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Are experienced people affected by a pre-set default option—Results from a field experiment

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ABSTRACT

The objective of the present paper is to investigate the robustness of the well-known result that pre-set default options determine people's choices. We do so by conducting a field experiment among environmental economists attending a large international conference on environmental economics. The participants were, at the time of registration, randomly allocated to different treatments related to carbon offsetting. What differs from earlier default studies is that our subjects have good knowledge about the good at hand. We investigate whether the choices of these experienced individuals are affected by a pre-set default option, and we also study the effect of a treatment with no pre-set default option. Our results, together with previous findings, indicate that the effect of a default option attenuates with experience.

1. Introduction

According to standard textbook economics, preferences are given. Over the years this assumption has been continuously challenged (see, e.g., [1]). The effect of pre-set default options on individual choices is an area where behavioral anomalies have been found [2]. A pre-set default option is the alternative that someone will receive if not actively making another choice, and a pre-set default option should not affect the choices made by rational subjects. The empirical evidence on default options can be summarized as the following conventional wisdom: "*Overall, the finding of large default effects is one of the most robust results in the applied economics literature for the last ten years*" ([21], p. 332).

The objective of the present paper is to investigate the robustness of the conventional wisdom that a pre-set default option determines people's choices. We do so by conducting a field experiment among environmental economists attending a large international conference on environmental economics. The participants were, at the time of registration, randomly allocated to different treatments related to carbon offsetting. What differs from earlier default studies is that our subjects have good knowledge about the good at hand. We investigate whether the choices of these experienced people are affected by a pre-set default option, and we also study the effect of a treatment with no pre-set default option.

As indicated by DellaVigna [21], several studies have empirically investigated the impact of pre-set default options. Two of the more cited areas with significant effects of pre-set default options of high economic significance are organ donation [3,4] and pension saving [5]. In addition, pre-set default options have been found to affect insurance decisions [6],

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corporate law [7], and consumer choice [8]. In the environmental area, Pichert and Katsikopoulosa [9] show that pre-set default options can have significant effects on pro-environmental behavior in the choice of "green" electricity. Hence, it seems as though there is overwhelming empirical evidence suggesting that pre-set default options have a substantial effect.

However, few studies have investigated the robustness of such default effects. Fleming et al. [10] investigate the effect of default options on brain activity using fMRI scanning. The subjects were asked to act as line judges in a tennis game with a pre-set default suggesting whether the ball was in or out. When complexity in decision making increased, i.e., as it became harder to decide when the ball was in or out, subjects to a larger extent chose the default option, indicating a consistent bias toward the pre-set default option. They were able to show that rejection of a default option was associated with more activity in regions of the brain associated with difficult decisions (inferior frontal cortex).

Another important dimension of complexity relates to experience. In the seminal paper by List [11], the author compares the endowment effect between experienced and inexperienced consumers. His results show that the endowment effect is negligible when consumers are highly experienced. Thus, an important insight from this line of research is that market experience significantly reduces market anomalies. A related finding is that cheap talk does not reduce hypothetical bias when bidders are experienced [12]. In a similar vein, Choi et al. [13] find that low-income employees tend to change from a default pension scheme slower than high-income employees, which they suggest can be related to differences in human capital. A motivation for the impact of inexperience and low human capital on choosing the default option could be that preferences are constructed at the time when the individuals are exposed to the good, which favors the pre-set default (compare with the discussions on status quo bias in, e.g., [14,15]). Another possible explanation is that inexperienced individuals are more likely to interpret the pre-set default option as a prepared recommendation (e.g., [16]).

It should be noted that in the default studies discussed above, the cost of switching is low with the possible exception of organ donation where paperwork is needed to conduct the change. Interestingly, Johnson and Goldstein [3] find a default effect even when conducting an online hypothetical organ donation experiment where transaction costs were virtually zero, which again indicates the important role of (in)experience in explaining the strength of pre-set default options.[2]

We investigate whether there is an effect of default options on offsetting carbon emissions among experienced subjects. To this end, we conduct a field experiment on CO_2 offsets among participants at the annual European Association of Environmental and Resource Economists (EAERE) meeting in June 2008. This group of individuals can be assumed to have substantial experience related to carbon offsetting from their profession. Admittedly, "participation in an environmental economics conference," as a proxy for "experience with carbon offsetting", is of course imperfect, yet surely EAERE members are likely to be well-informed about both climate change and an instrument such as compensation. In addition to opt-in and opt-out treatments, we also have a treatment with no default that requires an active decision by the participants, following Carroll et al. [17]. Our experiment shows an insignificant effect of a default option on choice. By and large, this supports the idea that the effect of default option is reduced by experience. The rest of the paper is organized as follows. In Section 2 we present the experimental design, followed by our results in Section 3. Finally, we discuss the policy implications of our findings in Section 4.

