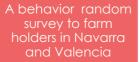
## Influence of structure, behavior and territory on innovation in small agricultural holdings: a multilevel approach

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✓ In Spain small and medium sized farms prevail, with possibly **OBJECTIVES** low ambition to engage on innovation. Examine the determinants on the ✓ Rural areas have suffered demographic decline in Europe, innovation adoption of small agricultural and the lack of economic dynamism may negatively affect the holdings, focus on the role of : innovativeness Structural variables  $\checkmark$  Firm's innovation activities depend on their own resources and Behavioral variables capacities and on the territorial context where they evolve. Spatial variables Sampled farms are located in 31 LS in Valencia and 15 in Navarra. Considering its geographical context given by the Local System (LS) where farmers develop their LS were classified according to their degree of rurality, based activity (Boix, R. and Galletto, V. 2004) on the OECD criterion of density of population.

## **METHODOLOGY**





Factorial analysis



## **RESULTS**

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

|   |  | Navarra  |            |     | Valencia |            |     |
|---|--|----------|------------|-----|----------|------------|-----|
|   |  | Estimate | Std. Error |     | Estimate | Std. Error |     |
| Agricultural Holding<br>level variables | Intercept                                      | -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)    | *** |
| Behavioral variables                    | Market Orientation (MO)                        | -0.012   | (0.095)    |     | 0.058    | (0.085)    |     |
|   | Learning Orientation (LO)                      | 0.172    | (0.096)    | *   | 0.232    | (0.077)    | *** |
|   | Willingness to participate<br>in organizations | 0.390    | (0.103)    | *** | 0.042    | (0.081)    |     |
| System Local level<br>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<br>groups                    | 15       |            |     | 31       |            |     |

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

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## CONCLUSIONS

✓ In both regions the effect of education and learning orientation on innovativeness appears significant and positive

✓ Rurality does not hamper innovation

 $\checkmark$  No significance of MO, what suggests that it can perhaps favour innovation, but does not seem sufficient for innovation capacity







NTRODUCTION