews* 14 (2), pp. 713–723.

Stommel, Evelyn (2013). *Reference-Dependent Preferences*. Wiesbaden: Springer Gabler.

Stoutenborough, James W., Shelbi G. Sturgess, and Arnold Vedlitz (2013). "Knowledge, risk, and policy support: Public perceptions of nuclear power". *Energy Policy* 62, pp. 176–184.

Sullivan, Kathryn and Thomas Kida (1995). "The Effect of Multiple Reference Points and Prior Gains and Losses on Managers' Risky Decision Making". *Organizational Behavior and Human Decision Processes* 64 (1), pp. 76–83.

Sundqvist, Thomas (2002). "Power Generation Choice in the Presence of Environmental Externalities". PhD thesis. Lulea University of Technology, Lulea,

Sweden. URL: `https://pure.ltu.se/portal/files/153854/LTU-DT-0226-SE.pdf`.

Sundt, Swantje and Katrin Rehdanz (2015). "Consumer's willingness to pay for green electricity: A meta-analysis of the literature". *Energy Economics* 51, pp. 1–8.

Susaeta, Andres et al. (2011). "Random preferences towards bioenergy environmental externalities: A case study of woody biomass based electricity in the Southern United States". *Energy Economics* 33 (6), pp. 1111–1118.

Swait, Joffre and Wiktor Adamowicz (2001a). "Choice Environment, Market Complexity, and Consumer Behavior: A Theoretical and Empirical Approach for Incorporating Decision Complexity into Models of Consumer Choice". *Organizational Behavior and Human Decision Processes* 86 (2), pp. 141–167.

— (2001b). "The Influence of Task Complexity on Consumer Choice : A Latent Class Model of Decision Strategy Switching". *Journal of Consumers Research* 28 (1), pp. 135–148.

Swait, Joffre and Jordan J. Louviere (1993). "The Role of the Scale Parameter in the Estimation and Use of Multinomial Logit Models". *Journal of Marketing Research* 30, pp. 305–314.

Tabi, Andrea and Rolf Wüstenhagen (2017). "Keep it Local and Fish-Friendly: Social acceptance of hydropower projects in Switzerland". *Renewable and Sustainable Energy Reviews* 68, pp. 763–773.

Tanaka, Yutaka (2004). "Major Psychological Factors Determining Public Acceptance of the Siting of Nuclear Facilities". *Journal of Applied Social Psychology* 34 (6), pp. 1147–1165.

Thurstone, L. L. (1927). "Psychophysical Analysis". *The American Journal of Psychology* 38 (3), pp. 368–389.

Train, Kenneth E. (2009). *Discrete Choice Methods with Simulation*. New York, NY: Cambridge University Press.

Tsuge, Takahiro, Atsuo Kishimoto, and Kenji Takeuchi (2005). "A choice experiment approach to the valuation of mortality". *Journal of Risk and Uncertainty* 31 (1), pp. 73–95.

Tversky, Amos and Daniel Kahneman (1991). "Loss Aversion in Riskless Choice: A Reference-Dependent Model". *Quarterly Journal of Economics* 106 (4), pp. 1039–1061.

— (1992). "Advances in Prospect-Theory - Cumulative Representation of Uncertainty". *Journal of Risk and Uncertainty* 5 (4), pp. 297–323.

Uggeldahl, Kennet et al. (2016). "Choice certainty in Discrete Choice Experiments: Will eye tracking provide useful measures?" *Journal of Choice Modelling* 20, pp. 35–48.

Van Houtven, George, Melonie B. Sullivan, and Chris Dockins (2008). "Cancer premiums and latency effects: A risk tradeoff approach for valuing reductions in fatal cancer risks". *Journal of Risk and Uncertainty* 36 (2), pp. 179–199.

Van Loo, Ellen J. et al. (2014). "Visual Attribute Non-Attendance in a Food Choice Experiment: Results From an Eye-tracking Study". *Agricultural & Applied Economics Association's 2014 AAEA Annual Meeting, Minneapolis, MN, July 27-29, 2014*.

Viscusi, W. Kip (1998). *Rational Risk Policy*. Oxford: Oxford University Press.

Viscusi, W. Kip and Joel Huber (2012). "Reference-dependent valuations of risk: Why willingness-to-accept exceeds willingness-to-pay". *Journal of Risk and Uncertainty* 44 (1), pp. 19–44.

Viscusi, W. Kip, Joel Huber, and Jason Bell (2014). "Assessing whether there is a Cancer Premium for the Value of a statistical Life". *Health economics* 23, pp. 384–396.

Visschers, Vivianne H. M., Carmen Keller, and Michael Siegrist (2011). "Climate change benefits and energy supply benefits as determinants of acceptance of nuclear power stations: Investigating an explanatory model". *Energy Policy* 39 (6), pp. 3621–3629.

Waechter, Signe, Bernadette Sütterlin, and Michael Siegrist (2015). "Desired and Undesired Effects of Energy Labels—An Eye-Tracking Study". *Plos One* 10 (7), e0134132.

Wakker, Peter P. (2010). *Prospect Theory For Risk and Ambiguity*. Cambridge UK: Cambridge University Press.

Wang, Hua (1997). "Treatment of "don't know" responses in contingent valuation surveys: a random valuation model". *Journal of Environmental Economics and Management* 32 (2), pp. 219–232.

Warren, Charles R. et al. (2005). "'Green On Green': Public Perceptions of Wind Power in Scotland and Ireland". *Journal of Environmental Planning and Management* 48 (6), pp. 853–875.

Weber, Elke U. and Richard A. Milliman (1997). "Perceived risk attitudes: relating risk perception to risky choice". *Management Science* 43 (2), pp. 123–144.

Weber, Martin and Colin F. Camerer (1998). "The disposition effect in securities trading: an experimental analysis". *Journal of Economic Behavior & Organization* 33 (2), pp. 167–184.

Weisser, Daniel (2007). "A guide to life-cycle greenhouse gas (GHG) emissions from electric supply technologies". *Energy* 32 (9), pp. 1543–1559.

Weller, Priska et al. (2014). "Stated and inferred attribute non-attendance in a design of designs approach". *Journal of Choice Modelling* 11 (1), pp. 43–56.

Whitfield, Stephen C. et al. (2009). "The future of nuclear power: Value orientations and risk perception". *Risk Analysis* 29 (3), pp. 425–437.

Willemsen, Martijn C. and Eric J. Johnson (2008). *MouselabWEB Documentation*. URL: `http://www.mouselabweb.org/download.php`.

— (2010). *MouselabWEB*. URL: `http://www.mouselabweb.org/`.

Winer, R. S. (1986). "A reference price model of brand choice for frequently purchased products". *Journal of Consumer Research* 13, pp. 250–256.

Witte, Kim (1992). "Putting the Fear back into Fear Appeals: The Extended Parallel Process Model". *Communication Monographs* 59, pp. 329–349.

Wolsink, Maarten (2000). "Wind power and the NIMBY-myth: institutional capacity and the limited significance of public support". *Renewable Energy* 21 (1), pp. 49–64.

Wüstenhagen, Rolf, Maarten Wolsink, and Mary Jean Bürer (2007). "Social acceptance of renewable energy innovation: An introduction to the concept". *Energy Policy* 35 (5), pp. 2683–2691.