2. Experimental design

The experiment was conducted during the registration for the 16th Annual Conference of the European Association of Environmental and Resource Economists (EAERE), 25–28 June 2008, in Gothenburg, Sweden. The registration was web-based and participants were required to fill in a registration form when registering for the conference. This registration form included the option to offset CO_2 emissions if flying to the venue. There were two different levels of the offsetting fee: 10 euro for participants flying from within Europe and 40 euro for participants flying from outside Europe.[3]

The option to offset occurs in the middle of the second registration page, and it is labeled "CO_2 compensation for flying" (a screen shot from the web registration form is presented in Appendix A, see Fig. A1). The first two options in this section correspond to CO_2 emissions compensation for flying from within or outside Europe, respectively. When the participant logged on to the webpage, the random number generator drew an integer number from 1 to 3, which determined to which of the three treatments the participant was assigned.[4] When "compensation" was the default option, the dot was located by the option to compensate for CO2 emissions[5] in the circle in front of either "Flight from a country inside Europe" or

[2] Since subjects were exposed to choice making, we can in this case also rule out emotional cost as an explanation for choosing the default option.

[3] The offset was undertaken by buying European Allowance Units (EAU) after the conference. The prices of 10 and 40 Euro, respectively, were based on the two assumptions that an average European return flight emits around 0.5 metric tons CO_2 per traveler and an average transatlantic return flight around 2 metric tons per traveler and on the fact that at the time of the study, the EUA price (December, 2008) on the European Union's carbon market (the European Union Emissions Trading Program, EU-ETS) corresponded to approximately 20 euro per metric ton CO_2. Detailed information on how the prices were calculated as well as other details related to the carbon offsetting was available to the participants if they followed the link in the registration form on the web.

[4] Not all participants could be randomly assigned to a treatment due to computer compatibility problems. If the browser used did not support the random number generator math.random in Javascript, or if the browser blocked such scripts, a random number could not be generated, and hence they could not participate in the experiment.

Table 1
Descriptive statistics of participants' choices to offset.

Treatment	Percentage who compensated their flight to the conference		
	All flights	Flights from European countries	Flights from non-European countries
1: "Active decision", no default choice	46.8%	55.6%	34.4%
2: "Opt-in", default choice not to compensate	39.3%	50.0%	21.2%
3: "Opt-out", default choice to compensate	43.2%	54.7%	14.3%
Total	42.9%	53.2%	24.4%
Number of observations	240	154	86

Note. The confidence intervals for "All flights" are for "Active decision" (40.4–53.0), "Opt-in" (33.0–45.4), and "Opt-out" (37.1–49.6).

"Flight from a country outside Europe" based on earlier registered information on the country of origin. This represents the "opt-out" treatment since participants had to make an active choice not to compensate by clicking to change from the default option to another option. In the treatment "opt-in," the dot was located by the option "I do not want to compensate for my CO_2 emissions." The third treatment was an "active choice" treatment, i.e., there was no default. In this case, the participants had to make an active and fully independent choice (unassisted by any implicit hint from the default) of whether or not to CO_2 offset their travel. It should be noted that the registration could not be completed unless the compensation choice had been made.

3. Analysis

In total, 240 participants provided complete and valid data that could be used in the analysis.[6] Descriptive statistics of the choices made by the participants about whether or not to offset their air travel are shown in Table 1. As can be seen, there are only small differences between the three treatments. The overall results, presented in the second column, refer to all participants regardless of country of origin. This column shows that the highest level of compensation was made in the active choice treatment where no option was preset (46.8% chose to compensate), followed by the opt-out treatment (43.2% chose to compensate) and then the opt-in choice (39.3% chose to compensate). However, these differences are small and we cannot reject the null hypothesis of equal participation between all treatments at the 5% significance level (p-value$=0.63$) using a chi-square test. Moreover, we also conducted pairwise tests between the treatments. We cannot reject the null hypothesis of an equal proportion of participants who offset in any of the three pairwise comparisons of treatments at the 5% significance level ("Active decision" vs. "Opt-in", p-value$=0.34$; "Active decision" vs. "Opt-out", p-value$=0.66$; "Opt-in" vs. "Opt-out", p-value$=0.61$).

