Can experimental approaches help to design a better CAP?

Sophie Thoyer

National Research Institute for Agriculture, Food and the Environment
Center of Environmental Economics of Montpellier CEE-M

Sophie.thoyer@inrae.fr
• Are evaluation needs changing with the new CAP?

• What can experimental approaches bring to the CAP evaluation toolbox? Three examples

• How can we be better organized as a research community to respond to these needs?
EVOLVING EVALUATION NEEDS
The CAP evaluation cycle until now

- **Ex ante evaluation**
  - Impact Assessment – in house
    - Compare different policy designs
    - Anticipate costs and benefits
    - Evaluate feasibility

- **Mid-term evaluation**

- **Ex post evaluation**

**New policy**

**Conception and Design**

**Implementation**

**End**

**Ex ante evaluation**

**Impact assessment**

**Evaluation and monitoring framework**

- Measure results of policy
- Understand outcomes and draw conclusions
- Communicate on policy
- Prepare next policy cycle
Farm to Fork Strategy and 2023 CAP

- Agricultural sector expected to **contribute to EU sustainability objectives**

- «**New delivery model**»: MS must design their National Strategic Plans and demonstrate achievement of self-assigned results – more accountable for their policy choices

- **Ecoschemes**: 25% of direct payments dedicated to environment (14 billion/year) with the objective to have large-scale impacts – more space to innovative tailored measures

- **Enhanced conditionality**: political acceptability and compliance issues
Evolving evaluation needs

- CAP under more scrutiny - Tough negotiations on CAP budget and CAP measures
  - Need to demonstrate impact and to measure efficiency: accountability of public money

- Change in evaluation focus: farm-level, compliance, enrolment in voluntary measures, collective approaches
  - Understand farmers’ behavioural drivers (Dessart et al, 2020)

- Acceleration of CAP changes: annual revision of the Strategic National Plans
  - Less time to evaluate and learn from previous assessments

- More innovation and heterogeneity in CAP implementation at Member States level
  - Need to test before implementation for different contexts/location
What can experimental approaches bring to the evaluation toolboox?

- Ability to demonstrate the **causal impact** of the policy by identifying the proper counterfactual and overcoming the selection and time-trend biases

- **Pre-test innovative policy designs** to check that they can be effective

- **Elicit farmers’ preferences** and understand their reactions to policy in the presence of behavioural factors (risk and loss aversion, social norms, intrinsic motivations, time inconsistencies ...)

- **Communicate convincingly** on evaluation results with policy-makers
What is an experiment?

- Data generation controlled by the experimenter
- In a controlled setting: comparison of a treated group with a control group
- Ensuring replicability and representativity. **Randomization** procedure for subject selection and treatment assignment
- Often rely on **revealed preference methods** (behaviour is usually incentivized)
Types of experiments
Subject pools and research objectives

Test theory
Student pools

Produce new
knowledge
Student pools

Elicit preference
parameters
Farmers

Test policy designs
Farmers

Models

Cason and Wu (2019); ERE
WHAT CAN EXPERIMENTAL APPROACHES BRING TO THE CAP EVALUATION TOOLBOX?
THREE EXAMPLES RELATED TO CAP MEASURES
Example 1 - Eliciting farmers’ risk preference parameters in different countries

Why?

• To provide estimations of the heterogeneity of farmers’ risk across contexts
• To identify best-fitting decision models in risky situations: expected utility versus cumulative prospect theory
• To feed simulation models with robust loss aversion and risk aversion parameters

How?

