

# Participating into Producer Organisations in the Southern European F&V sector.

Angelo Zago

University of Verona, Verona - IT

*“The contribution of producer organisations to an efficient agri-food supply chain”*

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# Motivation

In the fruit and vegetables (F&V) sector, long known support to POs:

- 1 POs recognized by the EU since the 70s.
- 2 After the 1996 reform, they benefited from subsidies for initial (50%) and operational (2%/year) expenses (EU Reg. 2200/96), to assure: quality standards enforcement, supply control, environmental friendly technologies adoption, and producers' co-financing of other policies. In brief, the aim was

*“... to strengthen the position of producers in the face of a greater concentration of demand and to integrate environmental concerns in the production and marketing of F&V ...” (EU Commission, 2014).*

- 3 Reform in the 2007, when the UE re-empowered POs with the same roles in the F&V sector (EU Reg. 1182/07).
- 4 Last, in 2013 the UE (EU Reg. 1308/13) has extended the use of POs as a *transversal policy tool* for the common market organization of **other agricultural sectors** as well.

# Motivation, 1

- As of 2010, in the EU-27 F&V the **participation rate**, that is the value of F&V marketed by POs, was about **43%** (31% in 2004).
- However, great **differences in participation rates across countries, regions, and products**:
  - ▶ **countries**: more than 90% in the Netherlands and Ireland, but about 50% in France, Italy and Spain, and lower in Poland, Finland, and Portugal (around or below 20%);
  - ▶ **regions**: in Italy, for instance, from < 20% (e.g., Sicily, Sardinia) to > 50% (e.g., Trentino, Emilia-Romagna);
  - ▶ **products**: in France, for instance, from < 30% to 75% for the fresh F&V sector.
- These differences have led some commentators to argue that

*“the POs in the F&V sector do NOT seem to have reached the objectives assigned them by the Common Market Organization” (Camanzi et al., 2010).*

# Motivation, 2

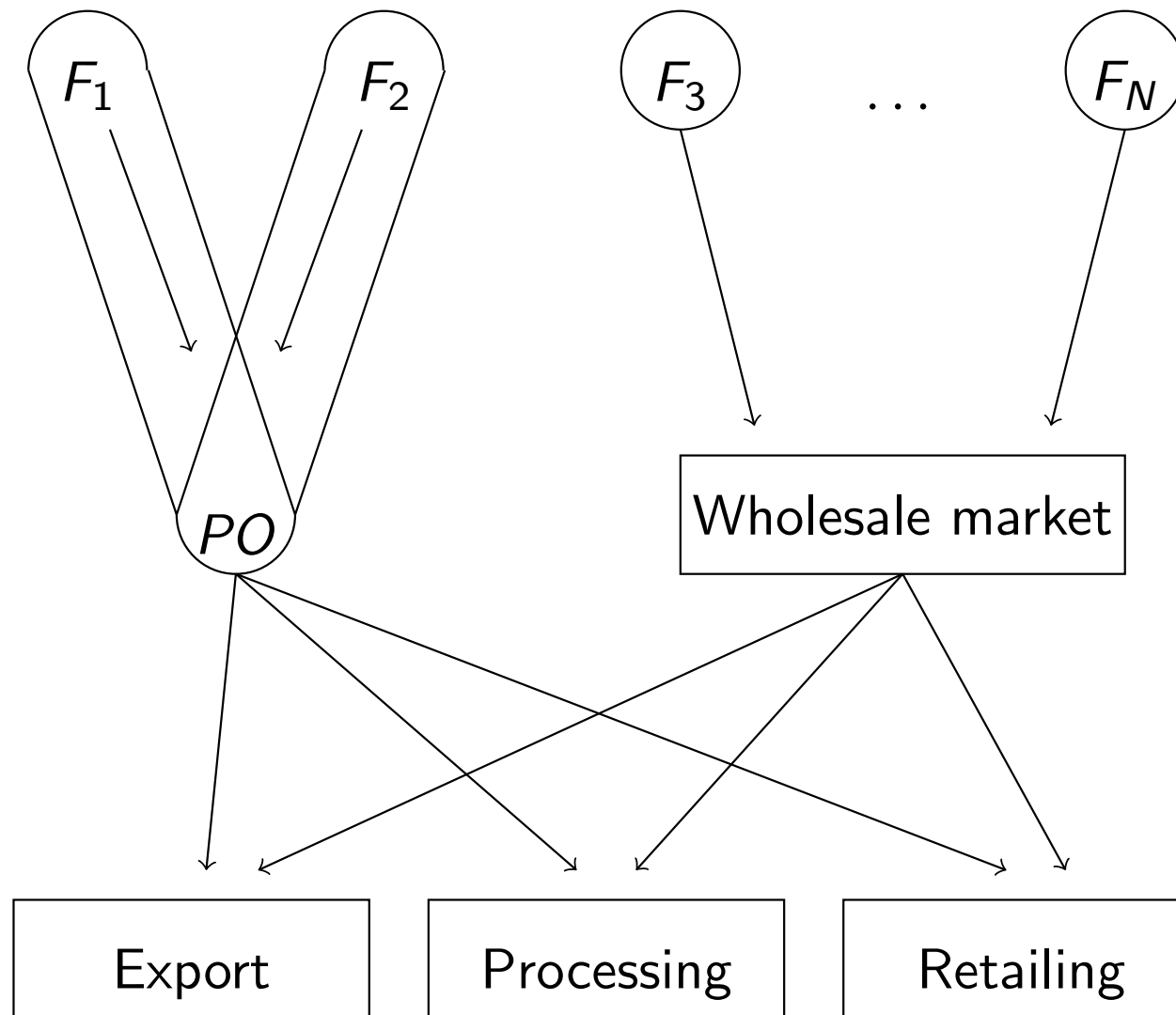
## NATURAL QUESTIONS:

