Tap Water Consumption

Assessing the Role of Attitudes towards Environment using Non-Parametric Mokken Scale Analysis

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Motivation (0/3)

- Willingness-to-Pay (WTP) surveys currently include questions about attitudes towards environment
- Most of the time, questions that measure attitudes have more than two ordered categories (Likert scales)

Question 23: How concerned are you about the following environmental issues?

	Not concerned	Fairly concerned	Concerned	Very concerned	No opinion
Waste generation					
Air pollution					
Global warming					
Water pollution					
Natural ressources depletion					
GMO					
Endangered species					
Noise					

Question 91: How often do you do the following in your daily life?

	Never	Occasionaly	Often	Always	Not applicable
Turn off the water while brushing teeth					
Take showers instead of bath					
Plug the sink when washing the dishes					
Water your garden in the coolest part of the day					
Collect rainwater					

Motivation (1/3)

- A set of questions can be designed to assess a single latent trait (psychological trait, state of health, specific abilities)
- Various models (Item Response Theory) allow to construct a score that gives a unidimensional measure of the latent trait
- Some are parametric
  - The Rasch (1960) model (initially developed for dichotomous item - question), or one-parameter logistic model
  - Extented to polytomous items (see Embretson and Reise, 2000)
  - The partial credit model (Zheng and Rabe-Hesketh, 2007)
  - Latent-class models (Morey *et al.*, 2008)
- Other are non-parametric (Hardouin, 2005), especially the Mokken model (see van Schuur, 2003 for a straightforward presentation)
- For items that satisfy the criteria of the Mokken model, the sum of the responses across items can be used to rank respondents on the latent trait (Hardouin *et al.*, 2010)

Motivation (2/3)

- The Mokken model requires few assumptions regarding the relationship between the latent trait and the responses to the items, and so, generally allows to keep more items. As a consequence, the precision of the individuals ordering is higher (Hardouin *et al.*, 2010)
- Empirical analysis: water quality and tap water consumption
- Most of the papers in the field (see Schram, 2009) assess the willingness-to-pay to improve water quality using the averting behavior method and/or the contingent valuation method
- The willingness-to-pay for water quality improvement is found to be related to variables such as the presence of young children in the household, education, gender, job, etc.
- Estimates do vary across the literature mainly because of the variability in specification of the scenario presented to respondents
- To our best knowledge the effect of the water quality perception of the respondent on the decision to consume or not tap water has rarely been assessed (see Jakus *et al.*, 2009)

Motivation (3/3): what does this paper add?

- Few studies have been conducted using data that allow to compare the developed and the developing world
- We use survey data of about 10,000 households from 10 OECD countries, including Czech Republic, Korea and Mexico
- We investigate whether the water quality perception of people influences their choice to drink tap water, checking for potential endogeneity issues
- Using the Mokken scale analysis, we construct a concernment score and a water-saving score which are both tested within our econometric work
- The preliminary results show, not surprisingly, strong country-specific effects
- Further, attitudes towards environment and water saving behaviors are found to be significant along with other attitudinal characteristic such as trust in information from national or local governments

Methodological considerations (1/4)

- Mokken scale analysis relies on three assumptions (van Schuur, 2003; Hardouin, 2010):
  - Unidimensionality: the responses to the items are explained by one and only one latent trait
  - Monotonicity: given the scale value of individual j, θ_j, the probability of a positive response to an item i increases with increasing value of θ. If $\theta_s < \theta_t$, $p_i(\theta_s) < p_i(\theta_t)$
  - Local independence: conditionally to the latent trait, the responses are independent or, stated differently, responses of individual s to two or more items are influenced only by θ_s
- Actual responses are compared to theoritical responses consistent with a perfect Guttman scale under the model of stochastic independence
- Attitudinal data form a perfect Guttman scale when an individual who gives a positive answer (assuming dichotomous items for simplicity) to the more difficult item (question) will also give a positive answer to all the items (questions) that are easier

Methodological considerations (2/4)

- Example: van Schuur, 2003, Political science

Response type	V1	V2	V3	V4	V5	V6	Frequency of response type
1	0	0	0	0	0	0	50
2	0	0	0	0	0	1	3
3	0	0	0	0	1	1	2
4	0	0	0	1	1	1	35
5	0	0	1	1	1	1	5
6	0	1	1	1	1	1	3
7	1	1	1	1	1	1	2
Total	2	5	10	45	47	50	100

