Impact of Geographical Indications on sustainable developement of territories in France

Impact des Appellations et Indications Géographiques Protégées sur le développement durable des territoires en France

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Worldwide Perspectives on Geographical Indications

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Introduction

- Geographical Indications (GIs) : tools to contribute to sustainability (FAO, 2009; REGULATION No 1151/2012 of the European union).

- Literature: Effects of GIs on sustainability dimensions : large potential “if well managed”(Vandecandelaere et al. 2021):

  - Economic: Effects on price premium and net margin along the production chain (Monier-Dilhan et al., 2019 ; Arfini et Bellassen, 2019; Jeanneaux et al. 2019)

  - Social: employment creation, wages (Hilal et al., 2021, Bouamra-Mechemache and Chaaban, 2010)

  - Environment, landscape and biodiversity preservation (genetic and eco-systems). Local varieties, low intensive agriculture. (Hirczak and Mollard, 2004; Thévenod-Mottet, 2010; Beletti et al. 2015; Bellassen et al. 2021; Sengel et al., 2022;)

Introduction

- Large majority of specific case studies: level of exploitation or sector. Difficult to be extended. Best practices or conditions for success.
- Interest for evaluation of overall effects on territories: public policy assessment.
- Few statistical quantitative assessment of the overall impact (Cei et al. 2018a, Cei et al. 2018b; Raimondi et al., 2020) at the national level:
  - Lack of data on GI locations (European E-Ambrosia Portal),
  - NUTS3 level
  - Rural development, productivity and employment. None on environmental aspects.

Question and data

- The « Observatoire de développement rural »(INRAE): host and treat large and precise data on GI and agricultural systems on the territory. https://odr.inrae.fr
- Data on certified operators. Over the 2012-2020 period. Geographical level of « canton » (between NUTS3 and municipality level), only food products (not wines nor spirit drinks).
- Impact evaluation of GI in France on the three dimensions of sustainability:
  - Economic (agricultural benefits/Family work unit) (Piet et al., 2020)
  - Social (full-time employment/ha, wages),
  - Environmental (agricultural pressure on environment and biodiversity: water pollution, crop diversity, share of grassland) (Cherrier et al., 2021).

GI intensity index on territories on the 2012-2020 period

- 3446 cantons between 2012 and 2020.
- 2 indicators: % farms engaged in GI (intensity), Number of GI sectors involved (diversity)

Figure: GI intensity in « cantons » of France in 2012 (% farms involved and number of GI sectors)

