Evaluation of the impact of the CAP on generational renewal, local development and jobs in rural areas

Methodological aspects

ADE
Evidence for better policy

CCRI

ÖIR

Agenda

- **Objectives and scope of the evaluation**

- **Evaluation themes and questions**

- **General methodological approach**

- **Special focus:**
  - **Correlation and multivariate analysis**
  - **Counterfactual analysis with FADN data**
  - **CGE modelling**

- **Women and gender in analysis**

Objectives and scope of the evaluation

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Context

The challenge of generational renewal in agriculture and rural areas
- EU's population is aging
- 31% of the farming population are older people
- 55% of EU farmers are 55 or older

Objectives

Evaluate how and to what extent the Common Agricultural Policy (CAP) affects generational renewal in rural areas, with a secondary focus on rural jobs and local development

- Does CAP spending make a difference to the number of Young Farmers (YF)?
- Does CAP spending make a difference to YF performing better compared to non beneficiaries?

Scope

- 2014-2020 CAP (2007-2013 reference) – EU 28
- Pillar 1 CAP's support for YF via Direct Payments
- Pillar 2 : YF business start-up aid in Pillar 2 (Measure 6.1); investment measures modulated in favour of YF (e.g. M4.1); supporting measures tailored to accompany YF (e.g. M1 training, M2 advice, M16 co-operation)
- LEADER, Measure 7 (basic services in rural areas), Measures 6.2-6.4 (business start-up)).

CAP intervention logic
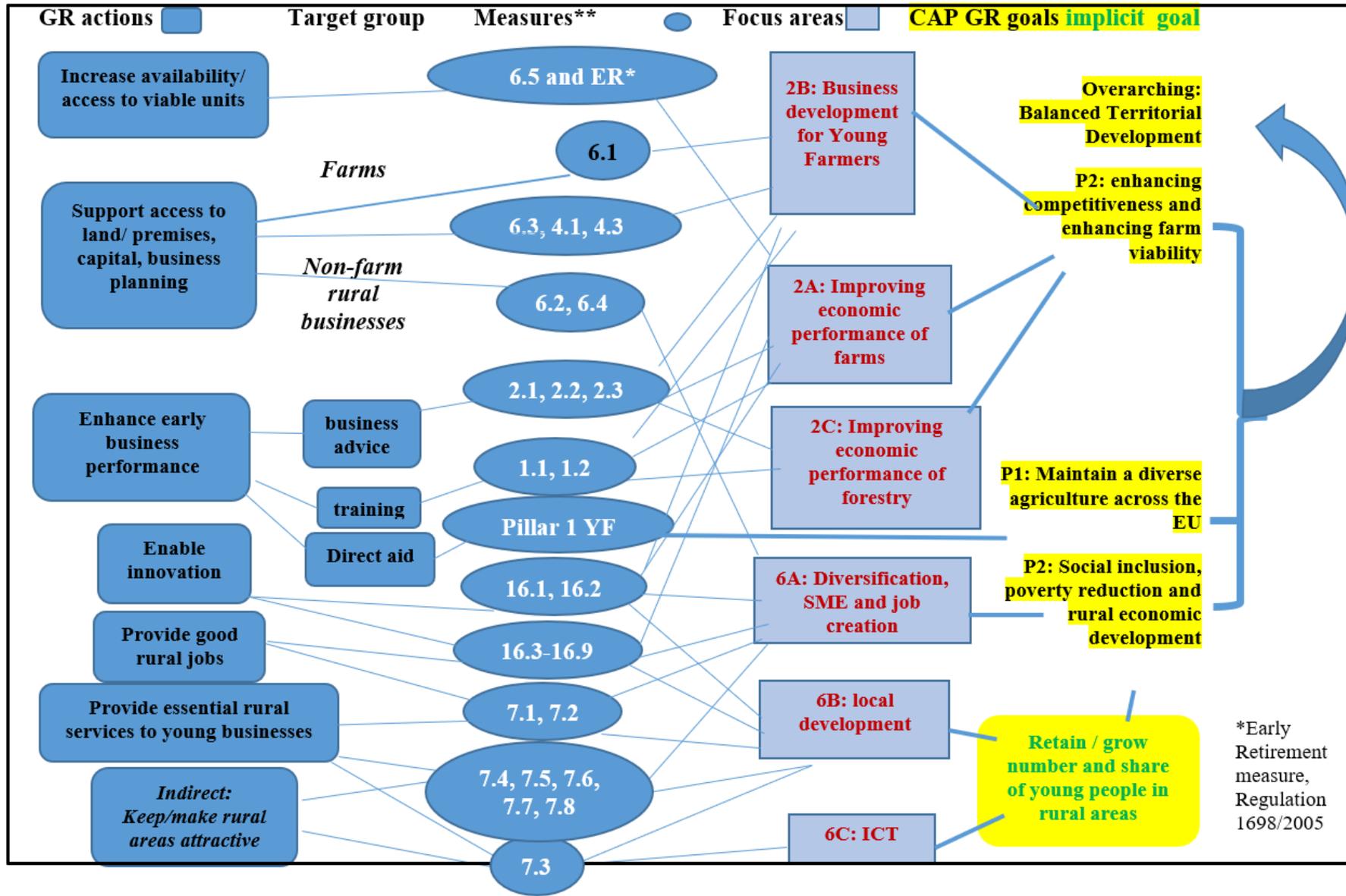
GR – generation renewal

