



An evaluation of the CAP impact on agri-employment: A discrete policy mix analysis

A proposal to multidimensional evaluation problems

*Competence Centre on Microeconomic Evaluation (CC-ME)
Unit JRC.I.1 - Joint Research Centre*

*Good Practice Workshop on, 'How to assess direct payment interventions in the new CAP'.
Athens, 9-10 November 2022*

Foreword

This work was prepared within the “2019-2021 Joint Work Programme between AGRI.C.4 (A.3) Monitoring and Evaluations (Policy Performance) and the Competence Centre for Microeconomic Evaluations within unit JRC.I.1. Monitoring, Indicators & Impact Evaluation”

The usual disclaimer applies.

The CAP a policy “à la carte”

*“...the 2013 reform enabled Member States to redistribute a share of the **direct payments** to small holdings and to **transfer appropriations from the first CAP pillar** to the **second** and vice-versa. Some dismissed this deeming that the CAP acronym no longer meant “common agricultural policy” but “**a` la carte agricultural policy.**”*

in Fondation Robert Schuman: The Research and Study Centre in Europe
(<https://www.robert-schuman.eu/en/european-issues/0503-the-common-agricultural-policy-and-the-challenge-of-subsidiarity>)

How to evaluate the EU the CAP as a policy mix?

- ▶ **The objective:** Evaluate the **causal impact** of different **CAP mixes** on economic outcomes using **counterfactual** impact evaluation methods at the **NUTS3 level**:
- ▶ **Why causal?**
 - ▶ To isolate the effect of the policy from the spatial context in which is implemented because regions **self-select** into the treatment (CAP implementation choices);
 - ▶ There are **regional characteristics** that affect both the outcomes and the CAP implementation choices.
- ▶ **What is the (relevant) counterfactual?**
 - ▶ Often the counterfactual scenario is:
*What would have happened to the exposed in the **absence of a given policy***
 - ▶ When the policy has **many instruments** the relevant questions are:
*What would have happened under **different policy scenarios**?*
*What is the **relative effectiveness** of the different (combination of) instruments?*

Contribution of this approach?

- ▶ This approach characterises the **policy mix** as combinations of:

Market Measures, Direct Payments, Rural Development.

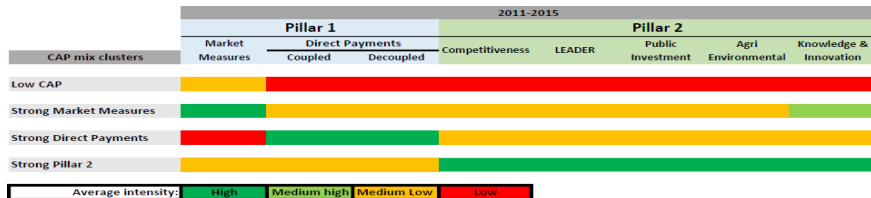
- ▶ Each policy mix describes by the **intensities** of the three instruments in a group of NUTS3 regions.
- ▶ Different ways of grouping produce **alternative treatment designs** to exploit other features of the policy (e.g. **Decomposing Coupled vs Decoupled** or **Private vs Public RD** beneficiaries).
- ▶ Analysis can be extended to **Member State** level (provided some assumptions):
 - ▶ At **regional level** if enough data (e.g. municipality level !?)
 - ▶ At **farm level**: DP vs other funds; Different levels of DP intensity, other funds ?

Identifying the CAP mix causal impact: Ingredients

- ▶ The policy mix evaluation of the CAP addresses two challenges:
 1. **The treatment:** How to define and measure the CAP as a **policy mix**
 2. **Causal estimation:** Method to **isolate the effect** of the CAP from the regions' characteristics.
- ▶ **Main assumption:**
 - ▶ We **observe all variables** that affect simultaneously the treatment allocation (CAP funds) and the outcomes before the treatment.
- ▶ **The causal method:** Generalised Propensity Score method
 - ▶ Average Treatment Effect of CAP (*ATE*) mix *j* vs *m*: ATE_{jm}

