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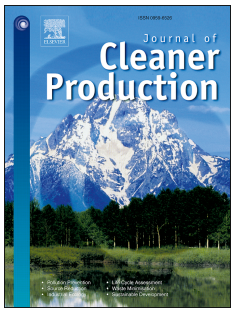

Consumers' preferences for electricity-saving programs: Evidence from a choice-based conjoint study

Stefanie Hille, Sylvain Weber, Tobias Brosch

PII: S0959-6526(19)30531-1

DOI: https://doi.org/10.1016/j.jclepro.2019.02.142

Reference: JCLP 15872

To appear in: *Journal of Cleaner Production*

Received Date: 30 August 2018

Revised Date: 16 January 2019

Accepted Date: 13 February 2019

Please cite this article as: Hille S, Weber S, Brosch T, Consumers' preferences for electricity-saving programs: Evidence from a choice-based conjoint study, *Journal of Cleaner Production* (2019), doi: https://doi.org/10.1016/j.jclepro.2019.02.142.

Consumers' Preferences for Electricity-Saving Programs: Evidence from a Choice-Based Conjoint Study

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Abstract

Electric utilities play a crucial role in designing and deploying electricity conservation programs. However, because people can freely decide to participate in such programs or not, better understanding what types of programs appeal to specific groups of customers is fundamental. The authors therefore explore preferences of likely subscribers for electricity-saving programs defined by various features (such as goal setting, tailored feedback provision, or reward and penalty schemes), and use a latent class approach to capture heterogeneity and detect segments of people that share similar preferences. The segments are subsequently profiled in terms of socio-demographic and psychographic characteristics. Overall, results show that there is considerable heterogeneity in tastes for different features of electricity-saving programs. The findings allow identifying individual characteristics that influence the likelihood to adopt different forms of programs. On this basis, electric utilities may design electricity-saving programs that better satisfy customer needs and effectively tailor marketing and communication programs to the specific target groups.

Keywords: Choice-based conjoint analysis; Electricity-saving programs; Latent class analysis; Market segmentation.

Highlights:

- A choice-based conjoint experiment is designed to elicit preferences for electricity-saving programs.
- Strong heterogeneity prevails in tastes for features of electricity-saving programs.
- No one-size-fits-all approach to design programs should therefore be followed.

- Psychographic variables were most powerful in explaining likely program subscription.

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Which of the following **three tariff options** would you **prefer most**?

Please note: *When you scroll over the specific characteristics of the electricity tariffs, you will be provided with additional information.*

1 of 8

	Option 1	Option 2	Option 3
Reduction target	5%	10%	15%
Electricity saving bonus	100 CHF	50 CHF	150 CHF
Form of bonus	Direct reduction from bill	Solar electricity	Efficiency voucher
Fine if target is missed	50 CHF	(-)	25 CHF
Improved information	Improved billing	Improved billing and in-home display unit	(-)
	1	2	3
Which option do you prefer?	○	○	○

If your utility provider would offer you the tariff that you have chosen above in real life, would you be willing to subscribe to such a tariff?

○ Yes, very likely

○ No, very unlikely

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[1] Swiss households consume around 3,000 kWh per year (see e.g., Weber et al. 2017b). Considering a price of 20 cents per kWh (see the statistics from the Swiss Federal Electricity Commission), the average annual bill is

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thus around CHF 600, and the bonuses go up to 25% of the annual electricity expenses. Such bonuses seem sufficiently high to create substantial incentives for motivating households.

Attribute	Attribute levels
Reduction target	• 5% • 10% • 15%
Electricity-saving bonus	• CHF 50 • CHF 100 • CHF 150
Form of bonus	• Direct reduction from the next electricity bill • Efficiency voucher • Certified green electricity from solar plants in the region
Fine if target is missed	• (-) • CHF 25 • CHF 50
Improved information	• (-) • Improved billing • Improved billing and in-home display unit

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[2] The analysis was also conducted using the original sample of 574 respondents (among which 73 are likely non-subscribers and 501 are likely subscribers) without any data cleansing. The main findings (available on request) remain unaltered. The most important difference is the optimal number of segments, which is five in the analysis reported in the paper, while it is six with the full sample. In the alternative analysis based on the six-segment solution, the number of observations in some groups becomes small, and the additional group is difficult to characterize, which constitute another argument for cleaning the sample.

