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

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Joint Research Centre

Foreword

This work was prepared within the "Joint Work Programme between AGRI.C.4 Monitoring and Evaluations and the Competence Centre for Microeconomic Evaluations within unit JRC.I.1. Monitoring, Indicators & Impact Evaluation"

The usual disclaimer applies.

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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)

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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?

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Contribution of this approach?

► Causal analysis often discussed within a **single policy instrument** perspective or different intensities of the same instrument.

► This approach characterises the policy mix as combinations of:
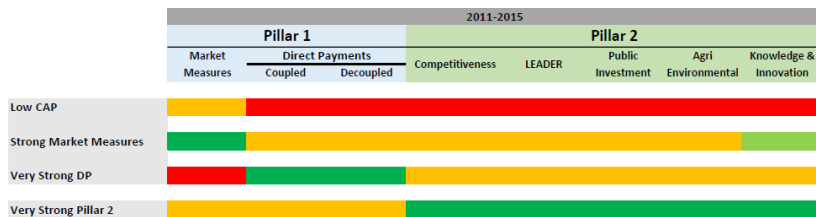
Market Measures, Direct Payments, Rural Development.

► 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 ?

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Identifying the CAP mix causal impact: Ingredients

► The policy mix evaluation of the CAP adresses 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.

   ► **Requirements:**
      ► Non-homogenous implementation of the CAP across regions.
      ► We observe all variables that affect simultaneously the treatment allocation (CAP funds) and the outcomes before the treatment.
      ► We must be able to observe a given type of region under all policy mixes. (counter-example: ANC payments and ANC areas)

   ► **The causal method**: Generalised Propensity Score method
      ► Average Potential Outcome of CAP (*APO*) mix *j*: $APO_j = E[Y(j)]$
      ► Average Treatment Effect of CAP (*ATE*) mix *j* vs *m*: $ATE_{jm} = APO_j - APO_m$
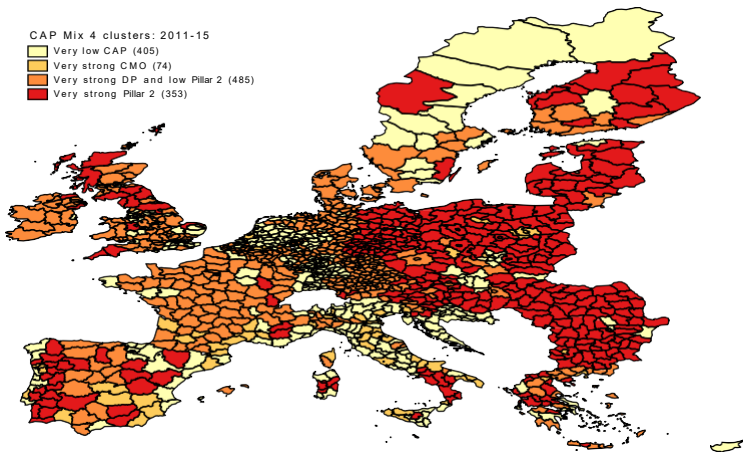
Measuring the CAP as a policy mix: CAP (intensities) cluster analysis

► **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.

	2011-2015							
	Pillar 1			**Pillar 2**				
	Market Measures	**Direct Payments**		Competitiveness	LEADER	Public Investment	Agri Environmental	Knowledge & Innovation
		Coupled	Decoupled					
Low CAP								
Strong Market Measures								
Very Strong DP								
Very Strong Pillar 2								

Heat table of funds' intensities across clusters.