- V1, V2, V3 are three indicators of party political participation (V1, Run for office, V2, is active in a campaign, V3 goes to a party meeting). V1 is the more difficult question ($p_{V1} = 0.02$), V4, V5, V6 are variables that tap voting behavior for three types of office (president, representative, and sheriff)
- This table forms a perfect Guttman scale: an individual who gives a positive answer to the more difficult question will also give a positive answer to all the easier questions

Methodological considerations (3/4)

- However, empirical data sets show model (perfect Guttman scale) violations: an individual who gives a positive response to a difficult item can give a negative response to an easier item. Such a violation is a Guttman error
- Model violations are assessed through the comparison of actual Guttman errors (e_{jk}) and theoritical Guttman errors (e^0_{jk}) obtained under the assumption of independence between the responses to two items j and k
- Loevinger H coefficients are defined as a function of the Guttman errors
  - Loevinger H coefficient between two items: $H_{jk} = 1 - \frac{e_{jk}}{e^0_{jk}}$. $H_{jk} = 1$ when there is no Guttman errors
  - Loevinger H coefficient to measure the integration of one item to a scale S: $H^S_j = 1 - \frac{\sum_{k \in S, k \neq j} e_{jk}}{\sum_{k \in S, k \neq j} e^0_{jk}}$. H^S_j is near one if the item j is well integrated in the scale S
  - Loevinger H coefficient of scalability: $H^S = 1 - \frac{\sum_{j \in S} \sum_{k \in S, k > j} e_{jk}}{\sum_{j \in S} \sum_{k \in S, k > j} e^0_{jk}}$

Methodological considerations (4/4)

- Rule of thumb: $H^S < 0.3$, poor scalability properties, $0.3 \leq H^S < 0.4$, weak scale, $0.4 \leq H^S < 0.5$, medium scale, $0.5 \leq H^S$, strong scale
- Bottom-up algorithm (best smallest scale = pair of items with the highest H_{jk} coefficient), find the next best item in the scale and iterate on the basis of a user-specified boundary
- Fortunately Hardouin, 2010 has written a stata routine (MSP, Mokken Scale Procedure) which implements this algorithm in order to find whether a set of items (questions) forms a Mokken scale
- If a set of questions forms a Mokken scale, we can define a score by adding the value taken by each response included in the scale

Data (1)

- The data come from an environmentally-related survey implemented in 10 OECD countries (Australia, Canada, Czech Republic, France, Italy, Korea, Mexico, Netherlands, Norway and Sweden) in 2008. Data are fully described in Beaumais-Briand-Millock-Nauges, 2009, and Millock and Nauges, 2010
- About 10,000 respondents have been surveyed using a web-based access panel, regarding a set of environmentally relevant activities including use of water and energy, recycling, transportation mode.
- Respondents were also asked a series of questions regarding characteristics of their household (age, income, composition, education, ownership status), housing characteristics, and behavioural attitudes or opinions regarding the environment in general
- Specific questions on water use (water saving behavior, investment in water-saving devices)

Data (2)

- Attitudinal variables (environment):

Question 23: How concerned are you about the following environmental issues?

	Not concerned	Fairly concerned	Concerned	Very concerned	No opinion
Waste generation					
Air pollution					
Global warming					
Water pollution					
Natural ressources depletion					
GMO					
Endangered species					
Noise					

- Attitudinal variables (water saving behavior):

Question 91: How often do you do the following in your daily life?

	Never	Occasionaly	Often	Always	Not applicable
Turn off the water while brushing teeth					
Take showers instead of bath					
Plug the sink when washing the dishes					
Water your garden in the coolest part of the day					
Collect rainwater					

Data (3)

Table: Respondents' opinion about tap water

Country	% satisfied with tap water	% of dissatisfied having taste concern	% of dissatisfied having health concern	% drinking tap water
High quality tap water countries				
Netherlands	95	63	31	91
Sweden	92	68	24	95
Norway	90	67	29	97
Medium quality tap water countries				
Czech Republic	72	52	39	75
Australia	71	55	42	83
France	70	59	37	63
Canada	67	43	56	67
Italy	56	33	61	39
Low quality tap water countries				
Korea	30	11	86	39
Mexico	21	5	92	19

- Question 95a: Do you drink tap water for your normal household consumption?