• Replication of a lab-in-field experiment (Bocqueho et al, 2014) across 11 samples of farmers in 10 different MS: 1400 farmers participating to a multiple price list survey (Tanaka et al, 2010)
• Study jointly conducted by 10 research teams under the coordination of Jens Rommel (SLU) and Julian Sagebiel (Idiv, Leibniz)
Eliciting farmers’ risk preference parameters in different countries

Table 4. Structural estimates of EUT model

<table>
<thead>
<tr>
<th></th>
<th>New samples pooled</th>
<th>BJR2014</th>
<th>BJR2014 (weighted)</th>
<th>Austria</th>
<th>Croatia</th>
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<th>France_II</th>
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<th>Italy</th>
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Table 6. Structural estimates of CPT model

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<td>[0.498; 0.625]</td>
<td>[0.404; 0.597]</td>
<td>[0.506; 0.597]</td>
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</tbody>
</table>

Rommel et al, 2022, Farmers' risk preferences in eleven European farming systems: A multi-country conceptual replication of Bocquého et al. (2014) - submitted
Example 2: Enhancing collective participation in agri-environmental contracts

Why?
Need to coordinate enrolment at landscape level to increase environmental benefits
What type of agri-environmental scheme design to improve participation without increasing public spending?

Many solutions proposed and tested with farmers, but often imply greater costs (Mamime et al, 2020)

Start with a simple one:
Pay farmers only if a collective threshold of participation is attained
Would such a condition deter participation?
Adopt an incremental approach – from lab to field

Internal validity/replicability

Lab experiments (wind tunnel testing)

Field experiments (test prototype)

Social experiments RCT (test flight)

Discrete choice experiments (test prototype)

External Validity – Contextualizing the protocol and moving to artefactual pools

AIEAA Conference – Viterbo – 16-17 June 2022
First step: In the lab with students and a decontextualized protocol

Framed as a threshold public good game, played in the lab with 220 students
- **Unconditional subsidy** paid to public good contributors proportionally to their contribution
- **Conditional subsidy** paid to contributors only if the threshold is reached by the group

Nash predictions (multiplicity of equilibria) are the same

**Results:** the conditional payment does not deter contribution to the public good. Therefore scheme efficiency is improved. But heterogenous patterns of group and individual behaviour: elicitation of risk preferences and beliefs on others’ contributions helped disantangle drivers of cooperation

Second step: taking the lab to the field- framed field experiment

- **Contextualizing** the protocol: (Harrison & List, 2004)
  - Tokens → hectares enrolled
  - Contribution to public good → adoption of low-input practices on ha enrolled
  - Threshold Public good → water quality

- **Enrolling farmers** into the experiment: less risk averse, higher beliefs on others’ contributions

- Farmers’ contributions higher - Importance of the first period to signal cooperation

*Limbach, K, Rozan, A., Le Coent P., Préget, R. and Thoyer S., 2022, Can collective conditionality improve agri-environmental contracts? From lab to field experiments, on-going work*
Third step - Measuring farmers’ preferences in the field

**Question:** would the introduction of an individual bonus paid when a collective participation threshold is attained have a positive effect on farmers’ participation, without increasing public expenditures?

**Discrete choice experiment** conducted with 317 winegrowers in the South of France on the acceptability of herbicide reduction contracts

**Attribute:** conditional bonus paid to each enrolled farmer per hectare enrolled, at the end of the 5-year contract if 50% of the area of the local vineyard is enrolled in the AES
Adoption probability of a herbicide reduction measure (60%) for 3 classes of farmers

**Interpretation:** Consistent with the hypothesis that farmers are more willing to provide environmental efforts when their neighbours also do so: signal of a social norm?

**Is this result replicable elsewhere,** for other types of changes of practices? Can it be mobilized at larger scale?

→ Mixed responses (Sumrada et al, 2021)

**Towards RCTs?** (Behaghel et al, ERAE, 2019)

*Kuhfuss, Préget, Thoyer and Hanley, 2016, Nudging farmers to enrol land into agri-environmental schemes: the role of a collective bonus, ERAE, 43(4), 609-636*
Third example: Supporting small farms differently?

Why?
• Small farms get little financial support from CAP (ha-based payment)
• But they contribute to the provision of public goods (landscape, biodiversity)
• Public opinion in favour of small farms and more equity in farm payments
• Need for simplification

Proposal for a simplified payment scheme for small farmers (SFS) in 2014 CAP:
• Lump sum payment of max 1250 € per farm in place of direct payments / ha -
• Self-selection of farmers in the SFS
• Would conditions on wage employment and environmental certification be acceptable instead of the no-condition no-control system, with a higher lump sum payment?