- Why should farmers participate into POs?
- Can we explain the differences in participation in POs?
- In particular, we should look at the following.
  - ▶ Why should farmers participate into POs?
  - ▶ What are their benefits and costs?
  - ▶ Why is participation high in some countries or regions, e.g., in the Netherlands, but much lower in others, such as in Southern Europe?
  - ▶ What are the reasons that may explain these differences?
- The aim of our project is to investigate POs formation and functioning, looking at possible determinants of their success (or lack thereof).
- As a measure of performance/success, we consider the participation rate, that is how much F&V production in a particular region is reaching the downstream market through POs.

# Plan of the project & talk

- We investigate - theoretically and empirically - the participation decisions of farmers into POs, acknowledging that **farmers weigh benefits and costs** of joining a PO. Revealed preference argument.
- In effect, by joining a PO a farmer commits to deliver her products to the PO for its processing and/or marketing.
- But why should someone give her product, i.e., money, to someone else?
  - ▶ Because she may get some **benefits**, which depend on the possibility to share with other the fixed joint processing and marketing costs to gain access to market opportunities otherwise unavailable.
  - ▶ However, this may imply losing other market opportunities, which represent the (opportunity) **costs** of her participation.
- In short, the net benefits of joining a PO depend on:
  - A. EXTERNAL factors, i.e., the market environment for farmers and POs;
  - B. INTERNAL factors, i.e., some structural characteristics of the POs.

# The big picture



# The data

- For the empirical investigation, we collected data for the period 2007-2014 on individual POs of the three major EU F&V countries, that is
  - ▶ France,
  - ▶ Italy,
  - ▶ Spain.
- The other data were obtained from standard sources, such as Eurostat, OECD, etc.
- Here we report some PRELIMINARY results of joint work with:
  - ▶ Zohra Bouamra-Mechemache - Toulouse School of Economics, Toulouse;
  - ▶ Tomas Garcia-Azcarate - Instituto de Economia, Geografia y Demografia (IEGD-CSIC), Madrid;
  - ▶ Michel Simioni - Institut National de la Recherche Agronomique (INRA) UMR MOISA, Montpellier.
- Those that follow are PRELIMINARY results, plus other caveats.

## [A.] EXTERNAL factors

What are the exogenous factors that may influence farmers participation into POs?

- Camanzi et al. (2009) suggest the following:
  - ▶ the role of a large retail sector;
  - ▶ the competitive pressure from proximity markets;
  - ▶ the pressure from imports;
  - ▶ the existence of alternative source of public funds, such as structural and rural development funds;
  - ▶ the relative inefficiency of local and government offices.
- Comanor & Rey (2000) show that the concentration in the retailing sector may in fact induce the restructuring into the upstream industry.
- Hueth & Marcoul (2006) find that bargaining associations are more common where
  - ▶ there are formal contractual arrangements,
  - ▶ in markets for processed output, and
  - ▶ there is high geographical concentration of supply.