Mokken scale analysis

- Question 23 and question 91 are investigated in search of a Mokken scale
- The eight items of question 23 refer to an environmentally concerned attitude
- The five items of question 91 refer to a water-saving attitude
- All the eight items of question 23 are found to form a Mokken scale. Thus we create a score (score_env) by adding the value taken by each item of question 23
- Only items 4 and 5 of question 91 are found to form a Mokken scale. These two items are related to garden work (use of water tank, timing of garden watering). Thus we create a score (score_wat) by adding the value taken by items 4 and 5 of question 91

Mokken scale analysis: concernment scale

Table: Concernment score

Country	Mean	Std. Dev.	Min	Max
High quality tap water countries				
Netherlands	12.47	5.69	0	24
Sweden	13.56	5.77	0	24
Norway	13.84	5.14	0	24
Medium quality tap water countries				
Czech Republic	15.22	5.12	0	24
Australia	16.13	5.03	0	24
France	16	5.21	0	24
Canada	16.14	4.87	0	24
Italy	17.34	4.20	0	24
Low quality tap water countries				
Korea	18.06	4.44	0	24
Mexico	20.09	3.07	4	24

Mokken scale analysis: water-saving scale

Table: Water-saving score

Country	Mean	Std. Dev.	Min	Max
High quality tap water countries				
Netherlands	1.92	1.94	0	6
Sweden	1.56	1.99	0	6
Norway	1.19	1.43	0	6
Medium quality tap water countries				
Czech Republic	2.30	2.29	0	6
Australia	3.39	1.99	0	6
France	2.36	2.28	0	6
Canada	2.10	1.90	0	6
Italy	3.87	1.86	0	6
Low quality tap water countries				
Korea	1.15	1.58	0	6
Mexico	2.64	1.90	0	6

Specification

- Two variables of interest: *tap* (1 drink tap water, 0 do not drink tap water) and *sat* (1 satisfied, 0 not satisfied)
- Question 95: Are you satisfied with the quality of your tap water for drinking?
- Cross table:

	Sat		
Tap	1	0	Total
0	878	2500	3,378
1	5,610	865	6,475
Total	6,488	3,365	9,853

Independence of *sat* and *tap* is clearly rejected ($\chi^2(1) = 3600$)

- We seek to estimate a probit model:

$$\Pr(tap = 1) = \Phi(\beta' x + \delta sat + \sum_{i=1}^{9} country_i)$$

- Where x is a column vector of exogenous variables and $country_i$ are binaries for each country (Australia is the reference)

Econometrics issues

- Are the scores (score_env and score_wat) independent? **No** (Spearman test, clear rejection of the null hypothesis of independence)
- Endogeneity concerns: we must check whether *sat* is exogenous or not
- As *sat* is dichotomous variables, we must estimate a recursive bivariate probit model. See Greene (1998, 2008) and more recently, Wilde (2000), Monfardini and Radice (2008)
- Marginal effects are more involved than in a basic bivariate probit model (again, see Greene, 1998 or Kassouf and Hoffmann (2006))

The model (1/2)

- The recursive bivariate probit model is as follows:

$$\Pr(sat = 1, tap = 1 \mid w, x) = BVN(\alpha' w, \beta' x + \delta, \rho)$$
$$\Pr(sat = 1, tap = 0 \mid w, x) = BVN(-\alpha' w, \beta' x, -\rho)$$
$$\Pr(sat = 0, tap = 1 \mid w, x) = BVN(\alpha' w, -\beta' x - \delta, -\rho)$$
$$\Pr(sat = 0, tap = 0 \mid w, x) = BVN(-\alpha' w, -\beta' x, \rho)$$

where BVN indicates the cumulative distribution function of the bivariate standard normal distribution with correlation ρ. w is a column vector of exogenous variables. Note that the same exogenous regressors can appear in both equation, without raising identification issues (Wilde, 2000)

- As Greene (1998) recalls, the model can be estimated by maximum likelihood as the usual bivariate probit model

The model (2/2)

- The expected value for *tap* is given by:

$$E(tap \mid w,x) = \Pr(sat=1)E(tap \mid sat=1,w,x) + \Pr(sat=0)E(tap \mid sat=0,w,x)$$
$$= \Pr(sat=1)\Pr(tap=1 \mid sat=1,w,x) + \Pr(sat=0)\Pr(tap=1 \mid sat=0,w,x)$$
$$= \Pr(tap=1,sat=1) + \Pr(tap=1,sat=0)$$

