SUSFOOD

N°4 — September 2016

Newsletter

The SUSDIET Research Project:
Towards Sustainable Diets in Europe

Contents

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The SUSDIET project is a research project funded in the framework of the ERANET SUSFOOD Call. Its main goal is to identify sustainable diets compatible with consumers' preferences in Europe and analyse the public and private policies which could favor their adoption. This project is funded by the national funders involved in the ERANET-SUSFOOD Consortium. The SUSDIET consortium is composed of 15 highly-experienced teams from 9 European countries. The approach is multi-disciplinary, with experts in economics, nutrition, consumer research, public health, and environmental science.

The goal of this newsletter is to present the work in progress.

Environmental impacts of information campaigns on nutrition and health

During the last years there has been a lot of attention devoted to healthy food habits (World Health Organization, 2003) and by 2010 European countries implemented 121 interventions (Capacci et al., 2012) to promote the consumption of healthy foods.

Among these, there are advertising restrictions, like the OFCOM ban in the UK, and information campaigns, as the 5-a-day program in the UK. There is evidence that food advertising influences food preferences and purchase behaviour especially by children (Jenkin et al., 2009), and it is associated with the increased rates of obesity among children and youth, some campaigns has been devoted to reduce the advertising of unhealthy food during television programme for children. This because during the two last decades food high in fat and sugar content were among the most heavily advertised in UK (Lewis, et al., 1998).

Our objective was to integrate existing ex-post evaluations of nutrition policies (from the 7th framework programme Eatwell project) to consider their impact in terms greenhouse gas emission (GHGE). We consider two Eatwell ex-post evaluation projects on UK related to information provision, the OFCOM ban of TV adverts targeted at children, started in April 2007, and the 5-a-day campaign to promote fruits and vegetables consumption, started in April 2004.

Methods

We evaluate the two policies in terms of consumption changes, using the Almost Ideal Demand System (AIDS, Deaton and Muellbauer, 1980) as the baseline demand model. For both case studies, the evaluation approach relies on quasi-experimental methods (Blundell and Costa Dias, 2009) and on the specification of counterfactual scenarios.

For the OFCOM advertising restrictions, we adopt a difference-in-difference approach, comparing the difference in

average behaviour before and after the policy for the treated group as compared to a control group (Blundell and Costa Dias, 2009). Since this is not a randomized trial, we rely on an artificial treatment variable, and we define the "discriminant variable" as the presence of children in the household. The assumption is that the advertisements restriction for HFSS products during or around programmes to children is unlikely to have any effect on families without children. Hence households without children are appropriate control (counterfactual) group that will be compared with the treated group of households with children. The outcome level of both the treated and the control group is observed before and after the intervention. The average outcome difference between treated and control subjects after the intervention is compared to the same difference before the intervention, and if some change is observed it is ascribed to the policy. The difference-in-difference approach controls for selection biases induced by observable or unobservable factors that do not change or change in the same way across the two groups over time. Controlling for time-varying covariates and pre-existing trends improves the robustness of the findings. Thus, adding a difference-in-difference component to the AIDS model allows detection of the policy effect after conditioning on prices and total expenditure.

For the 5-a-day campaign the approach is different, since no natural treatment or control group can be identified, and the whole UK population is 'treated' by the promotion program. Thus, we adopt a model-based counterfactual. Assuming that the ultimate effect of the policy is to change consumer preferences, we estimate a baseline demand model prior to the policy intervention and a post-intervention model afterwards. The policy effect is given by the difference in the post-policy predictions obtained using the post-policy model parameters and the pre-policy model parameters. Again, the adopted specification is the Almost Ideal Demand System.

Results

In this report we have translate the impact of both the OFCOM and 5-a-day campaigns in environmental impacts, based on the coefficients provided in Task 1.2 of the Susdiet project. By estimating different models, our results suggest that the nutritional goals of the OFCOM advertising restrictions may generate adverse environmental effect, although the evidence that the OFCOM restrictions have generated a dietary change are weak. Our estimations seem to suggest that the reduction in snacks and soft drinks are associated with higher meat consumption, hence worse environmental outcomes. On the other hand, the increase in fruit and legume intakes observed as a consequence of the 5-a-day program is associated with a reduction in meat consumption. Given that meats represent the food group with the highest GHGE coefficient, and certainly higher than F&V, this result leads to an overall improvement in GHGE emissions and suggests consistency between the nutritional policy objectives and the environmental outcomes.