## [A.] EXTERNAL factors, I

Table: Variables and possible impact on participation rates

Variable	PO	Crop	NUTS2	Country	Effect*
- value of F&V marketed			X	X	
<b>Independent variables</b>					
<b>F&amp;V sector:</b>					
- number of farms with F&V			X	X	?
- value of F&V production			X	X	?
- size of avg. farm with F&V			X	X	?
<b>Retailing sector:</b>					
- concentration			X	X	+
<b>Processing sector:</b>					
- concentration			X	X	+
- distance from POs	X		X		+
<b>Sources of funds for investments:</b>					
- flow of structural funds			X	X	-
<b>Competitive pressure:</b>					
- level of import tariffs	X				-
<b>Economic development:</b>					
- GDP per capita			X	X	+
- GDP per capita growth			X	X	+

\*Expected impact on participation

# Preliminary results

```
1 . regress OR_VMP_i $PO3 $AGRIC1 $RETAIL1 $ECON;
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Source	SS	df	MS	Number of obs	=	5,744
Model	4891883.03	16	305742.689	F(16, 5727)	=	288.01
Residual	6079682.28	5,727	1061.58238	Prob > F	=	0.0000
				R-squared	=	0.4459
				Adj R-squared	=	0.4443
Total	10971565.3	5,743	1910.42405	Root MSE	=	32.582

OR_VMP_i	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
country	3.345909	1.395579	2.40	0.017	.6100457	6.081773
members	.0025972	.0006902	3.76	0.000	.0012442	.0039502
vmp	.7249539	.0140136	51.73	0.000	.697482	.7524258
specialization1	.0179055	.0230776	0.78	0.438	-.0273354	.0631464
fresh	.1036997	.0160646	6.46	0.000	.072207	.1351924