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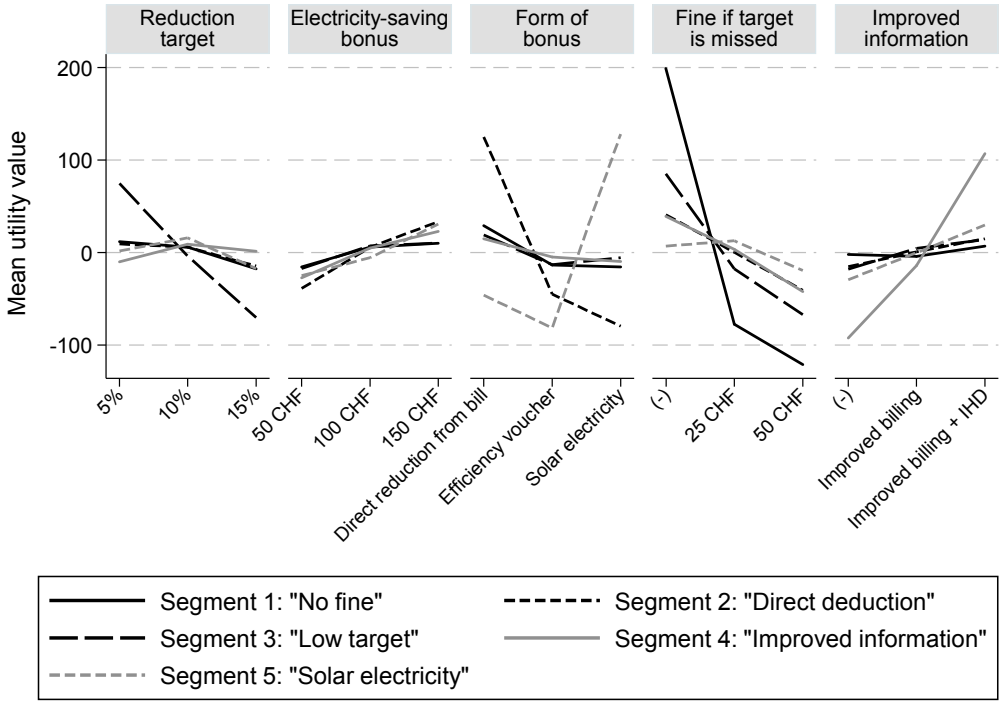
Number of segments	CAIC	BIC
2	5,050	5,029
3	4,812	4,780
4	4,697	4,654
5	4,642	4,588
6	4,657	4,592
7	4,692	4,616

[3] Note that utility should be decreasing for most individuals with the level of a potential "fine if target is missed". This is indeed what is observed for Segments 1 to 4. However, some rational individuals may find it stimulating and therefore attractive to face the risk of paying a fine. To some extent, Segment 5 displays such a behavior (more on this below).



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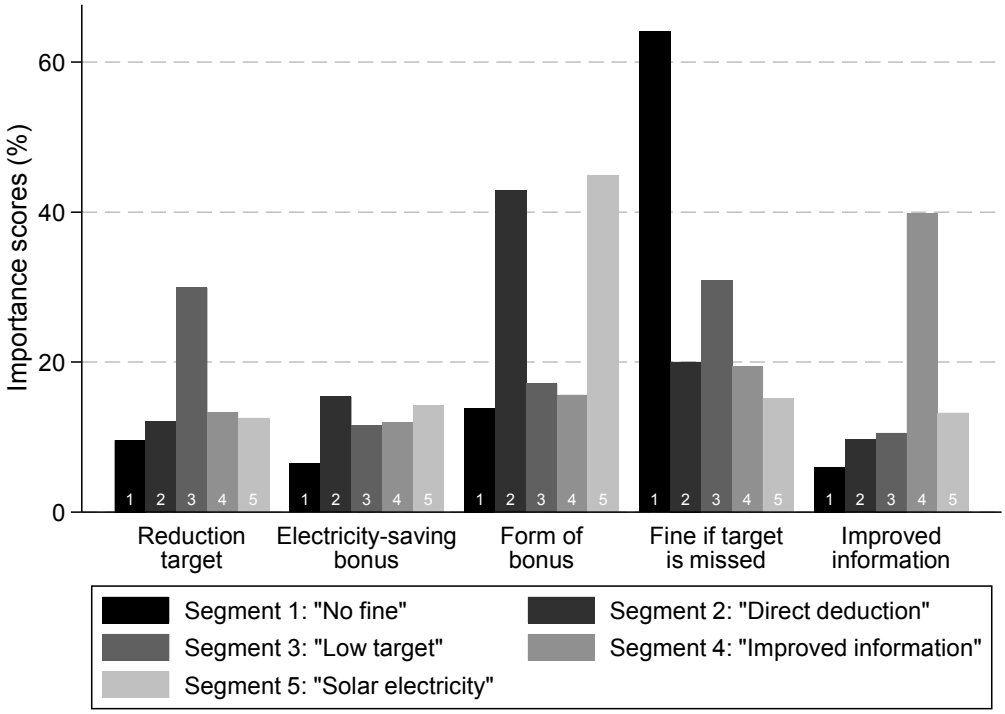