Treatment variables: Discrete CAP mixes

CAP Mix 4 clusters: 2011-15
- Very low CAP (405)
- Very strong CMO (74)
- Very strong DP and low Pillar 2 (485)
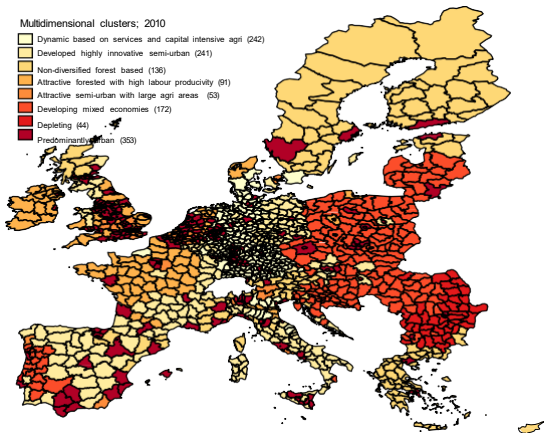- Very strong Pillar 2 (353)

Spatial distribution of CAP (mixes) clusters.
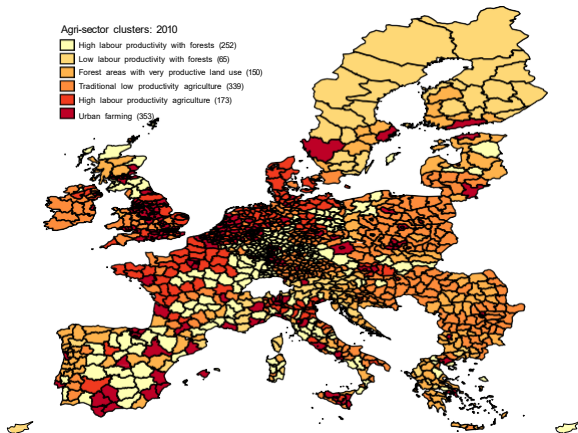
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The pre-treatment variables: Characterizing rurality at NUTS3

► 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, artifical 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** (remoteness measures); **Corinne** (land use data)
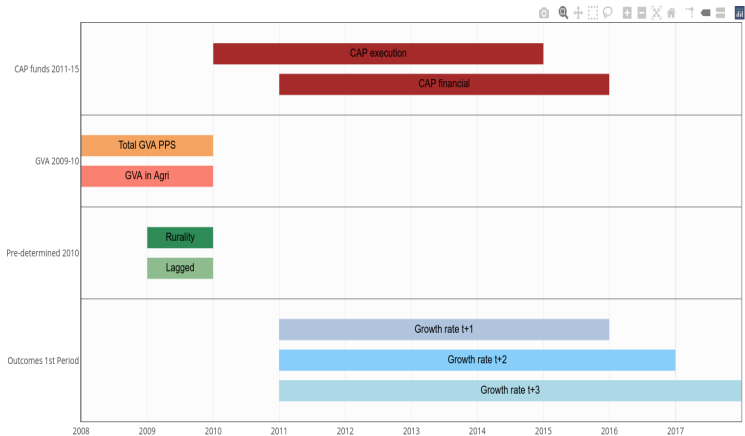
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The rurality clusters

Multidimensional clusters; 2010
- Dynamic based on services and capital intensive agri (242)
- Developed highly innovative semi-urban (241)
- Non-diversified forest based (136)
- Attractive forested with high labour productivity (91)
- Attractive semi-urban with large agri areas (53)
- Developing mixed economies (172)
- Depleting (44)
- Predominantly urban (353)

Agri-sector clusters; 2010
- High labour productivity with forests (252)
- Low labour productivity with forests (65)
- Forest areas with very productive land use (150)
- Traditional low productivity agriculture (339)
- High labour productivity agriculture (173)
- Urban farming (353)

Multi-dimensional rurality clusters

Agri-sector based rurality clusters

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Data timeline

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			
Very Strong DP vs Low CAP			
Full sample	0.080***	0.093***	0.110***
Rural Areas			
Very Strong Pillar 2 vs Low CAP			
Full sample	0.035**	0.044***	0.054***
Rural Areas			
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***
Very Strong DP vs Low CAP			
Full sample	0.080***	0.093***	0.110***
Rural Areas	0.113***	0.126***	0.147***
Very 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: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

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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 allows can be extended the analysis:

  ► 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.

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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, 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, JRC125450.

Keep in touch!
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Thank you