- That is:

$$E(tap \mid w,x) = BVN(\alpha' w, \beta' x + \delta, \rho) + BVN(-\alpha' w, \beta' x, -\rho)$$

- Which allows to compute the marginal effects

Marginal effects (1/3, Kassouf and Hoffmann, 2006)

- Marginal effect of being satisfied with the water quality on the probability to drink tap water:

$$Mef(sat) = \Pr(tap = 1 \mid sat = 1, w, x) - \Pr(tap = 1 \mid sat = 0, w, x)$$
$$= \frac{BVN(\alpha' w, \beta' x + \delta, \rho)}{\Phi(\alpha' w)} - \frac{BVN(-\alpha' w, \beta' x, -\rho)}{1 - \Phi(\alpha' w)}$$

where Φ is the cumulative distribution function of the standard univariate normal distribution

- When $\rho = 0$, the joint probability is the product of the marginals:

$$BVN(\alpha' w, \beta' x + \delta, \rho) = \Phi(\alpha' w)\Phi(\beta' x + \delta)$$

- Thus, in this case, $Mef(sat) = \Phi(\beta' x + \delta) - \Phi(\beta' x)$

Marginal effects (2/3, Kassouf and Hoffmann, 2006)

- Marginal effect of a binary variable y that belongs to x and/or w on the probability to drink tap water:

$$Mef(y) = BVN(\alpha' w_1, \beta' x_1 + \delta, \rho) + BVN(-\alpha' w_1, \beta' x_1, -\rho) \\ -BVN(\alpha' w_0, \beta' x_0 + \delta, \rho) - BVN(-\alpha' w_0, \beta' x_0, -\rho)$$

where w_1, x_1, w_0, w_0 are the vectors w and x in which y equals 1 and 0 respectively.

- A convenient way to interpret this marginal effect is to split it in two parts:

$$Mef(y) = Mef_1(y) + Mef_0(y)$$
$$Mef_1(y) = BVN(\alpha' w_1, \beta' x_1 + \delta, \rho) - BVN(\alpha' w_0, \beta' x_0 + \delta, \rho)$$

$$Mef_0(y) = BVN(-\alpha' w_1, \beta' x_1, -\rho) - BVN(-\alpha' w_0, \beta' x_0, -\rho)$$

- $Mef_1(y)$ is the marginal effect on the probability to drink tap water for individuals being satisfied
- $Mef_0(y)$ is the marginal effect on the probability to drink tap water for individuals not being satisfied

Marginal effects (3/3, Kassouf and Hoffmann, 2006)

- Marginal effect of a continuous variable z that belongs to x and/or w on the probability to drink tap water:

$$Mef(z) = \frac{\partial E(tap|w,x)}{\partial z} = Mef_1(z) + Mef_0(z)$$

- With:

$$Mef_1(z) =$$
$$\phi(\alpha' w)\Phi(\beta' x + \delta - \frac{\rho\alpha' w}{\sqrt{1-\rho^2}})\alpha_z + \phi(\beta' x + \delta)\Phi(\alpha' w - \frac{\rho(\beta' x+\delta)}{\sqrt{1-\rho^2}})\beta_z$$
$$Mef_0(z) = \phi(-\alpha' w)\Phi(\beta' x - \frac{\rho\alpha' w}{\sqrt{1-\rho^2}})\alpha_z + \phi(\beta' x)\Phi(-\alpha' w - \frac{\rho(\beta' x)}{\sqrt{1-\rho^2}})\beta_z$$

where ϕ is the density function of the standard univariate normal distribution.

- $Mef_1(z)$ and $Mef_0(z)$ receive the same interpretation as the previous ones. The expressions simplify when $\rho = 0$.