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Category and variable	Description	Source
Demographic characteristics		
Gender	0=Male; 1=Female	
Age	Respondent's age (in years)	
Years of education	Inferred from the highest level of education achieved: 1=Less than compulsory school (7 years); 2=Compulsory school (9 y.); 3=Domestic school (11 y.); 4=Basic vocational school (11 y.); 5=Vocational/general school (12 y.); 6=Apprenticeship (12 y.); 7=Full-time vocational school (14 y.); 8=High school (13 y.); 9=University, ETH, university of applied sciences (16 y.)	
Household size	Number of people living in the household	
House occupant	The household lives in a house (0 = flat, 1 = house)	
Home owner	The household owns its dwelling (0 = tenant, 1 = owner)	
Psychographic characteristics [z]		
Loss aversion [z]	Respondents were asked to imagine a situation in which they could participate in a game in which a coin was tossed. With a probability of 50%, "tail" appears and they would get paid CHF 6. With a probability of 50%, "head" appears and they have to pay some amount (X) in CHF. Then they were asked whether they would take part in a game where X would be CHF 2, 3, 4, 5, 6, 7. A loss aversion index is computed on a scale from 0 (least averse individuals, who accept all games), 1 (individuals who accept games with potential loss up to CHF 6 but reject the game with potential loss of CHF 7), … to 6 (most averse individuals, who reject all games). 62 respondents provided inconsistent answers, in the sense that they stated they reject a game with a low potential loss but would accept a game with a larger potential loss. For these respondents, loss aversion is determined by considering the first turning point only. For example, a respondent stating he would not accept games where he could lose CHF 2 to 5, accept a game where he could lose CHF 6, and then again not accept a game in which he could lose CHF 7 is assigned a loss aversion of 1. The rationale for implementing this procedure is that most inconsistent answers appear to arise because respondents likely misinterpreted the question and simply provided a single answer, which likely correspond to the last game they would accept (such as the above-mentioned example). Robustness checks are nevertheless conducted by (1) dropping these respondents and (2) considering these responses as missing values and implement multiple-imputation methods to conduct full-information estimations. These robustness checks (available on request) revealed no substantial change in the results.	Adapted from Gächter et al. (2007)
Energy literacy [z]	An energy literacy index is constructed by counting the number	

	of correct answers to the following five questions: 1. The biggest share of energy consumed in a Swiss household is for heating purposes. (True) 2. CO_2 emissions play a crucial role in global warming. (True) 3. Simply lowering the heating temperature in an average household by 1°C can help to cut down the heating demand by 6%. (True) 4. Coal is a renewable energy resource. (False) 5. Hydroelectric power plants account for 10% of total Swiss electricity production. (False)	
Positive outcome affect [z]	Respondents rated their tendency to experience positive emotions as a consequence of actions (their own or someone else's) with a positive impact on the environment across 4 scenarios (e.g., pride when they commit an environmentally friendly action) on a 5-point scale ranging from 1 = *totally disagree* to 5 = *totally agree.*	Hahnel et al. (2017)
Negative outcome effect [z]	Respondents rated their tendency to experience negative emotions as a consequence of actions (their own or someone else's) with a negative impact on the environment across 5 scenarios (e.g., anger when they observe someone polluting the environment) on a 5-point scale ranging from 1 = *totally disagree* to 5 = *totally agree.*	Hahnel et al. (2017)
Goal frustration effect [z]	Respondents rated their tendency to experience negative emotions when their intention to perform environmentally friendly behaviors is obstructed across 3 scenarios (e.g., frustration when they would like to recycle something, but there were no containers around) on a 5-point scale ranging from 1 = *totally disagree* to 5 = *totally agree*.	Hahnel et al. (2017)
Coercion affect [z]	Respondents rated their tendency to experience negative emotions when they are feeling forced to perform in an environmentally friendly manner across 3 scenarios (e.g., feeling annoyed when someone expects them to make a donation for an environmental organization) on a 5-point scale ranging from 1 = *totally disagree* to 5 = *totally agree*.	Hahnel et al. (2017)
Positive baseline affect [z]	Respondents rated their tendency to experience positive emotions vis-à-vis the current state of the environment across 3 scenarios (e.g., awe towards the beauty of nature) on a 5-point scale ranging from 1 = *totally disagree* to 5 = *totally agree*.	Hahnel et al. (2017)
Altruistic values [z]	Respondents rated the importance of 4 values (equality, a world at peace, social justice, helpful) "as guiding principles in their lives" on a 5-point scale ranging from 1 = *totally disagree* to 5 = *totally agree*.	Adapted from Steg et al. (2014)
Biospheric values [z]	Respondents rated the importance of 4 values (respecting the earth, unity with nature, protecting the environment, preserving nature) "as guiding principles in their lives" on a 5-point scale ranging from 1 = totally disagree to 5 = totally agree.	Adapted from Steg et al. (2014)
Egoistic values [z]	Respondents rated the importance of 5 values (social power, wealth, authority, influential, ambitious) "as guiding principles	Adapted from Steg