Evaluation themes and questions

Evaluation themes and questions

17 evaluation questions grouped under 4 themes:

Effective-ness and relevance	Impact of CAP Young Farmer measures on generational renewal;
	Impact of CAP measures relevant to generational renewal upon:
	  o intergenerational knowledge transfer and innovation
	  o social capital, infrastructure and governance
	  o rural jobs, their quality and their durability
	  o access to land, capital and knowledge

Efficiency	Efficiency of measure delivery, types and patterns of administrative burdens
Coherence	Internal coherence (CAP generational renewal measures within the CAP) External coherence with other EU policies, the role of non-EU policies and external factors
Overall performance	Assessing the effectiveness of the whole CAP in promoting generational renewal, the efficiency of its indirect impacts upon quality of life and EU added value

General methodological approach

Approach and methodology

Triangulation of information

| Literature and documentary review | • **Desk review** (literature and documents) at EU and case study levels |

Quantitative approach

CAP expenditure on GR, context data (Eurostat)
- **Correlation analysis**
- **Multivariate analysis (MVA)**
- **FADN data counterfactual analysis** (France and Italy)
- **Computable General Equilibrium (CGE) modelling exercise** (Poland)

Online survey of MS administration, Interviews and focus groups

- Surveys within case study Member States, key stakeholder interviews, workshops and focus groups (7 national, 3 EU)

Case study analysis

- **7 case studies:** France, Belgium-Flanders, Italy, Estonia, Hungary, Poland, Ireland. National, regional, local evidence.

Validation workshop with the European Commission

Correlation analysis and Multivariate Analysis (MVA)

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Correlation analysis:

Research question: **is CAP spending associated with more GR at NUTS3?**

- Mapping of data and comparison
- Statistical analysis of correlation
- ➔ No correlation between CAP spending and individual GR indicators at all EU NUTS3

Could be due to:

- Absence of link?
- Heterogeneous effects depending on NUTS3 characteristics?

➔ Hence, the need for a multivariate analysis (MVA): gather NUTS3 regions by contextual characteristics and observe CAP effects on GR within each group
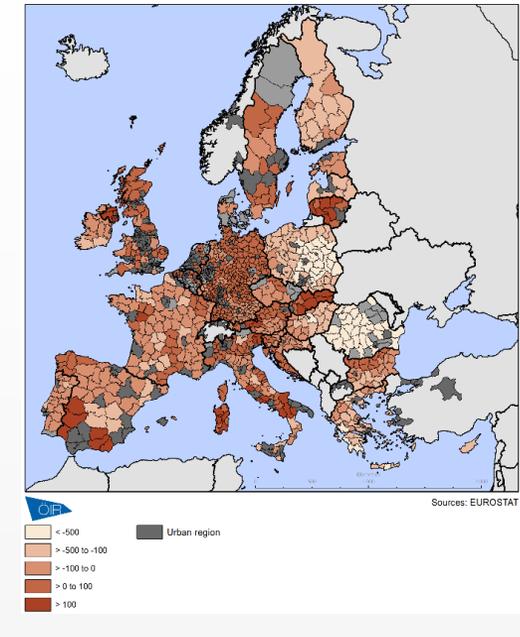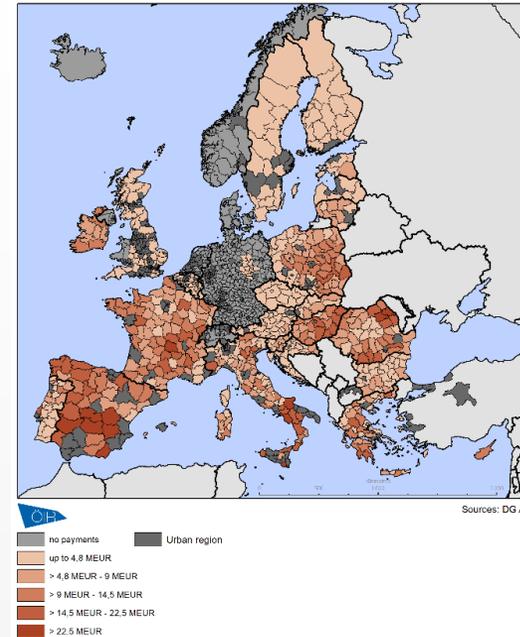
An example: Total expenditure planned under Pillar 2 Focus Area 2B over 2014-2020, Change in the number of farms managed by under 35s (in absolute numbers) between 2013 and 2016