As already mentioned, there were two different levels of the compensation fee: one for participants flying from within Europe and another one for participants flying from outside Europe. A natural hypothesis to test is whether the importance of default options differs between these two groups given that it was more expensive to compensate for travel from outside Europe (10 euro from within Europe vs. 40 euro from outside Europe). The frequencies for these two groups are presented in the third and fourth columns of Table 1. The overall compensation rate is much higher when flying from within Europe compared to when flying from outside Europe (53.2% vs. 24.4% at the overall level of all treatments, p-values < 0.01).[7] Accounting for this significant difference in behavior between the samples, we conducted a chi-square test to investigate the effect of the default option for European and non-European flights separately. The null hypothesis that the proportion of participants who offset their trip is independent of the default could not be rejected for either sample at a 5% significance level using a chi-square test (flying from within Europe, p-value$=0.83$; flying from outside Europe, p-value$=0.22$). We also conducted pairwise tests between the three treatments separated by flying from within Europe and flying from outside Europe. None of the six pairwise choices reject the hypothesis of equal proportion of participants who offset at the 10% significance level.

We also conducted a probit regression analysis to analyze whether any socio-economic variables influenced the compensation choice. In the analysis, we controlled for the treatments using dummy variables together with socio-economic variables available from the registration form (gender, geographic location, and academic position). The results

[5] The computer also selected between two separate rows for flights within or outside Europe, based on earlier registration data on country of origin.

[6] A number of participants were not included in the study for several reasons: 136 participants, in most cases from the Nordic countries, who did not fly to the venue, 66 participants from low-income countries whose trips were financed by scholarships from the organizer, and 41 who had already compensated their trips. In addition, 93 participants were excluded for computer technical reasons as discussed in footnote 4.

[7] A chi-square test confirms that the compensation rates differ significantly between flights from within Europe and outside Europe in each of the three treatments ("Active decision", p-value$=0.07$; "Opt-in", p-value < 0.01; and "Opt-out", p-value < 0.01).

show that only geographical location has a significant effect on compensation; no other socio-economic variables or any treatment dummy variables are significant when included individually.[8] The results are presented in Appendix B.

4. Conclusions

Previous research has found a decisive influence of default options on individuals' choices. This raises the question of whether these findings are robust. Using a field experiment on CO_2 offsetting, we investigate the effect of default options among experienced individuals. We find no significant effect of default options in our experienced sample. If we compare our results with previous findings that default option matters for inexperienced subjects, we conclude that the effect of default options attenuate with experience.[9] This result is in line with earlier research on market experience which has been shown to reduce market anomalies [11]. Subsequently, policy makers should focus on the inexperienced individuals' when deciding on pre-set default options since it is in this group that the default option is decisive.[10]