	in their lives" on a 5-point scale ranging from 1 = totally disagree to 5 = totally agree.	et al. (2014)
Hedonistic values [z]	Respondents rated the importance of 3 values (pleasure, enjoying life, self-indulgent) "as guiding principles in their lives" on a 5-point scale ranging from 1 = totally disagree to 5 = totally agree.	Adapted from Steg et al. (2014)
Descriptive norms [z]	Respondents rated the extent to which they agree with the statement "I believe that most of my acquaintances save energy wherever it is possible" on a 5-point scale ranging from 1 = totally disagree to 5 = totally agree.	Adapted from Thørgersen (2006)
Injunctive norms [z]	Respondents rated the extent to which they agree with the statement "Most of my acquaintances expect that I save energy wherever it is possible" on a 5-point scale ranging from 1 = totally disagree to 5 = totally agree.	Adapted from Thørgersen (2006)
Personal norms [z]	Respondents rated the extent to which they agree with the statement "I feel personally obliged to save as much energy as possible" on a 5-point scale ranging from 1 = totally disagree to 5 = totally agree.	Steg et al. (2005)
Self-efficacy [z]	Respondents rated the extent to which they agree with the two statements "I can participate in behaviors to protect the environment if I really wanted to" and "I will take steps to adopt environmentally friendly behaviors even if it causes daily inconveniences" on a 5-point scale ranging from 1 = totally disagree to 5 = totally agree.	Kim et al. (2012)
Response efficacy [z]	Respondents rated the extent to which they agree with the two statements "Acting environmentally friendly is effective to protect our planet and its nature" and "Acting environmentally friendly will help to prevent the consequences of global warning for our planet and its inhabitants" on a 5-point scale ranging from 1 = totally disagree to 5 = totally agree.	Kim et al. (2012)

[z] All psychographic variables are measured on a 5-point scale, from 1 to 5 (except loss aversion, measured on a 7-point scale from 0 to 6, and energy literacy, measured on a 6-point scale from 0 to 5). To facilitate interpretation, these variables were transformed to z-scores (i.e., standardized variables with mean 0 and standard deviation 1) before they were included in the estimations (Section 4.3).

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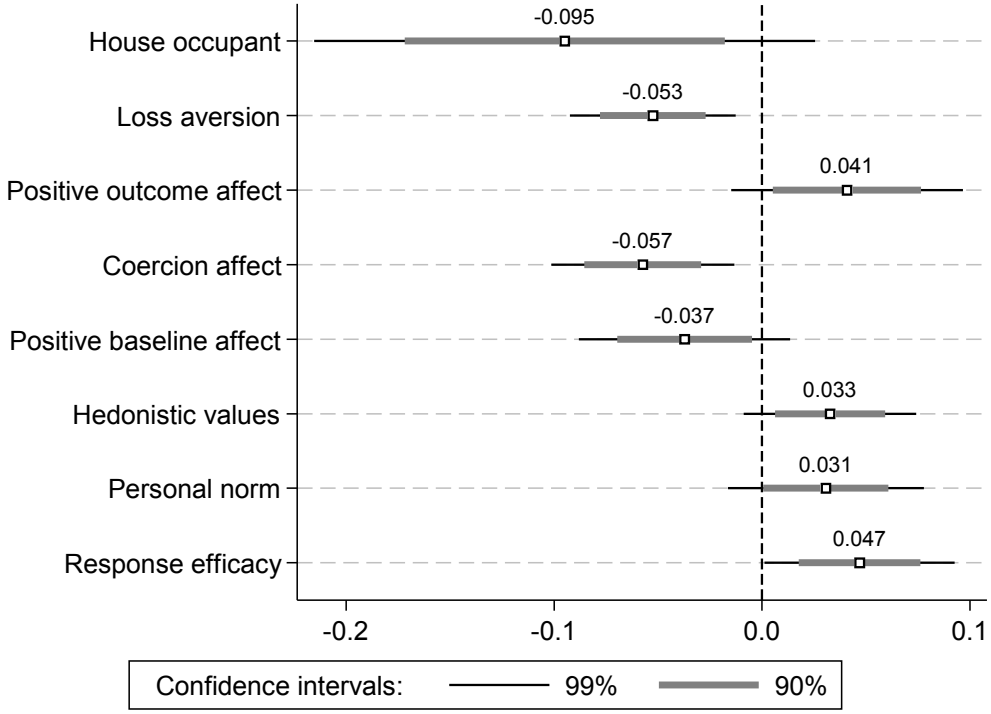

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[4] Note that income is not included in the explanatory variables. Even though this variable was collected in the survey, it is missing for a substantial share of the respondents (around 10%). To include income, a good number of respondents would have been lost or missing values would have to be imputed. The results obtained using both procedures show that income is not significant while other coefficients are virtually unaltered (results available upon request). The authors have therefore decided to exclude income from the analysis.

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$$y_i = \begin{cases} 1 & \text{if individual i belongs to segment 1: "No fine"} \\ 2 & \text{if individual i belongs to segment 2: "Direct deduction"} \\ 3 & \text{if individual i belongs to segment 3: "Low target"} \\ 4 & \text{if individual i belongs to segment 4: "Improved information"} \\ 5 & \text{if individual i belongs to segment 5: "Solar electricity"} \end{cases}$$

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[5] Tables with the full results are available on request.