Results (1/3): same exogenous regressors in both equations, Wilde (2000)

	sat equation		tap equation	
Variable	**Coefficient**	**p-value**	**Coefficient**	**p-value**
income cat. 2	-0.023	0.610	-0.025	0.605
income cat. 3	0.035	0.431	0.024	0.635
income cat. 4	0.036	0.415	-0.157	0.002
income cat. 5	-0.007	0.941	-0.236	0.037
score_wat	0.021	0.006	0.003	0.717
score_env	-0.005	0.067	0.010	0.006
age	-0.011	0.088	-0.010	0.171
age*age	0.0001	0.024	0.0001	0.209
gender (male)	0.112	0.243	0.134	0.220
age*gender	0.0009	0.649	-0.004	0.086
sat	-	-	1.226	0.022
i_Canada	-0.115	0.068	-0.554	0.000
i_Netherlands	1.108	0.000	-0.033	0.848
i_France	-0.064	0.312	-0.759	0.000
i_Mexico	-1.342	0.000	-1.621	0.000
i_Italy	-0.441	0.000	-1.354	0.000
i_Czech	-0.070	0.325	-0.383	0.000
i_Sweden	0.891	0.000	0.440	0.008
i_Norway	0.754	0.000	0.754	0.000
i_Korea	-1.036	0.000	-0.951	0.000
intercept	0.660	0.000	0.396	0.323
N=9212	Log likelihood=-8097.308		LR test: $\rho = 0$ not rejected ($chi2(1) = 0.36$)	

Results (2/3): instruments in sat equation, Monfardini and Radice (2008), score_wat dropped

	sat equation		tap equation	
Variable	**Coefficient**	**p-value**	**Coefficient**	**p-value**
income cat. 2	-0.022	0.602	-0.025	0.606
income cat. 3	0.027	0.547	0.025	0.618
income cat. 4	0.019	0.672	-0.155	0.002
income cat. 5	-0.014	0.885	-0.236	0.037
score_env	-0.004	0.166	0.010	0.004
age	-0.008	0.243	-0.010	0.164
age*age	0.0001	0.131	0.0001	0.192
gender (male)	0.086	0.369	0.135	0.213
age*gender	0.0014	0.520	-0.004	0.085
sat	-	-	1.181	0.005
prop (owner=1)	0.083	0.017	-	-
nbr of yrs in home cat. 2	0.011	0.790	-	-
nbr of yrs in home cat. 3	0.045	0.327	-	-
nbr of yrs in home cat. 4	0.142	0.004	-	-
trust in gov (no=1)	-0.041	0.000	-	-
i_Canada	-0.155	0.013	-0.560	0.000
i_Netherlands	1.058	0.000	-0.026	0.855
i_France	-0.096	0.124	-0.762	0.000
i_Mexico	-1.419	0.000	-1.641	0.000
i_Italy	-0.492	0.000	-1.355	0.000
i_Czech	-0.002	0.973	-0.385	0.000
i_Sweden	0.834	0.000	0.444	0.001
i_Norway	0.663	0.000	0.754	0.000
i_Korea	-1.107	0.000	-0.974	0.000
intercept	0.759	0.000	0.433	0.192
N=9212	Log likelihood=-8084.137		LR test: $\rho = 0$ not rejected $(chi2(1) = 0.72)$	

Tests

- No endogeneity issues in the bivariate probit (see Greene, 2008 for a straightforward explanation)
- This result is robust to the specification. Both equations are independent
- Income falls into five classes, class 1 [resp. class 5] gathering households with the lowest [resp. highest] income
- Class 1 is the reference. Are the income variables jointly significant? **Yes**: $\chi^2 = 20.98[8\ df]$
- Are the age/gender variables jointly significant? **Yes**: $\chi^2 = 46.29[8\ df]$
- Are "the number of years living in the primary residence" variables jointly significant? **Yes**: $\chi^2 = 10.30[3\ df]$
- Is score_env significant? **Yes**: $\chi^2 = 10.82[2\ df]$
- What if we replace score_env and score_wat by naive mean scores (preoc_env and habit_wat)?