Taken together, our results suggest that: (1) substitution patterns induced by nutrition policies are key in determining the environmental outcomes; (2) this may generate unintended adverse environmental effect in the case of some policies, but given that these patterns strictly depend on the substitution dynamics, a case-by-case assessment is necessary.
In any case, the substitutions effect within or between food categories are crucial, and any conclusion rely on the robustness of the estimated substitution effects. In one of our case studies (OFCOM) we found high variability in our estimates depending on the model specification, which casts doubts on the actual impact of the policy. Nevertheless, the environmental effects were found to be consistently negative. Furthermore, we suspect that 'within group' substitutions are more important than those between groups, and the knowledge on the GHGE levels for specific foods is still too limited to consider our results as indicative or generalizable to other countries and policies. ■

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Climate change, carbon footprint and labelling – Consumer responses

WE aim to assess consumer preferences for climate-friendly food in general and for carbon footprint indications. Additionally, the effect of information on climate-friendly behavior is analyzed. Emphasis is laid on the influence of time preference and risk perception on consumers' preference for climate-friendly food. In order to achieve these aim, we followed a three step approach. In a first step the literature with respect to consumers' perception of climate change and climate conscious behavior was reviewed (see newsletter 2). In the second step a survey combining choice experiments with a questionnaire was conducted to elicit consumer preferences. The third step consisted of face to face interviews with consumers in order to analyze the influence of time preference and risk as well as consumers' attitudes toward climate change and information on consumers' buying behavior in more detail.

Literature indicates that there are several barriers for buying climate friendly food. Consumers have difficulties to relate climate change with their everyday live since direct experiences with the impacts of climate change are frequently absent in Western societies. That is why personal risks resulting from climate change are perceived as low while the negative impact of climate change on the society and in particular on future generations is widely acknowledged (Lorenzoni and Pidgeon 2006). Further barriers to a climate conscious behavior are habit, the limited availability of products and low perceived consumer effectiveness (e.g., Upham et al. 2011). One way to foster climate-friendly behavior is an improved communication of the climate impact of food and of the carbon footprint. With regard to the design of a carbon footprint label studies point out that the indication of an absolute number for the carbon emission equivalents per unit of a product in combination with a colored scale is advisable. Apart from that, the literature advises to include motivational messages (e.g., «Buy seasonal products. They are better for the climate») in order to increase consumers' motivation to act according to their attitudes (e.g., Berry et al. 2008).

The survey (choice experiments plus questionnaire) was conducted with 6007 consumers in the six European countries France (FR), Germany (DE), Italy (IT), Norway (NO), Spain (ES) and United Kingdom (UK). It was carried out online between the 10th and 18th of June 2015. Participants were recruited by means of a representative online access panel run by a private market research agency. All surveys were self-administered by the participants. The questionnaire comprised 28 closed questions. It measured a variety of constructs related to climate change including behavior, attitude, perceptions, motives, subjective knowledge with respect to climate change, perceived consumer effectiveness (PCE), allocation of responsibility, trust in labels, risk perception and time preference. In the choice experiments participants had to choose eight times between three product alternatives. Each alternative varied by five attributes (see Tab.1).
Two CO2-labels were tested against each other (see Fig.1). Both labels were designed for the survey and showed an absolute number of carbon emission equivalents as well as a colored scale. The survey data was analyzed with mixed logit models and with descriptive statistical methods.

Results

The results of the questionnaire revealed that 55% of the participants bought at least sometimes climate-friendly products. With respect to climate-friendly

Attribute	Levels
Production method	European organic logo No logo
Origin	Locally produced No claim
Climate claim	Climate-friendly No claim
CO2-label	CO2-label 1 CO2-label 2 No label
Price	Low price Medium price High price

Tabel 1: Attributes and levels included in the choice experiments

behavior participants preferred activities which were easier to perform in everyday life such as buying seasonal products and driving less. In contrast, activities which required some sacrifice, for example a reduced consumption of milk and meat products, were less preferred. Nearly three quarters (72%) of the participants favored the introduction of a CO2-label. Participants showed a better understanding of the content of the label with a horizontal scale (left one in Figure 1) and perceived it as more credible.

Perceived consumer effectiveness and subjective knowledge about climate change had a positive impact on purchase probability. In contrast, the higher the skepticism toward labels was the lower the purchase probability of climate-friendly products. People who were concerned about the impact of climate change on future generations and thus revealed altruistic attitudes were more inclined to purchase climate-friendly products. Simultaneously, consumers who were generally concerned about climate change preferred climate-friendly products. Interestingly, attitudes indicating an ignorance of climate change also enhanced the probability of purchasing climate-friendly products. One reason for this result may be that people differentiate between personal consequences resulting from climate change and potential harm for the society and future generations (see also Lorenzoni and Pidgeon 2006).

Additionally, the choice experiments showed that the higher the time preference of a consumer was the lower the probability of buying climate-friendly products. That is, the stronger the present orientation of a consumer the less likely the consumer was to purchase climate-friendly products. The preparedness to take risks for him-/herself had only an inconsistent and weak impact on the purchase probability of climate-friendly products. In France, Italy and Norway participants who were more risk taking were less likely to prefer climate-friendly products. In contrast, in Germany higher preparedness to take personal risks resulted in a higher purchase probability.