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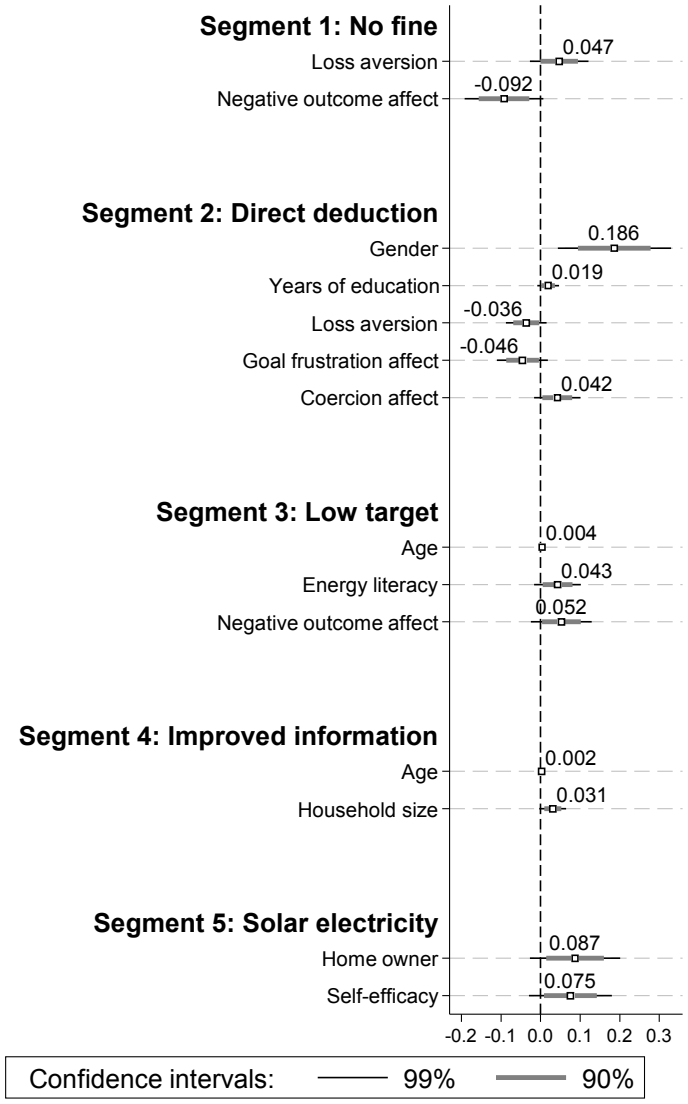

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Appendix

Table A: HB estimation of part worth utilities for the five segments.

	Segment 1: "No fine"		**Segment 2: "Direct deduction"**		**Segment 3: "Low target"**		**Segment 4: "Improved information"**		**Segment 5: "Solar electricity"**	
	n = 136		n = 104		n = 72		n = 45		n = 44	
Reduction target										
5%	11.7	(23.7)	9.1	(32.1)	74.5	(49.5)	-10.2	(35.1)	1.5	(32.6)
10%	5.9	(11.5)	5.7	(17.5)	-4.0	(25.2)	8.9	(25.6)	15.7	(20.6)
15%	-17.6	(23.1)	-14.8	(32.5)	-70.4	(36.9)	1.3	(34.4)	-17.2	(31.5)
Electricity-saving bonus										
50 CHF	-15.5	(12.6)	-38.8	(26.3)	-17.5	(34.3)	-27.4	(23.9)	-25.1	(36.4)
100 CHF	5.6	(7.5)	5.5	(12.5)	7.1	(14.5)	4.8	(13.1)	-5.6	(15.5)
150 CHF	9.9	(13.5)	33.3	(24.7)	10.4	(33.1)	22.6	(22.5)	30.7	(44.9)
Form of bonus										
Direct reduction from bill	29.1	(33.4)	124.7	(45.1)	18.9	(40.2)	14.6	(43.5)	-46.1	(66.3)
Efficiency voucher	-13.6	(24.2)	-45.0	(34.0)	-13.2	(31.4)	-4.9	(34.2)	-81.7	(29.0)
Solar electricity	-15.5	(32.9)	-79.7	(36.9)	-5.7	(43.9)	-9.7	(34.5)	127.8	(71.3)
Fine if target is missed										
(-)	199.0	(47.5)	40.8	(43.6)	85.0	(38.9)	39.1	(42.2)	6.9	(45.3)
25 CHF	-77.7	(19.7)	0.1	(25.9)	-17.8	(27.5)	3.3	(25.5)	12.5	(23.3)
50 CHF	-121.4	(30.2)	-40.9	(26.9)	-67.3	(22.3)	-42.4	(31.3)	-19.4	(30.2)
Improved information										
(-)	-2.3	(15.6)	-15.5	(23.5)	-18.2	(26.3)	-92.4	(28.6)	-29.5	(22.5)
Improved billing	-4.4	(7.6)	0.7	(11.7)	4.5	(15.4)	-14.3	(22.2)	-0.2	(12.8)
Improved billing + IHD	6.7	(18.0)	14.8	(23.6)	13.7	(26.3)	106.8	(45.0)	29.7	(22.7)

Notes: Standard deviations in parentheses. Figure 2 provides an illustration corresponding to this Table.