Measuring the CAP as a policy mix: CAP (intensities) cluster analysis

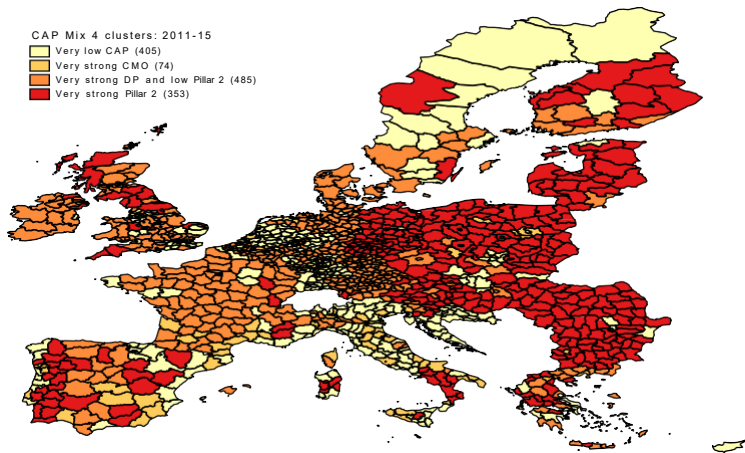
- ▶ **CAP funds Data at NUTS3** measured as intensities:
 - ▶ **Period of analysis:** 2011-2015 Post-Health check (2009) and pre-Greening
 - ▶ **Funds' Intensities:** **Pillar 1** and **Pillar 2** as **proportion** of average **GVA in Agri-sector** and **Total GVA**
 - ▶ **CAP mixes:** **Cluster analysis** on disaggregated CAP funds.



Competitiveness: Productive Investment; New Businesses and Risk Management

Heat table of funds' intensities across clusters.

Treatment variables: Discrete CAP mixes

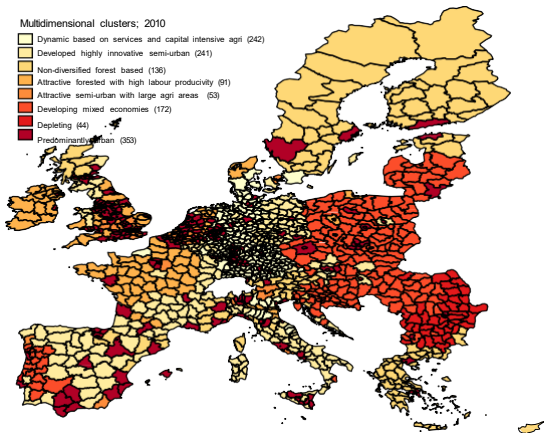


Spatial distribution of CAP (mixes) clusters.

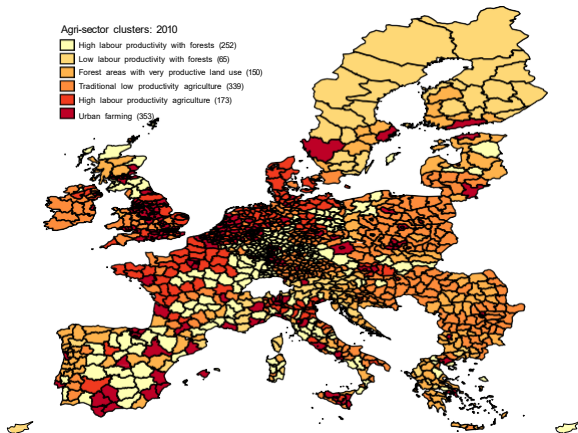
The pre-treatment variables: Characterizing rurality at NUTS3

- ▶ Regions are characterised according to two NUTS3 **rurality cluster analysis**:
 1. **Multidimensional**: grouping the regions according to:
 - ▶ **Local economy**: GDP per capita; Share of agri-GVA and Industry-GVA in total.
 - ▶ **Agricultural sector**: Labour productivity; GVA in by AA; Total employment by AA
 - ▶ **Demographics**: Population density; Birth rate; Net migration rate.
 - ▶ **Innovation**: EU trademark applications; registered community designs.
 - ▶ **Land use**: Share of forest, artificial and agricultural area (AA)
 - ▶ **Remoteness degree**: Minimum distance to MEGA1\2\3\4 cities.
 2. **Agri-sector**: grouping using the agri-sector dimension;
- ▶ Regional data collected from: **Eurostat regional dataset** (socio-economic variables); **ESPON** (remotness measures); **Corinne** (land use data)