FVsize1	-.4249804	.0315525	-13.47	0.000	-.4868352	-.3631257
specfv_ov	-117.803	17.58333	-6.70	0.000	-152.2729	-83.333
specfv_ha	-3.022291	3.958167	-0.76	0.445	-10.7818	4.737213
size_ret	-11.29842	1.029685	-10.97	0.000	-13.31699	-9.279848
size_who	14.70569	.949339	15.49	0.000	12.84463	16.56675
size_foo	-.2351541	.1332347	-1.76	0.078	-.4963445	.0260363
gdp_cap	-551.0119	137.2679	-4.01	0.000	-820.1088	-281.9149
gdp_cgr	.1354858	.0396136	3.42	0.001	.0578281	.2131435
un_rate	-.6049723	.271574	-2.23	0.026	-1.13736	-.0725844
yun_rate	.5511403	.130127	4.24	0.000	.2960421	.8062385
ind_vec	-.0844946	.0277881	-3.04	0.002	-.1389699	-.0300194
_cons	-1.716972	8.042472	-0.21	0.831	-17.48326	14.04931

- Almost all variables are significant (pooled OLS).
- Using machine-learning techniques, we find that the average size of the **wholesale** firms, the number of members of POs, and the regional specialization into F&V are more important.
- Moreover, France looks different from Italy and Spain.

## [B.] INTERNAL factors

- In the project, we ask also whether performances by POs are explained by their structural characteristics and choices.
- (1) We thus define **POs' business models** by using different characteristics and choices of POs as inputs in a cluster analysis.
  - (2) We use cluster analysis also to investigate differences in the **market environment** at the regional (NUTS2) level, using the information about the socio-economic conditions under which each PO operates.