Table B: Attribute importance scores (%) for the five segments.

	Segment 1: "No fine"	**Segment 2: "Direct deduction"**	**Segment 3: "Low target"**	**Segment 4: "Improved information"**	**Segment 5: "Solar electricity"**
	n = 136	n = 104	n = 72	n = 45	n = 44
Reduction target	9.6	12.1	29.9	13.3	12.5
Electricity-saving bonus	6.5	15.4	11.5	11.9	14.2
Form of bonus	13.8	42.8	17.1	15.6	44.9
Fine if target is missed	64.1	20.0	30.9	19.3	15.1
Improved information	6.0	9.7	10.5	39.8	13.2
Total	100.0	100.0	100.0	100.0	100.0

Note: Figure 3 provides an illustration corresponding to this Table.

Table C1: Descriptive statistics (means and standard deviations) comparing likely subscribers to likely non-subscribers.

	(1) Likely subscribers	(2) Likely non-subscribers	(3) Total
Gender	0.461	0.466	0.462
	(0.499)	(0.502)	(0.499)
Age	45.923	48.932	46.386
	(15.171)	(16.759)	(15.446)
Years of education	13.808	13.904	13.823
	(1.930)	(2.116)	(1.958)
Household size	2.112	2.110	2.112
	(1.170)	(1.208)	(1.175)
House occupant	0.195	0.315	0.213
	(0.396)	(0.468)	(0.410)
Home owner	0.299	0.233	0.289
	(0.459)	(0.426)	(0.454)
Loss aversion	3.643	4.712	3.808
	(1.934)	(1.783)	(1.948)
Energy literacy	3.564	3.219	3.511
	(1.225)	(1.566)	(1.288)
Positive outcome affect	3.968	3.455	3.889
	(0.783)	(0.955)	(0.832)
Negative outcome affect	3.441	2.959	3.367
	(0.841)	(0.912)	(0.869)
Goal frustration affect	3.438	3.201	3.402
	(0.943)	(0.986)	(0.953)
Coercion affect	2.521	3.096	2.610
	(0.931)	(0.985)	(0.961)
Positive baseline affect	4.165	4.210	4.172
	(0.809)	(0.719)	(0.796)
Altruistic values	3.890	3.791	3.874
	(0.748)	(0.728)	(0.745)
Biospheric values	4.012	3.908	3.996
	(0.761)	(0.827)	(0.771)
Egoistic values	2.677	2.641	2.672
	(0.709)	(0.718)	(0.710)
Hedonistic values	3.761	3.566	3.731
	(0.752)	(0.906)	(0.779)
Descriptive norm	3.145	3.123	3.141
	(0.932)	(0.985)	(0.940)
Injunctive norm	3.120	2.973	3.097
	(1.059)	(1.080)	(1.062)
Personal norm	4.052	3.534	3.973
	(0.927)	(1.191)	(0.989)
Self-efficacy	3.788	3.521	3.747
	(0.725)	(0.868)	(0.754)
Response efficacy	3.946	3.445	3.869
	(0.866)	(1.009)	(0.907)
# Obs.	401	73	474

Psychographic variables measured on a 5-point scale from 1 to 5 (except loss aversion measured on a 7-point scale from 0 to 6, and energy literacy measured on a 6-point scale from 0 to 5). All these variables were transformed to z-scores before they were included in the estimations. The variables are described in Table 3.

Table C2: Descriptive statistics (means and standard deviations) comparing the five segments of likely subscribers.