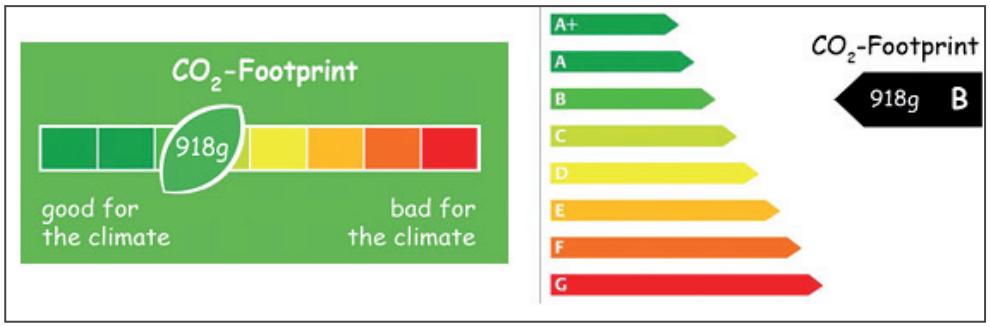

Figure 1: CO2-labels tested in the survey. Left CO2-label 1, Right CO2-label 2

According to the choice experiments participants attributed the highest importance to the price in the purchase decision. In all study countries besides Spain local production was the second most important attribute and as such preferred over explicit indications of the climate impact of a product (CO2-labels and climate-friendliness claim). In UK, Italy and Germany the CO2-labels had a similar impact on the choice response than the indication of organic production. In France and Norway organic production was more important in the purchase decision than CO2-labels and the climate-friendliness claim.

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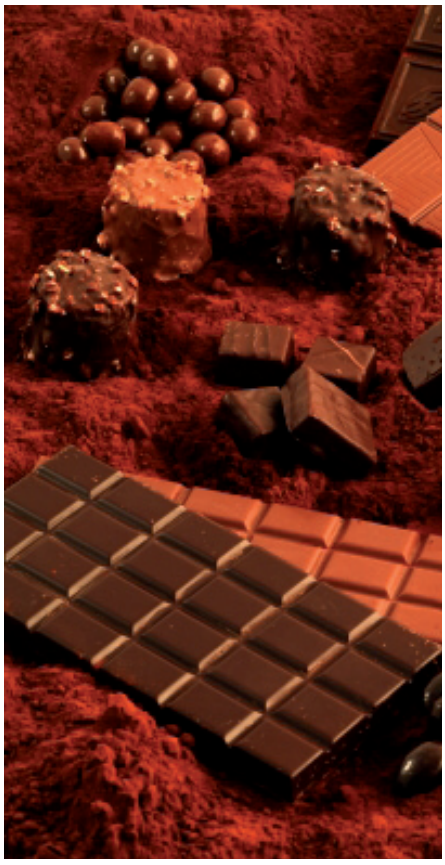
Label proliferation and consumers' confusion. The weak impact of sustainability labels on the value of chocolate

A lab experiment was conducted in France in September 2015 to evaluate the impact of different sustainability labels on participants' willingness-to-pay (WTP) for chocolate bars.

A lab is a practical place for eliciting well-informed, thoughtful preferences, with a Becker, DeGroot and Marschak (BDM) mechanism, guaranteeing performance-based financial incentives. Either 3 or 6 chocolate bars with different labels were initially shown and offered to each participants. At the end of the experiment, only one chocolate bar that was randomly selected was taken into account, for determining whether or not participants bought this chocolate bar, by comparing elicited WTP to a purchasing price drawn at random.

Even if participants did not see all products with all different labels, a total of 6 different sustainability labels were shown across different sessions, attended by different participants. For starting the experiment, participants bid for different chocolate bars without any references to the labels. In the following rounds, the participants' attention and knowledge about labels posted on chocolate bars were progressively improved, via additional information revealed to them. In particular, short explanatory messages on sustainability labels were delivered to participants, before the elicitation of new WTP for chocolate bars by participants. For measuring the impact of messages, we pool the participants' WTP elicited in the successive rounds, and we use a tobit random effects estimator.

Results of estimations are the following. First, by taking into account a subsequent question in which participants declare if they thought to the label at the time they indicate their initial WTP, we show a relatively low impact of labels on initial WTP, namely the ones before the revelation of any additional explanation. Regarding this initial impact of labels, some estimated coefficients are not statistically significant, and the other coefficients that are statistically significant have relatively low values. Second, it is shown that the explanatory messages on sustainability labels lead to significant increases of WTP for the chocolate bars with a sustainability label(s). This result shows that the sustainability labels are not perfectly known by participants who could benefit from additional and generic information, explaining these labels.



Different questionnaires that complemented the WTP elicitation show a participants' preference for a diversity of sustainability labels. After both revelation of information and WTP elicitations, 69.9% of participants declare that the sustainable labels presented to them appear as significantly different.

Moreover, even if the Organic label is ranked first as the most useful label by many participants, other labels like the Rain Forest Alliance or the Cocoa Life are also ranked first, as the most useful label by a significant proportion of participants. Some of these participants, preferring some of these other labels, mentioned that they did not always notice these labels when the chocolate bars were initially presented.

This research was funded by the ERA-Net SUSFOOD (Grant agreement n°.: 291766), with the Carasso Foundation (Italy, France, Spain), MMM (Finland), BLE (Germany), RCN (Norway), FORMAS (Sweden), Defra (UK), as national funders, part of the 2013 SUSFOOD call for research proposals. French teams were also funded by ADEME (Agence de l'Environnement et de la Maîtrise de l'Energie).

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