  - (3) We then look at **POs' performances** across (1), and (2).

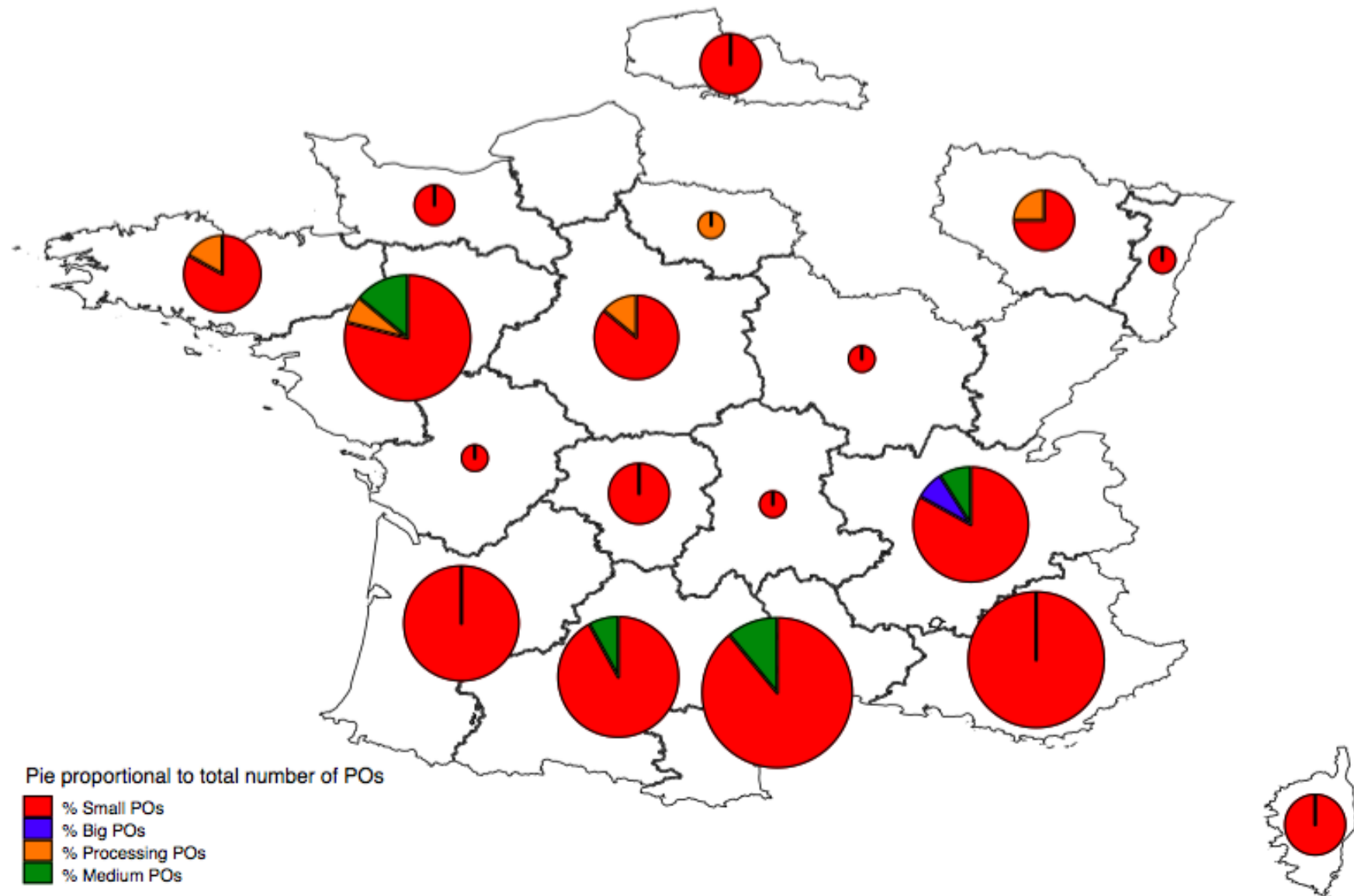
# 1. Finding Business Models

Table: Variables and clusters for POs

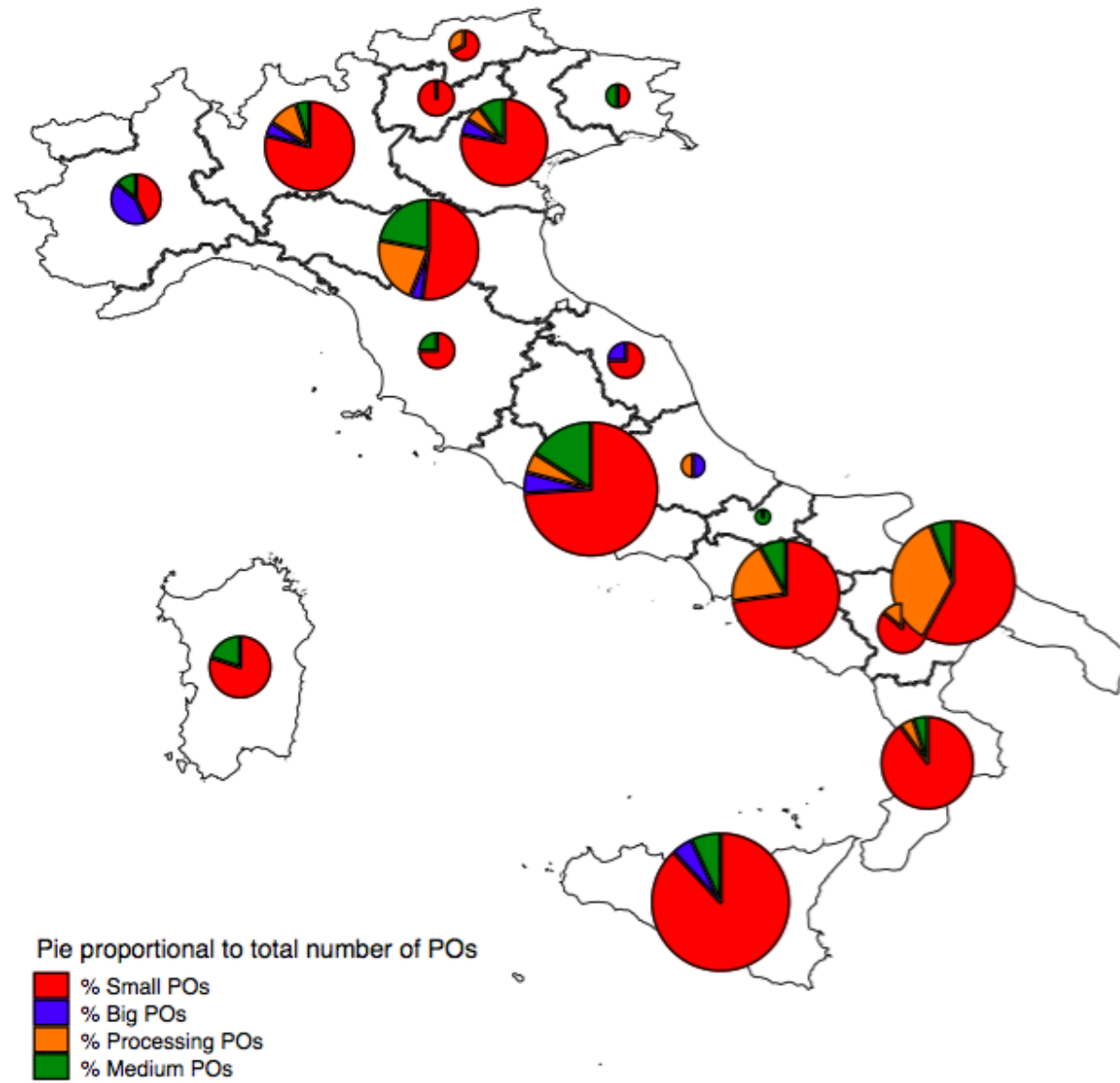
Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4
	(Mean)	(Mean)	(Mean)	(Mean)
Number of members of PO	25	470	31	192
Value of Marketed Product (VMP, mio)	13	21	10	15
Specialization (% of first 2 crops)	80	84	87	80
% Product sold for fresh use	96	81	17	87
Obs. n.	3,576	299	386	597
Total acreage*	635	1,701	1,750	1,082
Avg. acreage per member*	25.4	3.6	56.5	5.6
Avg. VMP per member (000)*	520	44.7	322.6	78.1
Business model name	Small PO, big farms	Big PO, small farms	Processing PO	Medium PO

\* NOT used for cluster analysis

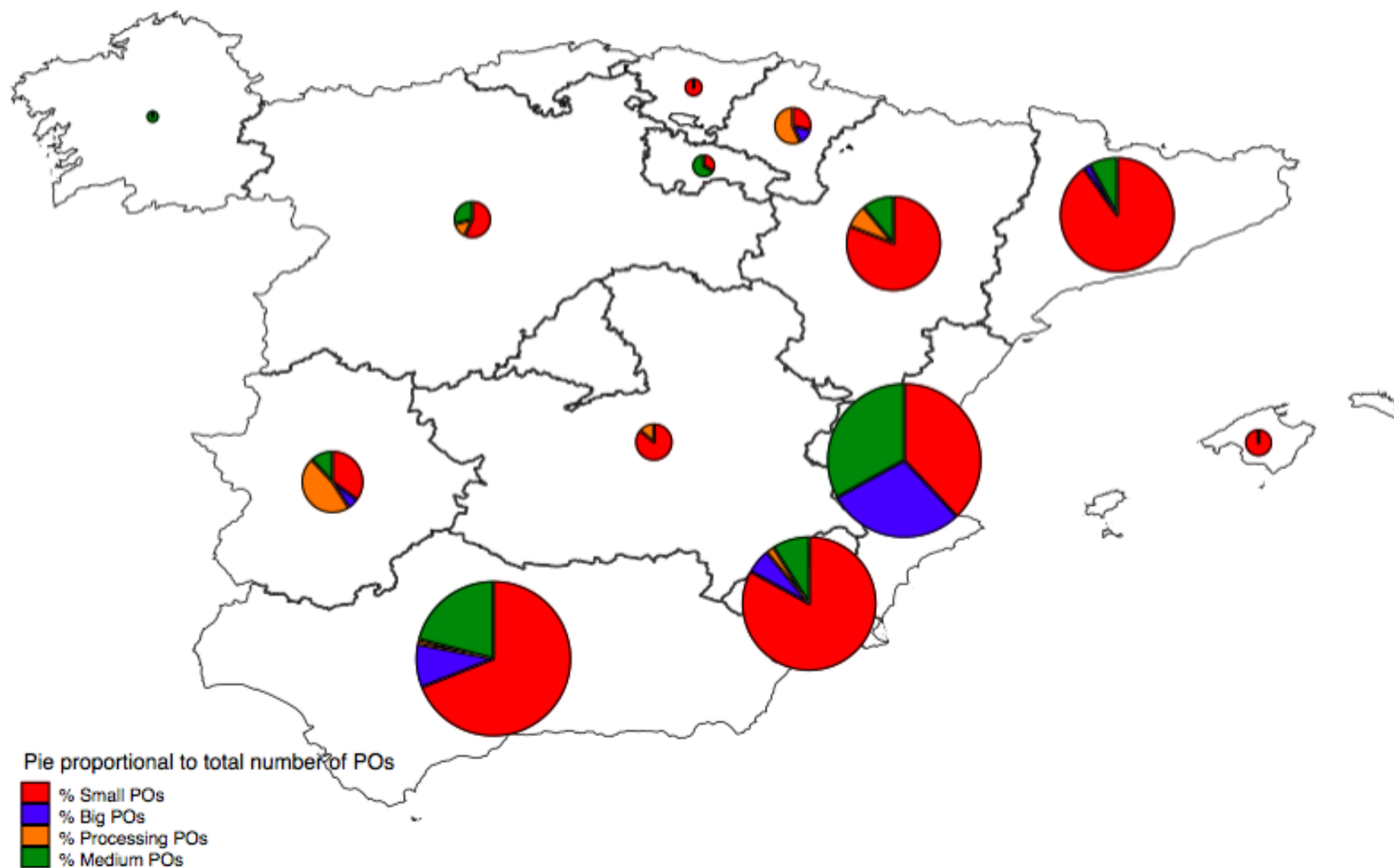
# POs by Business Models - France



# POs by Business Models - Italy



# POs by Business Models - Spain



## 2. Finding homogenous regions

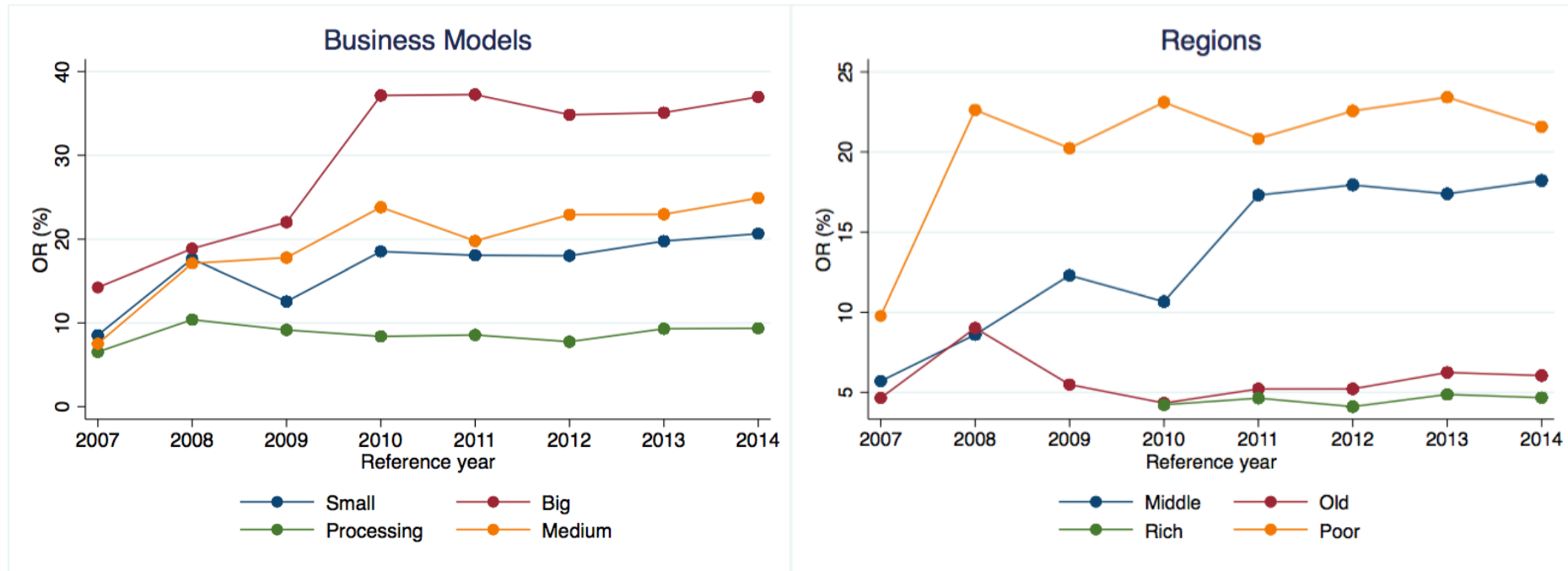
Table: Variables and clusters for regions

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4
<b>Agriculture</b>				
Avg. size, specialized F&V farms (ha)	22	17	74	14.5
Area specialization in F&V (% sales)	0.04	0.02	0.02	0.045
Area specialization in F&V (% ha)	0.21	0.12	0.18	0.18
<b>Downstream sectors</b>				
Avg. size retailing firms (no. employees)	2.6	2.7	3.2	2.83