	(1) No fine	(2) Direct deduction	(3) Low target	(4) Improved information	(5) Solar electricity
Gender	0.426	0.577	0.333	0.467	0.500
	(0.496)	(0.496)	(0.475)	(0.505)	(0.506)
Age	45.412	42.452	48.569	50.533	46.659
	(13.432)	(15.123)	(16.467)	(16.752)	(15.080)
Years of education	13.721	14.106	13.903	13.578	13.455
	(1.946)	(1.874)	(1.973)	(2.017)	(1.823)
Household size	2.074	2.058	2.028	2.533	2.068
	(1.113)	(1.261)	(1.007)	(1.517)	(0.900)
House occupant	0.162	0.192	0.236	0.222	0.205
	(0.370)	(0.396)	(0.428)	(0.420)	(0.408)
Home owner	0.279	0.269	0.292	0.311	0.432
	(0.450)	(0.446)	(0.458)	(0.468)	(0.501)
Loss aversion	3.882	3.442	3.333	3.889	3.636
	(1.982)	(1.940)	(1.906)	(1.874)	(1.831)
Energy literacy	3.441	3.538	3.806	3.667	3.500
	(1.293)	(1.097)	(1.083)	(1.187)	(1.517)
Positive outcome affect	3.849	4.007	3.865	4.100	4.278
	(0.765)	(0.769)	(0.817)	(0.791)	(0.726)
Negative outcome affect	3.246	3.471	3.492	3.573	3.759
	(0.849)	(0.887)	(0.783)	(0.767)	(0.750)
Goal frustration affect	3.380	3.359	3.426	3.600	3.659
	(0.965)	(0.906)	(0.946)	(0.806)	(1.065)
Coercion affect	2.547	2.638	2.593	2.363	2.212
	(0.941)	(0.984)	(0.858)	(0.834)	(0.932)
Positive baseline affect	4.120	4.045	4.111	4.363	4.477
	(0.855)	(0.819)	(0.767)	(0.619)	(0.802)
Altruistic values	3.840	3.851	3.764	4.006	4.222
	(0.792)	(0.732)	(0.756)	(0.652)	(0.638)
Biospheric values	3.947	3.945	3.944	4.122	4.369
	(0.780)	(0.746)	(0.772)	(0.676)	(0.714)
Egoistic values	2.682	2.723	2.697	2.720	2.477
	(0.730)	(0.699)	(0.698)	(0.688)	(0.702)
Hedonistic values	3.833	3.740	3.759	3.637	3.712
	(0.750)	(0.671)	(0.830)	(0.791)	(0.770)
Descriptive norm	3.162	3.212	2.944	3.156	3.250
	(0.913)	(0.972)	(0.963)	(0.852)	(0.918)
Injunctive norm	3.059	3.154	2.944	3.356	3.273
	(1.052)	(1.068)	(1.060)	(1.004)	(1.086)
Personal norm	3.949	4.019	4.028	4.311	4.227
	(0.999)	(0.935)	(0.839)	(0.874)	(0.831)
Self-efficacy	3.680	3.736	3.778	3.844	4.205
	(0.706)	(0.753)	(0.691)	(0.698)	(0.668)
Response efficacy	3.820	3.913	3.917	4.078	4.330
	(0.892)	(0.860)	(0.927)	(0.715)	(0.739)
# Obs.	136	104	72	45	44

Psychographic variables measured on a 5-point scale from 1 to 5 (except loss aversion measured on a 7-point scale from 0 to 6, and energy literacy measured on a 6-point scale from 0 to 5). All these variables were transformed to z-scores before they were included in the estimations. The variables are described in Table 3.

Table D: Binary models and marginal effects for likely subscribers (1) vs likely non-subscribers (0)

	Logit		Probit	
	Coefficients	Marginal effects	Coefficients	Marginal effects
Gender	-0.009	-0.001	-0.015	-0.003
	(0.329)	(0.029)	(0.177)	(0.032)
Age	-0.002	-0.000	-0.001	-0.000
	(0.011)	(0.001)	(0.006)	(0.001)
Years of education	-0.102	-0.009	-0.062	-0.011
	(0.078)	(0.007)	(0.043)	(0.008)
Household size	-0.066	-0.006	-0.023	-0.004
	(0.131)	(0.012)	(0.073)	(0.013)
House occupant	-0.770**	-0.082*	-0.450**	-0.095**
	(0.349)	(0.044)	(0.193)	(0.047)
Home owner	0.269	0.023	0.160	0.028
	(0.354)	(0.029)	(0.193)	(0.032)
Loss aversion ^{z}	-0.534***	-0.048***	-0.291***	-0.053***
	(0.168)	(0.015)	(0.087)	(0.015)
Energy literacy ^{z}	0.198	0.018	0.098	0.018
	(0.148)	(0.013)	(0.083)	(0.015)
Positive outcome affect ^{z}	0.377*	0.034*	0.226*	0.041*
	(0.213)	(0.019)	(0.120)	(0.022)
Negative outcome affect ^{z}	0.309	0.027	0.154	0.028
	(0.219)	(0.019)	(0.121)	(0.022)
Goal frustration affect ^{z}	0.113	0.010	0.070	0.013
	(0.201)	(0.018)	(0.110)	(0.020)
Coercion affect ^{z}	-0.562***	-0.050***	-0.318***	-0.057***
	(0.176)	(0.015)	(0.097)	(0.017)
Positive baseline affect ^{z}	-0.382*	-0.034*	-0.207*	-0.037*
	(0.200)	(0.018)	(0.109)	(0.020)
Altruistic values ^{z}	-0.258	-0.023	-0.125	-0.023
	(0.206)	(0.018)	(0.114)	(0.021)
Biospheric values ^{z}	-0.328	-0.029	-0.197	-0.035
	(0.235)	(0.021)	(0.130)	(0.023)
Egoistic values ^{z}	-0.073	-0.006	-0.041	-0.007
	(0.169)	(0.015)	(0.094)	(0.017)
Hedonistic values ^{z}	0.315*	0.028*	0.181**	0.033**
	(0.164)	(0.014)	(0.090)	(0.016)
Descriptive norm ^{z}	0.078	0.007	0.047	0.008
	(0.166)	(0.015)	(0.091)	(0.016)
Injunctive norm ^{z}	-0.052	-0.005	-0.051	-0.009
	(0.186)	(0.017)	(0.101)	(0.018)
Personal norm ^{z}	0.315*	0.028*	0.170*	0.031*
	(0.178)	(0.016)	(0.100)	(0.018)
Self-efficacy ^{z}	-0.261	-0.023	-0.143	-0.026
	(0.206)	(0.018)	(0.112)	(0.020)
Response efficacy ^{z}	0.471***	0.042***	0.260***	0.047***
	(0.178)	(0.016)	(0.098)	(0.018)
Constant	4.014***	-	2.306***	-
	(1.351)		(0.742)	
Pseudo-R^2	0.218		0.219	
Count R^2 (adjusted)	0.297		0.297	
Log-Likelihood	-159.197		-159.131	
AIC	364.393	.	364.262	.
BIC	460.101	.	459.970	.
# Obs.	474		474	