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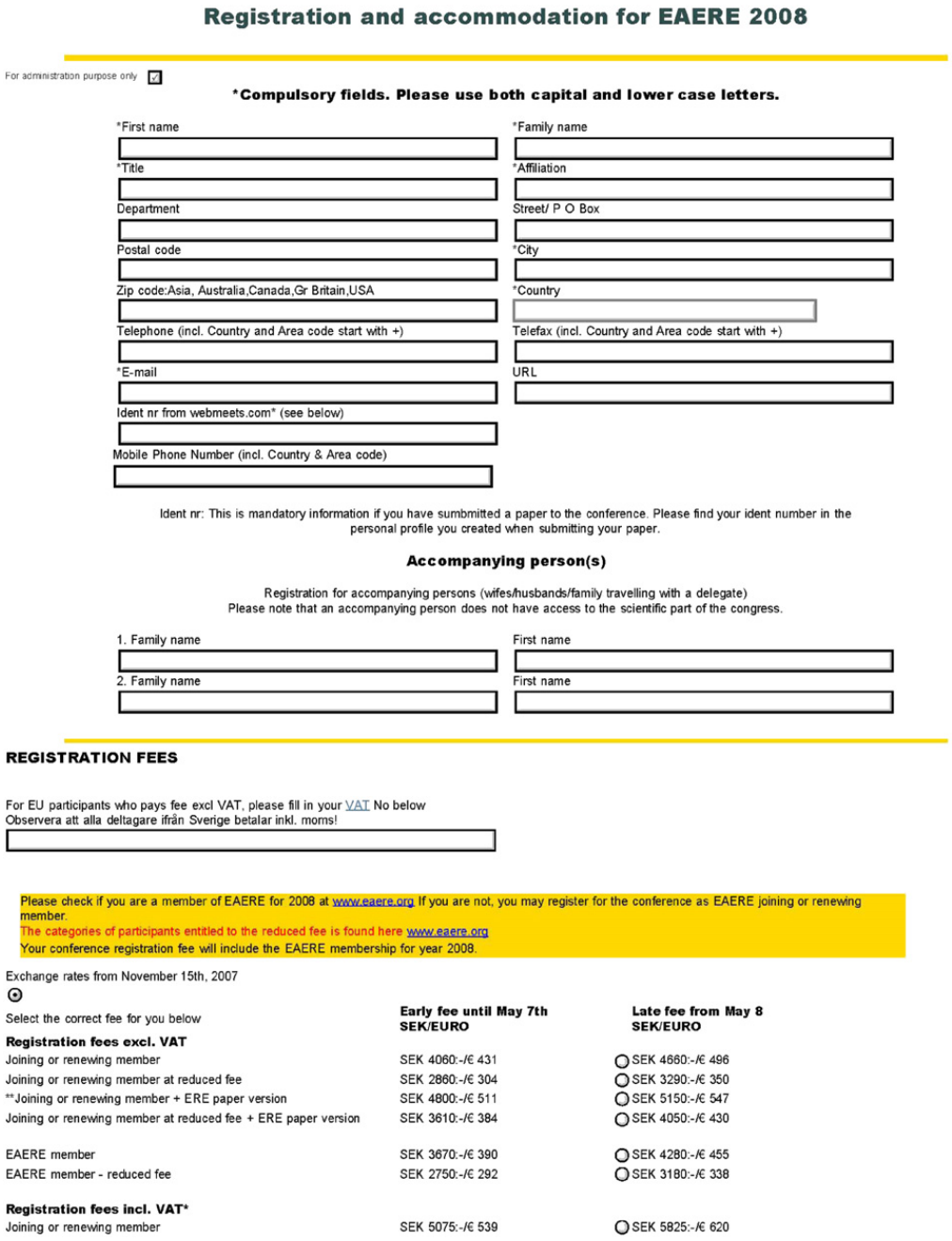
[8] As a robustness check, we run a probit regression where we also interacted the treatment and socio-economic variables (when also controlling for the socio-economic and treatment variables individually), but again only geographical location has a significant effect on compensation. The results for this regression are available from the authors upon request.

[9] It should be noted that the subjects' experience of environmental issues is likely to be correlated with self-awareness regarding subjects' own environmentalism. This means that experience per se could be confounded with social signaling concerns such as reputational effects (see e.g., [18]). However, for this to have a large effect on behavior, the choices made have to somehow result in an effect on reputation. In our case the effect on subjects' reputations is most likely small – if any – since the choice to offset CO_2 emissions is made individually when registering to the conference. However, in other settings, social signaling such as reputational effects might have a substantial impact on behavior related to pre-set default options.

[10] For a discussion on a libertarian paternalistic view that the default option should be used to help the irrational individuals without imposing too much of a cost on the rational individuals, see, e.g., [19,20].