MVA: Principal Component Analysis (PCA) to cluster NUTS3 regions

Gather NUTS3 regions by similarities:

- Start with a **PCA** to **group variables characterising NUTS3 regions** in a meaningful way
- PCA **creates 3 composite indicators** which combine information on several variables for each NUTS3 region – we name them:
  - ➤ **"Infrastructure" indicator**: includes broadband, governance quality, GDP/capita, multimodal accessibility, net migration, unemployment
  - ➤ **"Payment" indicator**; includes Pillar 1 YF support, Pillar 2 Focus Area 2B support, population, tertiary education
  - ➤ **"Employment" indicator:** includes GVA/c from tertiary, reducing GVA/c from secondary

- 2-step cluster analysis of composite indicators:
  - hierarchical clustering to identify optimal number of clusters;
  - K-means to form the clusters;
    - based on:
      - the 3 PCA indicators,
      - M01 and M07 spend (*M02* and *M06* are highly correlated to *M07*, and *M04* and *M16* are highly correlated to *M01*),
      - the number of farms of more over 50 ha

MVA: Clustering NUTS3 regions

- 5 clusters of NUTS3 regions:
- Shows **diversity in GR context across the EU**

Limitations
- Differences in the size of 'NUTS3' categories
  - Some regions are very large (Sweden), some are very small (Germany)
  - Hence comparison of NUTS3 remains delicate

- Clustering limitations:
  - a statistical exercise - outputs difficult to interpret
  - results depend on the available variables

➔ **Nevertheless**, clustering NUTS3 regions helps identify effects that could be drowned out if looking at EU or national levels

Sources: DG Agri/EUROSTAT
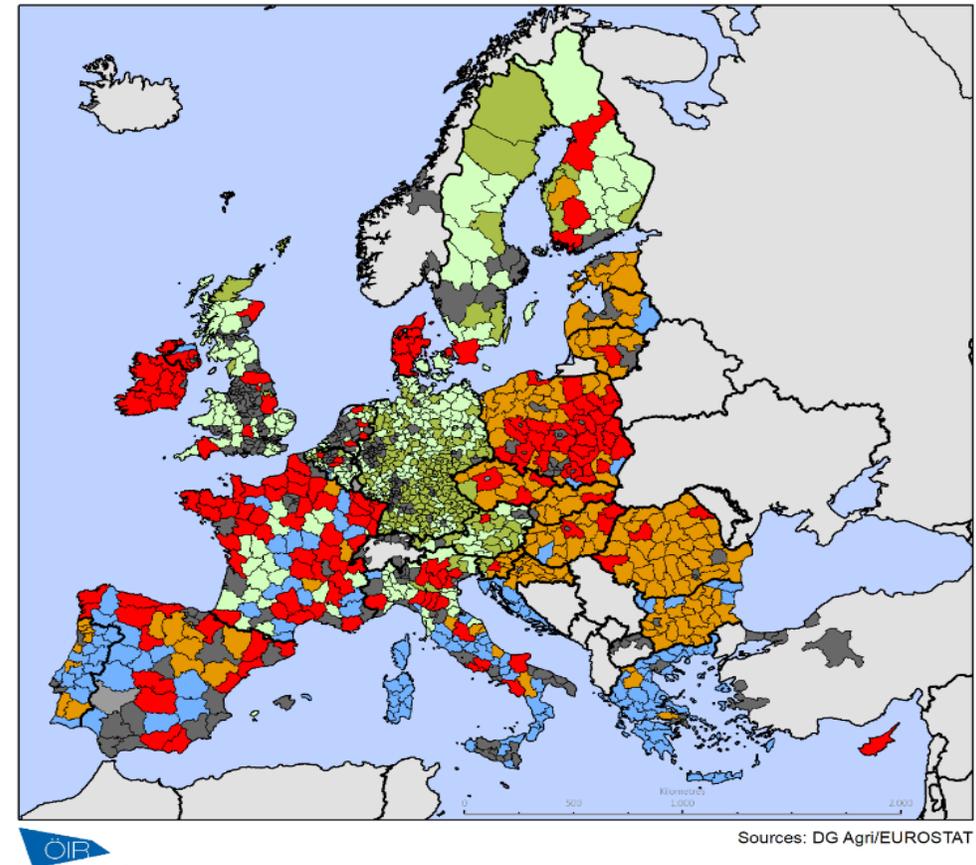
Clusters named:

1. Non-agricultural developed regions with low CAP expenditure
2. Agricultural developing regions with rapid agricultural abandonment
3. Sparsely populated developing areas with many small farms
4. Agricultural regions with large farms, high CAP expenditure and ageing farm population
5. Developed rural areas where other sectors dwarf the impact of agriculture

MVA: Effects of CAP spend on GR by cluster

Sources: DG Agri/EUROSTAT

- Regression to assess **correlation between CAP spendings and variation in number of YF** (proxy for GR) ***within*** **each cluster:**
  - In all clusters except C4, **CAP P1 GR spend is positively correlated with increased numbers of YF**
  - In C4, Pillar 2 spending on rural services and knowledge exchange is positively associated with increase in YF numbers; link between **GR funds and GR are weaker due to high total CAP expenditure**
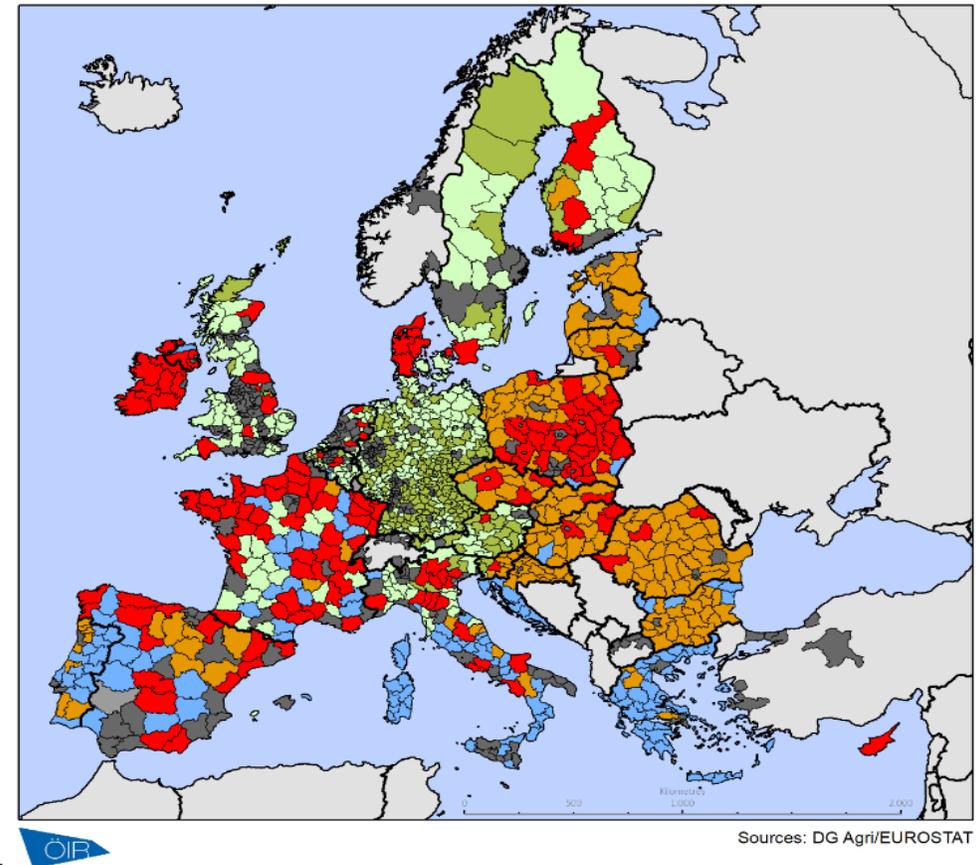
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Counterfactual analysis of FADN data: France