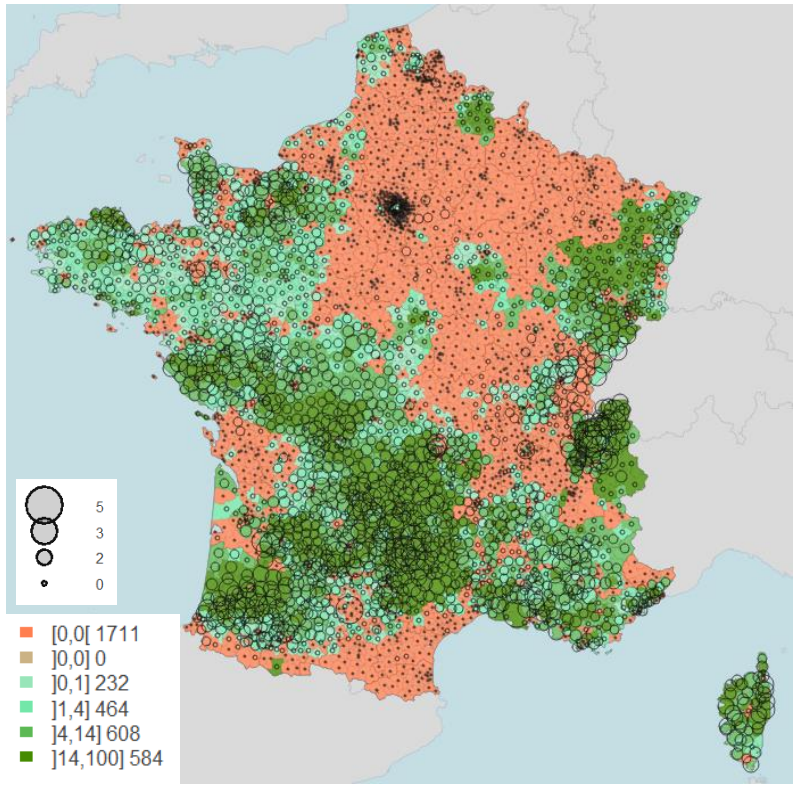
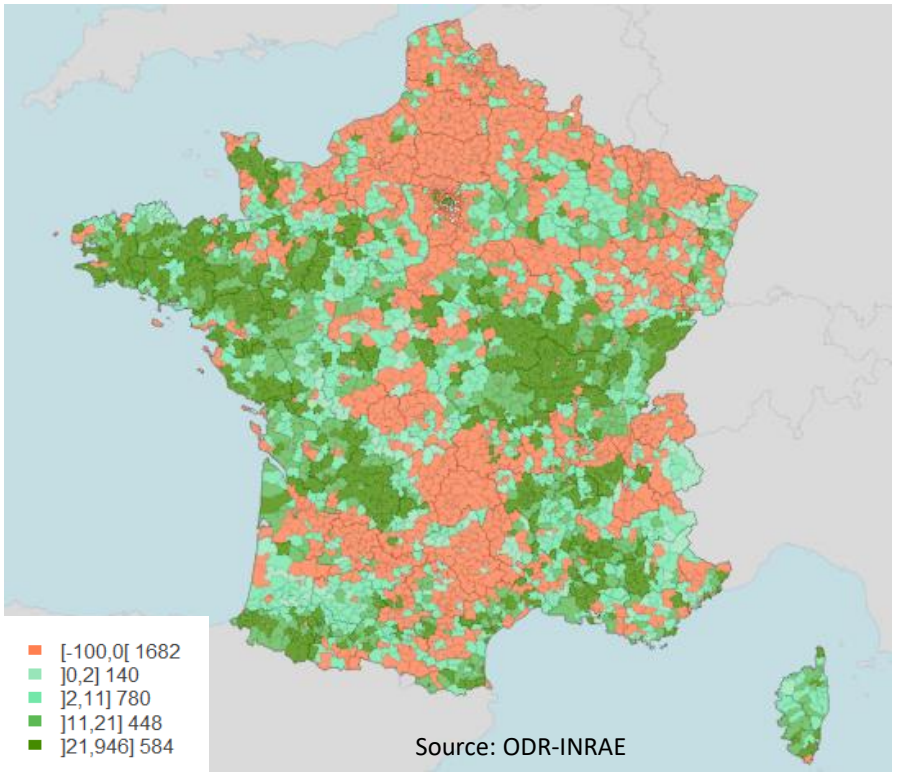


Figure : average annual growth rate (%) of the share of farms involved in GI between 2012 and 2020



Econometric model

Difference in difference(DID) impact estimation strategy. Fixed effect regression, with i the canton and t the year:

$$y_{it} = \alpha_i + \gamma_t + \rho T_{it} + \delta T_{it} D_t + \sum \beta X_{it} + e_{it}$$

Outcome, successively:
- Agricultural benefits/FWU
- Agricultural employment, wage per worker
- Agriculture pressure on environment index

Continuous « Treatment » variable:
- % farms involved in GI
- Number of GI sectors

Controls:
- CAP expenditure, 2nd pilar (Organic, investment aid, agri-environmental payments)
- % organic farmers
- UAA
- Average size of farms (UAA/farms)
- Average age of farmers

- « After treatment » dummy (1 si t>=2013)

- ρ : relative level of y in canton with high level of GI intensity (with respect to cantons with low level of GI intensity in 2012).
- δ: increase of y caused by an increase of the treatment intensity Tit. In comparison of cantons with no increase of treatment intensity over the period.

