

# Evaluating and simulating the environmental impact of food policies using scanner data

## RESEARCH PROGRAM

### Objectives

The activities for this project are functional to the extended partnership PE10 ONFOODS ("Research and innovation network on food and nutrition Sustainability, Safety and Security – Working ON Foods"), funded by the Ministry of University and Research (MUR) with funds from the National Recovery and Resilience Plan (PNRR), which started in November 2022 and is due to be completed in November 2025. The successful candidate will contribute to the application of quantitative methods aimed at evaluating the environmental effects of consumer-targeted policies, using structural models, quasi-experimental methods, and scanner data, more specifically homescan data.

### Project Background

The research program is related to the activities of the ONFOODS project. ONFOODS is a basic research project based on an Italian partnership of 13 universities, 6 research centres and 6 private companies. The project objectives are: (1) to promote the sustainability of food production; (2) to increase the adherence to more sustainable dietary patterns; (3) to promote the sustainability of food distribution; (4) to increase the quality of foods and diets; (5) to develop smart innovative technologies for a sustainable food production and consumption; (6) to guarantee food safety and food security at whole population level and in specific vulnerable targets of the population. ONFOODS is based on a comprehensive approach, joining together and synergizing the strengths and competences of several different disciplines, ranging from social and juridical sciences to agricultural economics, food chemistry, food technology and engineering, logistics, microbiology, marketing, human nutrition, and many disciplines of medicine. ONFOODS is structured on seven spokes, each one focusing on a very specific, although wide, matter related to food production, transformation, and effect. More specifically, the team from the Department of Statistical Sciences (STAT) is involved in Spoke 7 "Policy, Behaviour and Education", whose

focus is on developing models and instruments, to observe, analyse and predict food policies and business and consumers' behaviour. Research in this spoke targets planning, implementing, and promoting public actions, educational paths, and communication campaigns with the final aim of improving health and sustainability by preventing loss, surplus, and waste, and promoting a more informed food consumption.

## **Description of work**

Within the project, the unit of the Department of Statistical Sciences of the University of Bologna has specific responsibilities. The STAT team is co-leading Workpackage 4 within the Spoke, "Policies for Healthy and Sustainable Diets". The activities relevant for the team are the following: (1) review existing ex-post evaluations of public policies at the international level; (2) generate new evidence, using robust methods, evaluating international, European, and Italian national, regional policies; (3) produce of a set of evidence-based policy-oriented guidelines and set of recommendations based on findings and inputs from all project activities. The STAT unit will also contribute to Workpackage 1, "Understanding determinants and factors underlying food-related consumer behaviour." Currently, the following activities led by STAT are ongoing:

- Compilation of an "open access" European Food Policy database;
- Creation of a repeated cross-section of nutrition intake data-sets based on multiple imputation and matching from different official surveys;
- Estimation of price and income elasticities through demand models, taking into account greenhouse gas emission from diets, using household budget surveys and scanner data and accounting for quality-quantity trade-offs.

Other activities within the project will be planned in the coming months, and the expected completion data is November 2025. Within this project, the STAT team aims at extending an existing large homescan data-set monitoring daily drink purchases of more than 9,000 Italian households over 2019 and 2020. One of the aim of the project - and of the fellowship - is to consolidate the team expertise on scanner data, and become a strategic hub for the use of scanner data for food policy evaluation purposes in Italy. The grant will be initially for one year, but may be renewed. The successful

candidate will be part of the research team of the Department of Statistical Sciences, which collaborates with other Departments from the University and other universities and research centres participating to the project. The successful candidate will contribute to the activities of ONFOODS project, more specifically the activities within Spoke 7, WP1 and WP4.

The successful candidate is expected to:

- Support the management of large data-sets based on scanner technologies, including administrative tasks related to data protection and purchase agreements with data providers;
- Contribute to the modelling of scanner data, and more specifically to the estimation of indicators reflecting the sustainability and healthiness of household food baskets and the effect of Covid-19 restrictions on the quality and sustainability of diets;
- Contribute to the modelling of scanner data for policy evaluation using quasi-experimental methods, and more specifically to the estimation of treatment effects with synthetic control methods. Potential policies to be assessed include the effect of sustainability labels, and the impact of the EU directive on "green" claims;
- Support the team in writing and finalizing project deliverables, research reports and scientific articles;
- Explore/write codes using STATA or R;
- Participate to project meetings;
- Contribute to the project administration, especially in relation to the administrative procedures related to the management of scanner data.

## **GRANT OBJECTIVES, TRAINING AND RESEARCH PLAN**

The grant is for 12 months, with a starting date between August and October 2023, and may be renewed after the first year.

### **Requisites for candidates**

The successful candidate should:

- a. Master oral and written English language
- b. Have previous experience in modelling economic data, preferably with expertise in scanner data and/or consumption surveys;
- c. Have a solid quantitative training, with experience on the application to food economics/food consumption issues
- d. Have a good knowledge of statistical software and coding, preferably Stata and/or R
- e. Have a good knowledge of LaTeX language for writing scientific reports and articles

### **Grant objectives**

The specific objective of the training programme is to acquire advanced skills on the modelling of longitudinal consumer data for demand analysis and policy evaluation.

### **Training**

The successful candidate will be trained in the following activities:

1. Manage and pre-process large scanner data-sets for subsequent statistical analysis
2. Run statistical analyses using Stata, including writing ad-hoc commands
3. Write scientific reports and papers

Training will include:

1. Supervision and guidance by members of the STAT research team
2. Attendance of short courses on quantitative methods relevant to the project objectives, for example trainings and workshop organized by CEMMAP in London, and/or training activities organized within the framework of ONFOODS project.
3. The opportunity to spend study/research periods at other institutions with a focus on quantitative analysis

## **Expected outputs**

At the end of the first year, the grant holder should have produced at least one working paper ready for submission on a topic relevant to the project.

## **Timeline of the research plan**

**Months 1-3:** Empirical studies within the ONFOODS project: (a) integration and preparation of the scanner data data-set; (b) definition and computation of alternative household-level indicators to measure the dietary quality of the food basket, and its sustainability (e.g. carbon footprints, etc);

**Months 4-8:** Estimation of models and simulations using scanner data;

**Months 9-12:** writing working papers and reports about the use of longitudinal (scanner) data to analyze consumer behaviour, and the impact of Covid-19 restrictions on the healthiness and sustainability of food baskets in Italy

# Bibliography

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