Standard errors in parentheses. */**/***: significant at 10/5/1%. Marginal effects computed at the sample means (discrete change from the base level for binary variables). ^{z}: the variable is standardized (z-score). The variables are described in Table 3. The coefficients significant at least at the 10% level are displayed in Figure 4.

Table E: Marginal effects obtained in multinomial probit model for likely subscribers

	(1) No fine	(2) Direct deduction	(3) Low target	(4) Improved information	(5) Solar electricity
Gender	-0.065	0.186***	-0.048	0.004	-0.077
	(0.060)	(0.056)	(0.040)	(0.031)	(0.052)
Age	-0.000	-0.002	0.004***	0.002**	-0.003
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
Years of education	-0.002	0.019*	0.008	-0.003	-0.022
	(0.015)	(0.011)	(0.010)	(0.007)	(0.014)
Household size	0.005	0.002	-0.018	0.031**	-0.019
	(0.026)	(0.018)	(0.020)	(0.013)	(0.026)
House occupant	-0.073	0.030	0.058	-0.002	-0.013
	(0.072)	(0.051)	(0.050)	(0.035)	(0.066)
Home owner	-0.000	-0.002	-0.051	-0.034	0.087**
	(0.064)	(0.047)	(0.053)	(0.037)	(0.044)
Loss aversion ^{z}	0.047*	-0.036*	-0.030	0.007	0.012
	(0.029)	(0.020)	(0.020)	(0.015)	(0.027)
Energy literacy ^{z}	-0.017	0.016	0.043*	-0.004	-0.037
	(0.030)	(0.021)	(0.023)	(0.015)	(0.029)
Positive outcome affect ^{z}	-0.000	0.019	-0.032	-0.000	0.013
	(0.041)	(0.030)	(0.030)	(0.021)	(0.041)
Negative outcome affect ^{z}	-0.092**	0.011	0.052*	0.005	0.024
	(0.039)	(0.028)	(0.030)	(0.020)	(0.037)
Goal frustration affect ^{z}	0.034	-0.046*	0.009	0.003	0.001
	(0.035)	(0.025)	(0.025)	(0.017)	(0.031)
Coercion affect ^{z}	-0.006	0.042*	0.012	-0.022	-0.028
	(0.032)	(0.023)	(0.023)	(0.018)	(0.030)
Positive baseline affect ^{z}	0.019	-0.037	-0.014	0.021	0.010
	(0.036)	(0.025)	(0.026)	(0.021)	(0.035)
Altruistic values ^{z}	0.003	-0.018	-0.036	-0.000	0.051
	(0.037)	(0.027)	(0.027)	(0.019)	(0.040)
Biospheric values ^{z}	-0.003	0.010	-0.020	-0.018	0.031
	(0.042)	(0.031)	(0.031)	(0.023)	(0.043)
Egoistic values ^{z}	-0.009	0.016	0.010	0.019	-0.036
	(0.030)	(0.021)	(0.021)	(0.016)	(0.028)
Hedonistic values ^{z}	0.042	-0.025	0.024	-0.012	-0.029
	(0.031)	(0.022)	(0.022)	(0.016)	(0.028)
Descriptive norm ^{z}	0.021	0.011	-0.020	-0.012	0.001
	(0.032)	(0.023)	(0.024)	(0.016)	(0.029)
Injunctive norm ^{z}	-0.002	0.017	-0.037	0.016	0.006
	(0.033)	(0.023)	(0.025)	(0.017)	(0.029)
Personal norm ^{z}	-0.015	0.011	0.027	0.025	-0.048
	(0.037)	(0.026)	(0.029)	(0.022)	(0.037)
Self-efficacy ^{z}	-0.024	-0.023	0.002	-0.030	0.075*
	(0.040)	(0.028)	(0.029)	(0.022)	(0.041)
Response efficacy ^{z}	-0.038	0.011	0.006	0.013	0.007
	(0.036)	(0.026)	(0.025)	(0.019)	(0.037)
Segment size	136	104	72	45	44

Standard errors in parentheses. */**/***: significant at 10/5/1%. Marginal effects computed at the sample means (discrete change from the base level for binary variables). ^{z}: the variable is standardized (z-score). The variables are described in Table 3. The coefficients significant at least at the 10% level are displayed in Figure 5.