

Influence of structure, behavior and territory on innovation in small agricultural holdings: a multilevel approach

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INTRODUCTION

- ✓ In Spain small and medium sized farms prevail, with possibly low ambition to engage on innovation.
- ✓ Rural areas have suffered demographic decline in Europe, and the lack of economic dynamism may negatively affect the innovativeness
- ✓ Firm's innovation activities depend on their own resources and capacities and on the territorial context where they evolve.

OBJECTIVES

Examine the determinants on the innovation adoption of small agricultural holdings, focus on the role of :

- Structural variables
- Behavioral variables
- Spatial variables

DATA

- Sampled farms are located in 31 LS in Valencia and 15 in Navarra.
- LS were classified according to their degree of rurality, based on the OECD criterion of density of population.

Considering its geographical context given by the Local System (LS) where farmers develop their activity (Boix, R. and Galletto, V. 2004)

METHODOLOGY



RESULTS

Table 1. Estimation results for Agricultural Holding's innovation capabilities, Multilevel Random Intercept models

Agricultural Holding level variables	Intercept	Navarra		Valencia			
		Estimate	Std. Error	Estimate	Std. Error		
	-0.764	(0.610)		-1.134	(0.378)	***	
Structural variables	Education	0.242	(0.107)	**	0.240	(0.090)	***
	Founding year	-0.104	(0.043)	**	0.017	(0.042)	
	Size	-0.006	(0.116)		0.183	(0.064)	***
	Competitive Pressure	0.051	(0.093)		0.360	(0.075)	***
	Market Orientation (MO)	-0.012	(0.095)		0.058	(0.085)	
Behavioral variables	Learning Orientation (LO)	0.172	(0.096)	*	0.232	(0.077)	***
	Willingness to participate in organizations	0.390	(0.103)	***	0.042	(0.081)	
System Local level variables	Rurality	0.152	(0.202)		0.143	(0.077)	
	demographic dynamism	0.030	(0.081)		-0.025	(0.022)	*
	Observations	77		130			
	Number of country groups	15		31			

▪ LS seem to be more similar in Valencia with a more market-oriented agriculture

▪ The level of education has a positive effect for the innovativeness

▪ Founding year of agricultural holding is negatively related to the innovativeness

▪ The size of these agricultural holdings has significant influence on innovativeness in Valencia

▪ Organizations and networks has positive effect in Navarra

▪ ...

Notes: Note: Level of significance: **** 1% *** 5% ** 10%. R-Squared values according to Nakagawa and Schielzeth (2013). Source: Authors' calculations.

CONCLUSIONS

- ✓ In both regions the effect of education and learning orientation on innovativeness appears significant and positive
- ✓ Rurality does not hamper innovation
- ✓ No significance of MO, what suggests that it can perhaps favour innovation, but does not seem sufficient for innovation capacity