Counterfactual analysis

- **Research question: what is the effect of YF aid on farm performance?**

To answer:

➔ Use FADN data

➔ Basis: **compare farms and farmers who received YF start-up aid with those who did not**

➔ Sample restricted to **farms that experienced GR between 2013 and 2015** (excludes farms who experienced GR years before but still display YF support effects at time of evaluation)

- **Challenges:**

    1) Identify farms with GR within FADN data

    ➔ *Condition: no farm holder under 40 in year N-1 and 1 (one) farm holder under 40 in year N*

    2) Within this sub-sample, identify farms with and without YF start-up aid, either:

    - available in FADN data, or

    - ask paying agency to cross-link beneficiary status with FADN data

Counterfactual analysis, France: DiD

- **Difference in difference**: compares the difference in outcomes before and after GR, between group 1 (*farms supported by YF aid above €1500) and group 2 (farms not supported fed by aid to YF)*

  ➔ Assume without subsidies, both groups would have followed the same **trend** (not the same output); other than YF payments, no other variable differentially affected the outcomes under study between the groups

➔ comparison between the groups: shows differences, better performance in group 1 supported by aid to YF.

With YF support	Without YF support
An increase of economic size by 9%	A slight increase of economic size by 3%
An increase of total output by 5%	A decrease of total output by 4%
An increase of the farm capital by 8%	A slight decrease of the farm capital by 2%
A decrease in percentage of rented land by 10%	A decrease in percentage of rented land by 7%

➔ However, both groups are very different. Need to control for similar characteristics to identify the true effect of subsidies on farm performance

- To compare similar farms and identify effect of YF aid: **propensity score matching**
- ➔ Match each farm in group 1 with a farm in group 2 of the same sector and similar characteristics (**nearest 1:1 neighbour method** with exact matching for ANC and farm type)
  - Reduced sample (only grazing livestock farms, 77 in each group)
  - Separate LFA analysis (LFA: 54 out of 77 in each group)
  - ➔ Positive (but small) effects associated with YF aid (P value at 0.1 level)

  - Improved scale of operations in the short and medium term on supported farms, compared to similar farms without support
  - However: Farms of this type receiving YF aid seem to **invest beyond what is optimal for GVA.**
  - ➔ **Limitation: short term performance measure; GVA should be tracked over 5 years**

LFA livestock with YF support	LFA livestock without YF support
An increase in standard output of 11% – the farms get bigger, more capital is invested	An increase in standard output of 5% – a smaller impact on scale
Increased productivity per hectare	Decreased productivity per hectare
An increase in intermediate consumption	A small decline in intermediate consumption
An increase in costs per hectare	A decrease in costs per hectare
So, overall, a small increase in NVA	So, overall a higher increase in NVA*

CGE modelling: national and regional Poland analysis

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CGE modelling:

Research question: **What are the impacts of CAP spending (especially related to YF) on the wider rural economy?**

- CGE **models the whole economy**, including interlinkages between sectors, regions and actors
- **Policies** (i.e. more spending for YF) **can be simulated** and their effect on other sectors can be estimated
- We assessed the effects of CAP payments (Total P1 spend; YF P1 spend; YF P2 spend) in Poland on:
  - -**economic development** (GDP, investment, consumption, production):
  - -**aggregate employment**
  - -income and hence consumption in rural areas
  - -outputs in *other* sectors of the economy and less agricultural regions

Limitations:
- Costly to build, rare - which is why only Poland was studied
- A comparative static approach providing an overview of sectors affected by a policy change, (not a forecast, not dynamic)

For Poland, the 'POLTERM' model was available, built by a member of the team

Results of CGE analysis:

Positive impact of the measures on all outcomes

- Higher impact of Pillar 2 YF than Pillar 1 YF on **economic development** (GDP, investment, consumption, production)