Avg. size wholesale firms (no. employees)	3.13	2.7	4.3	4.2
Avg. size food manuf. firms (no. employees)	8.65	2.7	8.4	11.7
<b>Socio-economic characteristics</b>				
GDP per capita	.025	.024	.028	0.021
GDP per capita growth	-0.08	-0.35	1.35	-1.06
Unemployment rate (%)	12.8	11.9	9.2	21.7
Young unemployment rate (%)	34.1	35	22.9	44.8
Demographic index (Old/Young)	132	181	101	96
Obs. no. (no. NUTS2)	115	64	68	61
Regional clusters' name	Medium	Old	Rich	Poor



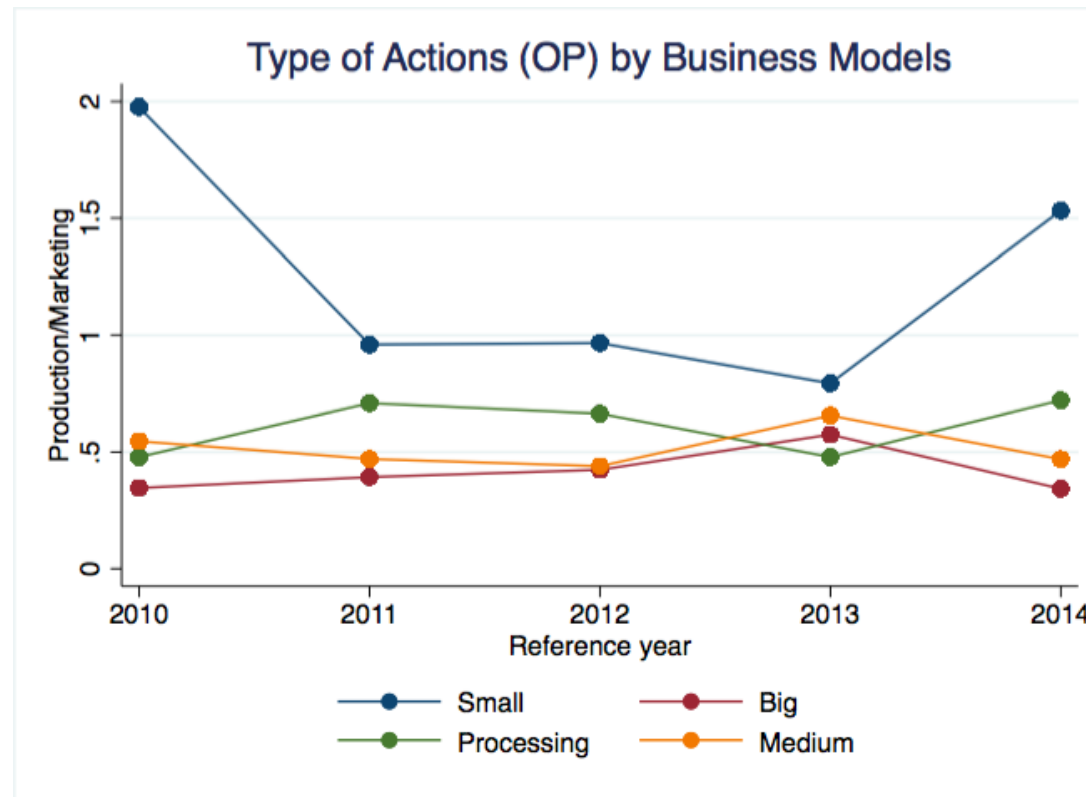
# 3. Participation rate

Value Marketed Product (Total PO / Total Region (F&V))



# Type of actions by Business Model

Production / Marketing Actions for (NO ES data)



# Summary, I

- Producer Organizations are (becoming) important players in the new EU CMO. After the F&V sector, now they are a transversal policy tool for other agricultural sectors as well.
- In the F&V sector, however, mixed success. How come?
- We propose a preliminary analysis to look at the performance of OPs, mostly in terms of participation decisions by farmers.
- These latter may weigh benefits and costs.
  - ▶ Benefits depend on the performances of the PO.
  - ▶ Opportunity costs depend on farmers' outside market alternatives.
- The literature considers the role of internal and external factors, like
  - ▶ the technology and governance structure of POs,
  - ▶ the structure of the farming sector,
  - ▶ the concentration of the downstream sectors,