Main results and predictive power

Selection effect:
- Economic: GI in cantons with low economic performance

Treatment effect:
- Economic : GI intensity + (10pt/11%), GI diversity (1/5%)
- Employment: GI intensity + (10pt,+ 2,8%), GI diversity ~

Environment: GI intensity + (10pt, +0,2 sd), GI diversity ~

Performance	Economic (AB/FWU) (1)	Social (ln(employment/UAA))	Environmental (Index)
% GI farms	-0.7192 ***	-0.1287	-0.0049
	(0.0800)	(0.0853)	(0.0062)
Dt* % GI farms	**1.0882 *****	**0.2862 *****	**0.0242 *****
	(0.0711)	(0.0702)	(0.0059)
GI diversity	-0.0612 ***	0.0038	-0.0007
	(0.0143)	(0.0110)	(0.0007)
Dt* GI diversity	**0.0514 *****	**-0.0122**	**0.0012**
	(0.0132)	(0.0099)	(0.0006)
% organic farms	-1.3759 ***	-0.0662	-0.0236
Dt *%organic farms	**1.2594 *****	-0.0081	**0.0258 *****
ln(CAP_2ndP)	-0.0118 ***	-0.0084 *	-0.0005 ***
Dt *ln(CAP_2ndP)	**0.0097 *****	**0.0071 ***	**0.0000**
Adj. R2	**0.72**	**0.94**	**0.88**
Num. obs.	27959	26976	16112
Effets fixes	Cantons, années	Cantons, années	Cantons, années

**p < 0,05, **p < 0,01, ***p <0,001,Robust standard deviation in parenthesis.*

Others controls included in these regressions: UAA, UAA/farms, average age of farmers

Detailed results on environment

Performance	Crop diversity	%grassland	nitrates	phosphorus	pesticides
Part exploitations IG	-0.0067	0.0421	0.1776 **	0.0958	0.1866
	(0.0360)	(0.0315)	(0.0688)	(0.1947)	(0.1089)
Dt* Part exploitations IG	-0.1078 ***	-0.0797 **	-0.2512 ***	0.1398	-0.9016 ***
	(0.0326)	(0.0285)	(0.0616)	(0.1742)	(0.0931)
Indice diversite filière IG	-0.0329 ***	-0.0254 ***	0.0099	0.0223	-0.0440 **
	(0.0055)	(0.0048)	(0.0103)	(0.0291)	(0.0166)
Dt* Indice diversite filières IG	**0.0233 *** **	**0.0373 *** **	**-0.0102**	**0.0048**	**0.0157**
	(0.0048)	(0.0042)	(0.0090)	(0.0255)	(0.0137)
Adj. R2	0.96	0.97	0.89	0.19	0.69
Num. obs.	28519	28573	21403	21339	22434
Effets fixes	Cantons, années	Cantons, années	Cantons, années	Cantons, années	Cantons, années

GI diversity: crop diversity and share of grassland

GI intensity: less nitrates and pesticides in surface water

**p < 0,05, **p < 0,01, ***p <0,001,Robust standard deviation in parenthesis.*

Others controls included in these regressions: %Orginc Farms, CAP 2nd pilar amount, UAA, UAA/farms, average age of farmers

Conclusion

- Results show an overall positive effect of GI on economic performance and a moderate effect on social performance:
  - self-selection bias: GIs set more in marginal and poor areas (low benefit per FWU) (Cei et al., 2018).
  - a 10 percentage point increase in share of GI farms in a canton would increase by 11% the farmers income (benefit by FWU), and by 2,8% the number of full time equivalent per ha (hired workers)
  - Both intensity and diversity of GI have an economic impact.
  - No significant effect found on wages or total agricultural employment.
- Positive effect of GI intensity on nitrates and pesticides in surface water (less pollution) (Bellassen et al., 2021).
- Positive effect of organic agriculture on farmers' income and water quality (Coinon et Chabbé-Ferret,2022).

Discussion

- Results confirm the relevance of GI protection policy : positive effects of intensity and diversity on sustainable development.
- Useful complement of the case study evidence.

- To go further: difference by sector, short run and long run effect (Raimondi et al. 2020) , eco-toxicity of pesticides.
- Data to be gathered/collected on GI farms involved at the national level in European countries and territories (UUA involved, number of farms involved).

- Thanks for your attention

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