Lecole P., Préget R. and Thoyer S., 2022, Designing an effective small farmer scheme in France, Ecological Economics, 107229
Design set-up with farm union (via campesina in France)  
Discrete choice experiment - Online survey - 608 full responses  
But biased sample
Weighted simulations at the scale of France

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Number of farmers joining the scheme</th>
<th>% of enrollment of total non retired farmers</th>
<th>Additional cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFS (1250€/farm/ no condition)</td>
<td>42,673</td>
<td>12%</td>
<td>129 million € (1,87%)</td>
</tr>
<tr>
<td>Programme 3000 € /farm and environmental certification</td>
<td>117,938</td>
<td>33%</td>
<td>55 million € (0,79%)</td>
</tr>
</tbody>
</table>

Reaching policy makers

➢ Conduct similar experiments in other EU countries
➢ Simulate enrollment and budgetary costs
➢ Discuss with DG Agri and Parliament
➢ A tangible impact? The implementation of a specific support scheme for vegetable growers in France (3ha max and 1588€/ha)
How can we be better organized as a research community to respond to evaluation needs?
Avoiding pitfalls when communicating results to policy-makers and stakeholders

Improve quality and replicability of results (Brodeur et al, 2016)

- Publication bias: overestimation of the magnitude of results
- Imprecision of results due to high signal to noise ratio

Be aware of the voltage effect (Al-Ubaydli et al, 2019)
Treatment effect size diminish when the policy is rolled out at larger scale

Learn how to communicate better on results
- Confirmation bias of policy makers (Hallsworth et al, 2020)
- Do lab experiments approximate real life behaviour? (Frigau et al, 2019)
- Do students behave like farmers? (Peth and Musshof, 2020)
➢ Pre-register protocols, share data and code – Ethics approval

➢ Run replications and publish them (Camerer et al, 2016, Brodeur et al 2016)

➢ When a result is promising, get organized to check its robustess in different settings and contexts

➢ Think together on ethical issues related to farmers recruitment and randomization and share proposed solutions (Clot et al, 2018,)

➢ Conduct meta-analysis (Chabe-Ferret et al, 2018)

➢ Associate stakeholders and policy-makers to the prediction of results (DellaVigna et al, 2019): helps to identify best research questions and overcome confirmation bias (Hallsworth et al 2020)

➢ Write policy briefs and share results with policy-makers
Join the REECAP network!

info@reecap.org
https://sites.google.com/view/reecap/about

Awarded the CBEAR Prize for Agri-Environmental Innovation
https://centerbear.org
Reference list


Cason T. and Wu, S., 2019, Subject pools and deception in agricultural and resource economics experiments, Environmental and Resource Economics, 73: 743-758


Ferraro P., and Shukla P., 2022, Is a replicability crisis on the horizon for environmental and resource economics?

Frigau, L., Medda T. and Pelligra V., 2019, From the field to the lab. An experiment on the representativeness of standard laboratory subjects, Journal of Behavioural and Experimental Economics, 78: 160-169
Hallsworth et al, 2020, Behavioural government, Behavioural insight team report, 58 pages

Heckelei T., Hüttel S., Odening M., and Rommel J., 2021, The replicability crisis and the p-value debate – what are the consequences for the agricultural and food economics community? Discussion Paper 2021:2 University of Bonn

Mamime, Fares and Minviel, 2020, Contract designs for adoption of agrienvironmental practices: a meta-analysis of DCE, Ecological Economics, 176, 106721

Peth D. and Musshoff, O., 2020, Comparing compliance behaviour of students and farmers. An extra-laboratory experiment in the context of agri-environmental nudges in Germany, Journal of Agricultural Economics, Vol 71 (2)

For more general insights into the subject

Herberich, D., Lewitt S., and List, J., 2009, Can field experiments return agricultural economics to the glory days?, American Journal of Agricultural Economics, 91(5), 1259-1265 - proceedings

European Review of Agricultural Economics special issue on « Enriching the CAP evaluation toolbox with experimental approaches », 2019, Vol 46, No 3