The rurality clusters

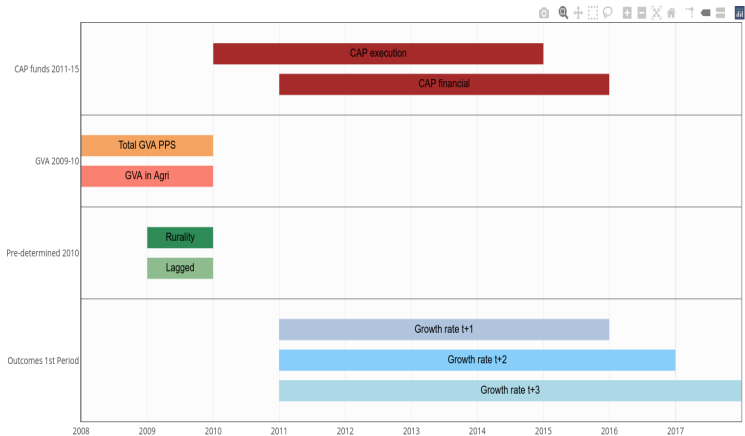


Multi-dimensional rurality clusters



Agri-sector based rurality clusters

Data timeline



Agri Employment: ATE Unadjusted vs Causal estimates ($\times 100\%$ points)

| | Agri Employment | | |
|--|-----------------|----------|----------|
| | (t+1) | (t+2) | (t+3) |
| Strong Market Measures vs Low CAP | | | |
| Full sample | | | |
| Non causal | 0.019 | 0.025 | 0.044 |
| Strong Direct Payments vs Low CAP | | | |
| Full sample | | | |
| Non causal | 0.030** | 0.039*** | 0.055*** |
| Strong Pillar 2 vs Low CAP | | | |
| Full sample | | | |
| Non causal | -0.024** | -0.024* | -0.032* |
| Observations | 995 (687) | | |

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Agri Employment: ATE Unadjusted vs Causal estimates ($\times 100\%$ points)

| | Agri Employment | | |
|--|-----------------|----------|----------|
| | (t+1) | (t+2) | (t+3) |
| Strong Market Measures vs Low CAP | | | |
| Full sample | 0.059*** | 0.067*** | 0.090*** |
| Non causal | 0.019 | 0.025 | 0.044 |
| Strong Direct Payments vs Low CAP | | | |
| Full sample | 0.080*** | 0.093*** | 0.110*** |
| Non causal | 0.030** | 0.039*** | 0.055*** |
| Strong Pillar 2 vs Low CAP | | | |
| Full sample | 0.035** | 0.044*** | 0.054*** |
| Non causal | -0.024** | -0.024* | -0.032* |
| Observations | 995 (687) | | |

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Agri Employment: Average Treatment Effect ($\times 100\%$ points)

| | Agri Employment | | |
|--|-----------------|----------|----------|
| | (t+1) | (t+2) | (t+3) |
| Strong Market Measures vs Low CAP | | | |
| Full sample | 0.059*** | 0.067*** | 0.090*** |
| Rural Areas | 0.092*** | 0.098*** | 0.122*** |
| Strong Direct Payments vs Low CAP | | | |
| Full sample | 0.080*** | 0.093*** | 0.110*** |
| Rural Areas | 0.113*** | 0.126*** | 0.147*** |
| Strong Pillar 2 vs Low CAP | | | |
| Full sample | 0.035** | 0.044*** | 0.054*** |
| Rural Areas | 0.070*** | 0.082*** | 0.096*** |
| Observations | 995 (687) | | |

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Conclusion

- ▶ Assessing the CAP impact **cannot be dissociated** from the context in which it is implemented implying using CIE methods.
- ▶ The proposed approach simplifies the representation of the **CAP mix allowing causal inference** in a multi-treatment context;
- ▶ Results show that CAP funds and in particular **Direct Payments contribute to attenuate the job losses** in the agri-sector (when compared with Low CAP).
- ▶ Characterisation of the CAP mixes **can be extended**:
 - ▶ to consider other **CAP groups of instruments** (e.g. decomposing Direct Payments and or RD measures) additional EU funds; or different intensities of CAP funds;
 - ▶ at Member State level with **municipality data** (if large enough)
 - ▶ to **farm level**: replicating the CAP mixes or creating other relevant combinations.

References

- ▶ Dumangane, M., Freo, M., Granato, S., Lapatinas, A. and Mazzarella, G., *An Evaluation of the CAP impact: a Discrete policy mix analysis*, EU 30880 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-43291-3, [doi:10.2760/72177](https://doi.org/10.2760/72177), JRC125451.
- ▶ Dumangane, M., Freo, M., Granato, S., Lapatinas, A. and Mazzarella, G., *The regional dimension of the CAP: 2007-2018*, EU 30878 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-43170-1, [doi:10.2760/60203](https://doi.org/10.2760/60203), JRC125450.

Keep in touch!

Competence Centre on Microeconomic Evaluation

ec-cc-me@ec.europa.eu

Thank you



©European Union 2020

Unless otherwise noted the reuse of this presentation is authorised under the CC BY 4.0 license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.