  - ▶ the socio-economic environment, etc.

## Summary, II

- We find that the concentration of the downstream sectors has a significant role in explaining participation rate into the POs. In other words, POs are presumably more important when dealing with a concentrated wholesale sector, where they provide more net benefits to farmers.
- In addition, considering the structural characteristics of POs we find that big POs (with many small farms as members) on average attract more farmers than other business models such as small, processing, or medium POs.
  - ▶ This result is quite robust across different measures of performance, i.e., not only VMP but also acreage or number of farmers going to POs.
- Finding that different BMs lead consistently to differences in performances provides support to the literature that considers the importance of strategic choices for the success of collective action → need to consider also what POs do and how they do it, not only where they operate.

# Conclusions & directions, I

There are different kind of questions that may be of some relevance.

## I) BUSINESS-ORIENTED QUESTIONS

- 1 Measuring the economic performances of POs, and how they are related to their technology (e.g., returns to scale, economies of scope), their governance structure, etc.
- 2 Measuring the export performances of POs.
- 3 Investigating the role and functions of APOs.

## II) POLICY-ORIENTED QUESTIONS

- 1 What is the economic impact of POs on participating farmers?
- 2 What is the enviromental impact of operational programmes?
- 3 What is the socio-economic impact of POs in rural areas?

In brief, this analysis may help in better targeting economic policies and interventions for the F&V industry.

# Conclusions & directions, II

## POLICY IMPLICATIONS

- The answers to these questions may have important policy implications.
- In essence, the question is how to effectively use public funds, in a world of limited (and may be declining) resources.
- For instance, for providing subsidies targeted to (or conditional on)
  - ▶ the most effective POs, provided the objective of the policy-maker is the optimal organization of the industry (to be proven, in fact);
  - ▶ POs in socially-economically depressed areas;
  - ▶ POs in more environmental-sensitive areas;
  - ▶ only certain operational programmes, e.g., for innovation, for environment, for market, etc.

## Conclusions & directions, III

- To conclude, let us emphasize that a better understanding of the participation of farmers into POs may help policy-making.
- In particular, we need to look at the causality issue, that is:
  - ▶ does higher production lead to better industry organization, or
  - ▶ is it better organization that leads to more production?
- If the former, there may be possible conflicts between market organization and rural development objectives of agricultural policies.