Results (3/3): naive scores in both equations

	sat equation		tap equation	
Variable	**Coefficient**	**p-value**	**Coefficient**	**p-value**
income cat. 2	-0.024	0.573	-0.027	0.582
income cat. 3	0.027	0.542	0.026	0.604
income cat. 4	0.023	0.602	-0.149	0.004
income cat. 5	-0.015	0.876	-0.239	0.035
habit_wat	0.074	0.002	0.092	0.001
preoc_env	-0.595	0.026	0.055	0.073
age	-0.008	0.206	-0.011	0.130
age*age	0.0001	0.120	0.0001	0.171
gender (male)	0.086	0.375	0.132	0.223
age*gender	0.0014	0.500	-0.004	0.095
sat	-	-	1.160	0.006
prop (owner=1)	0.083	0.021	-	-
nbr of yrs in home cat. 2	0.012	0.787	-	-
nbr of yrs in home cat. 3	0.045	0.328	-	-
nbr of yrs in home cat. 4	0.141	0.005	-	-
trust in gov (no=1)	-0.041	0.000	-	-
i_Canada	-0.123	0.052	-0.520	0.000
i_Netherlands	1.066	0.000	-0.003	0.982
i_France	-0.082	0.192	-0.742	0.000
i_Mexico	-1.384	0.000	-1.604	0.000
i_Italy	-0.461	0.000	-1.318	0.000
i_Czech	0.033	0.652	-0.339	0.000
i_Sweden	0.867	0.000	0.490	0.001
i_Norway	0.721	0.000	0.835	0.000
i_Korea	-1.040	0.000	-0.896	0.000
intercept	0.636	0.000	0.156	0.641
N=9212	Log likelihood=-8074.691		LR test: $\rho = 0$ not rejected $(chi2(1) = 0.81)$	

Comments

- Whatever the specification, habit_wat is strongly significant
- Again, no endogeneity issues
- Coefficients other than those of preoc_env and habit_wat are stable
- What tells us the Cronbach's α about the scalability of question 23 and question 91?
- Question 23: Cronbach' $\alpha = 0.86$ (good scalability, not surprising because all items are also included in the Mokken scale)
- Question 91: Cronbach' $\alpha = 0.52$ (bad scalability, but the Mokken scale analysis identifies a scale and not the Cronbach analysis)
- A naive approach (computation of scores without checking the scalability) could lead to false conclusions (influence of water saving attitudes on the probability to drink or not tap water)
- The Mokken scale analysis appears to be more precise than the Cronbach analysis (on these data) and allows for testing richer specifications

Marginal effects (1/2)

- The delta method is used to derive a 95 % confidence interval (restricted model, $\rho = 0$)
- $male = 1, age = 42, prop = 1, sat = 1$, Australia is the reference, no trust in gov, first revenue category, reference number of years in the primary residence (less than two years).
- Joint probability, $\Pr(tap = 1, sat = 1) = 0.73$; marginal probability $\Pr(tap = 1) = 0.94$

Marginal effects (2/2)

Variable	Marginal Effect on Pr(tap=1)	p-value	[95% Conf.	Interval]
Mef(sat)	0.40	0.000	0.36	0.45
Mef1(score_env)	0.0009	0.003	0.0003	0.001
Mef0(score_env)	0.0009	0.003	0.0003	0.001
Mef1(age)	0.0005	0.227	-0.0003	0.001
Mef0(age)	-0.001	0.001	-0.001	-0.0004
Mef1(prop)	0.024	0.017	0.004	0.044
Mef0(prop)	-0.013	0.018	-0.025	-0.002
Mef1(notrustgov)	-0.011	0.000	-0.017	-0.005
Mef0(notrustgov)	0.006	0.000	0.002	0.009
Mef1(sweden)	0.177	0.000	0.137	0.217
Mef0(sweden)	-0.077	0.000	-0.101	-0.053
Mef1(Korea)	-0.463	0.000	-0.503	-0.424
Mef0(Korea)	0.028	0.066	-0.001	0.058
Mef1(inc_cat2)	-0.013	0.012	-0.023	-0.002
Mef0(inc_cat2)	0.004	0.356	-0.004	0.013
Mef1(inc_cat3)	-0.009	0.073	-0.019	-0.0008
Mef0(inc_cat3)	0.008	0.076	-0.0008	0.017
Mef1(inc_cat4)	-0.026	0.000	-0.038	-0.015
Mef0(inc_cat4)	-0.008	0.112	-0.018	0.001
Mef1(inc_cat5)	-0.035	0.012	-0.063	-0.007
Mef0(inc_cat5)	-0.014	0.161	-0.035	0.005

Conclusions

- Estimations on the pooled data show strong country specific effects
- **The water quality perception do influence** the decision to drink or not tap water (strong effect of the *sat* variable)
- Constructing Mokken scales allows us to assess accurately the effect of attitudinal variables on the individual decision to drink or not tap water. Concerned individuals do consume more tap water
- More generally, attitudinal variables have a small but significant influence on the decision to drink tap water (at least for our respondent profile)