- Impact on **aggregate employment**: similar for P1 YF and P2 YF, but differences in the **allocation of new employment**

- Impact on incomes in rural areas (hence on consumption of households): Pillar 2 YF has larger effect than Pillar 1 YF

- Regional impact on GDP: largest impacts in predominantly agricultural regions

- Overall impact for Poland positive compared to the CF in terms of jobs and growth

Figure 40. Predicted employment impacts of CAP GR measures, by sector, 2014-2020
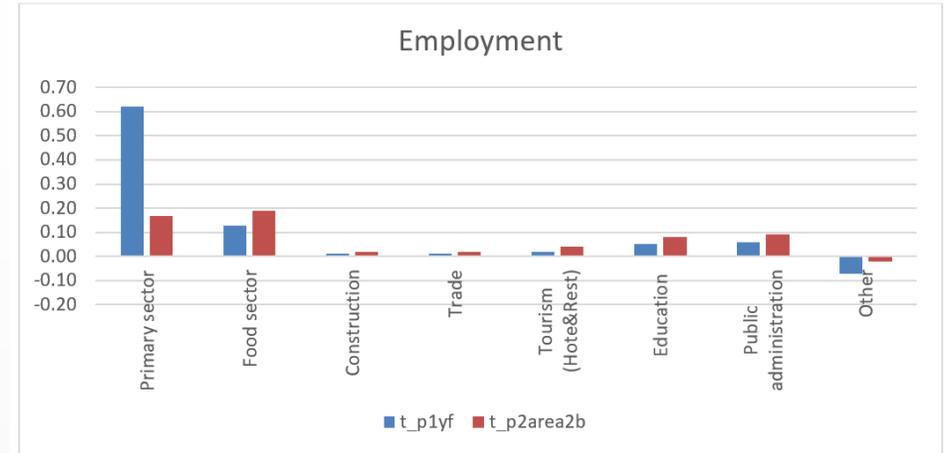
Source : CGE results, CCRI et al

Figure 41. Estimated impact of GR measures on regional GDP, 2014-2020
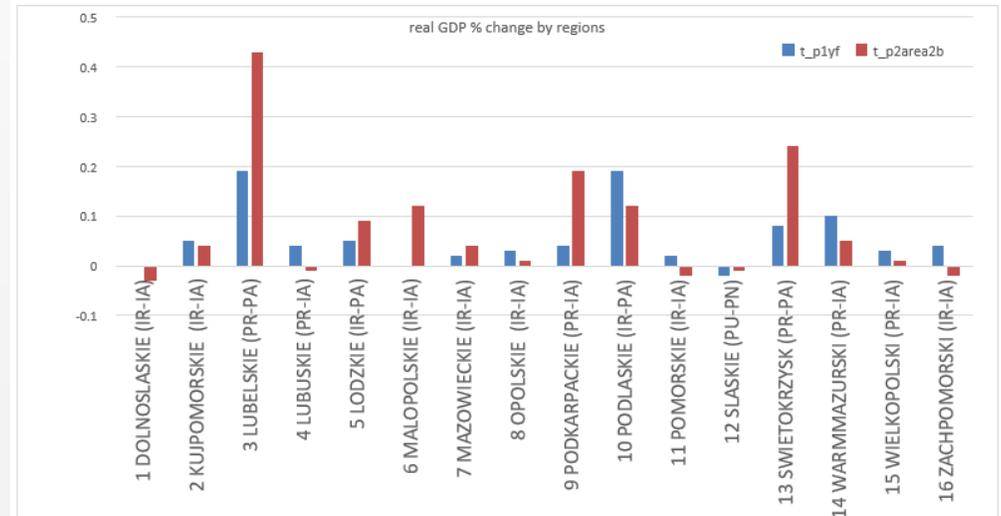
Source : CGE results, CCRI et al

Women and gender in analysis

Gender and women

In 2014-2020

- gender was a cross-cutting objective of Pillar 2, it was not included in Pillar 1,

- it was not the focus of the Generational Renewal study

However, most indicators allow for a division by gender: Eurostat, FADN

In 2023-2027

• Women in agriculture and rural areas are now included in a dedicated specific objective of the CAP (SO8)

• Generational Renewal indicators under SO7 are disaggregated by gender

Thank you for your attention!

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