Appendix A. Screenshot of the CO_2 compensation



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*E-mail	URL
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Registration fees incl. VAT*		
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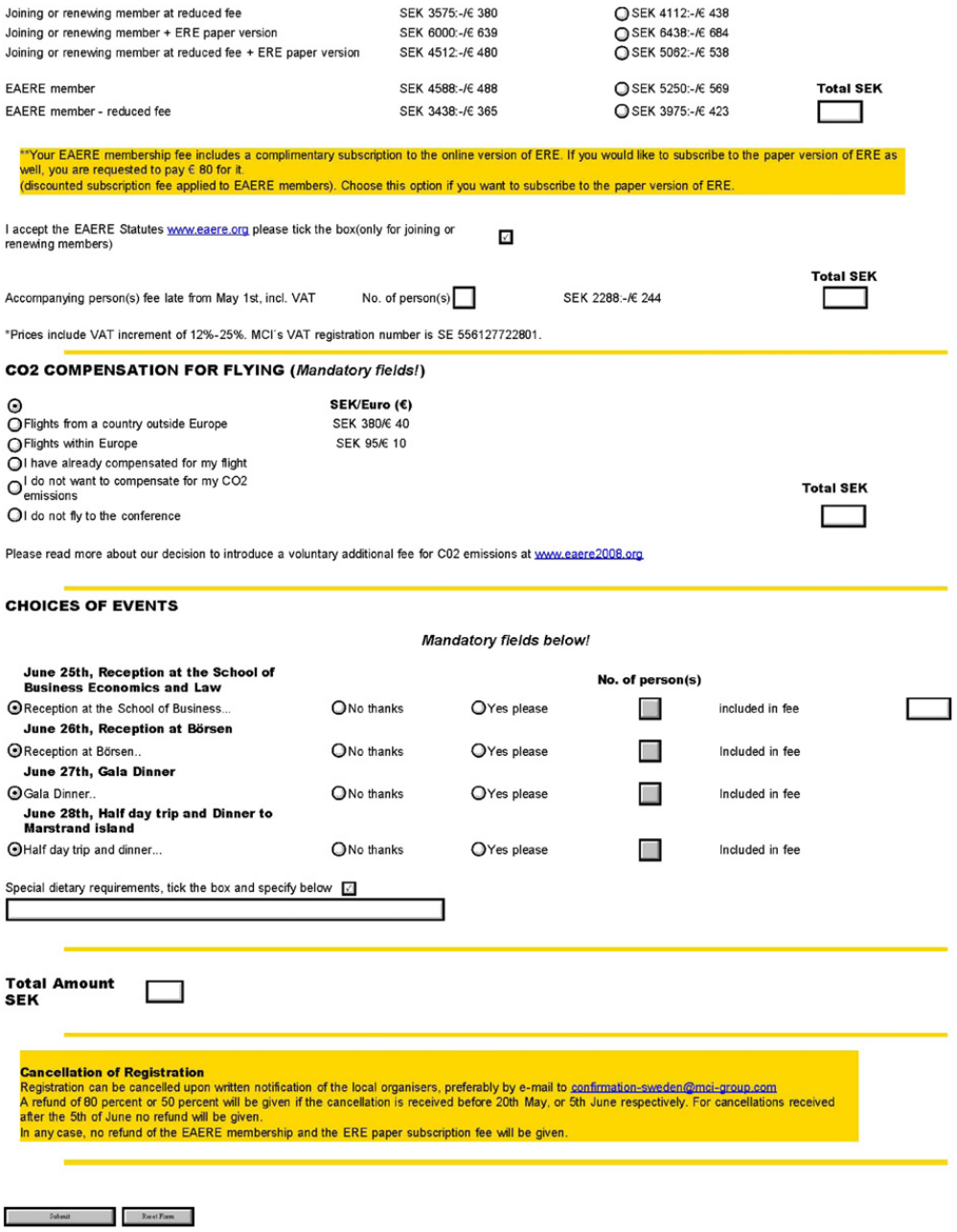
Fig. A1.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CO2 COMPENSATION FOR FLYING (Mandatory fields!)

SEK/Euro (€)
Flights from a country outside Europe SEK 380/€ 40
Flights within Europe SEK 95/€ 10
I have already compensated for my flight
I do not want to compensate for my CO2 emissions
I do not fly to the conference
Total SEK

Please read more about our decision to introduce a voluntary additional fee for C02 emissions at www.eaere2008.org

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No. of person(s)

June 25th, Reception at the School of Business Economics and Law
Reception at the School of Business... No thanks Yes please included in fee
June 26th, Reception at Börsen
Reception at Börsen.. No thanks Yes please Included in fee
June 27th, Gala Dinner
Gala Dinner.. No thanks Yes please Included in fee
June 28th, Half day trip and Dinner to Marstrand island
Half day trip and dinner... No thanks Yes please Included in fee

Special dietary requirements, tick the box and specify below

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In any case, no refund of the EAERE membership and the ERE paper subscription fee will be given.

Submit Reset Form

Fig. A1. (*continued*)

Appendix B. Probit regression results (Dep. Var.: Compensated for flying to the conference)

	Marginal effects	Standard error
Opt-in treatment	−0.064	0.080
Opt-out treatment	−0.059	0.083
Europe	0.298***	0.063
Professor	0.095	0.085
Female	0.052	0.077
(Pseudo) R^2	0.071	
Number of observations	237	

***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

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