COMPARISON OF SELF-ASSESSMENT AND OBJECTIVE INDICATORS OF ATTRIBUTES DRIVING FARMS RESILIENCE

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EAAP Annual Meeting,
Lyon, August 26th / September 1st, 2023.
Session 71 "Building on a resilient dairy sector - from animal, farm and regional perspective"

CENTRO DE INVESTIGACIÓN Y TECNOLOGÍA AGROALIMENTARIA DE ARAGÓN

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Background

- Strengthening farming systems´ resilience is on the top of the EU and national political agendas, and research.
- Several approaches have been proposed to develop this concept (at the farm level)…

…there is still a lack of methodological consensus.

- Multiple definitions of reliance lead to different analytical frameworks
- Resilience is a latent property, which most times cannot be measured directly
- So, what do we measure?

Background

- Measuring resilience is key for practical reasons.
- Quantitative assessments based on objective or subjective measures; each have specific strengths and weaknesses.
- **Objective** measurement: Fixed, proxy indicators routinely collected…

  …but difficult to agree on a common set (usually huge), which use might not be applicable across systems
- **Subjective** measurement: account for farmers capacity and contextual information, better for 'soft' processes such as social capital or community cohesion….

  …but what some uncertainty about what is being measured
- Little is known about how subjective self-assessment and objective measures compare.

Objectives

Provide a comparison of self-assessed and objective farm resilience measurement approaches

Strengthening the resilience of small ruminant local breed farming systems: from covid-19 to global change (RUMIRES). Project PID2020-120312RA-I00 funded by:

Methods.
Resilience framework; definition

"Ability to ensure the provision of the **system functions** in the face of increasingly complex and accumulating **economic, social, environmental and institutional shocks and stresses,** through capacities of **robustness, adaptability and transformability**"

Meuwissen et al., 2019

RESILIENCE IS A LATENT PROPERTY

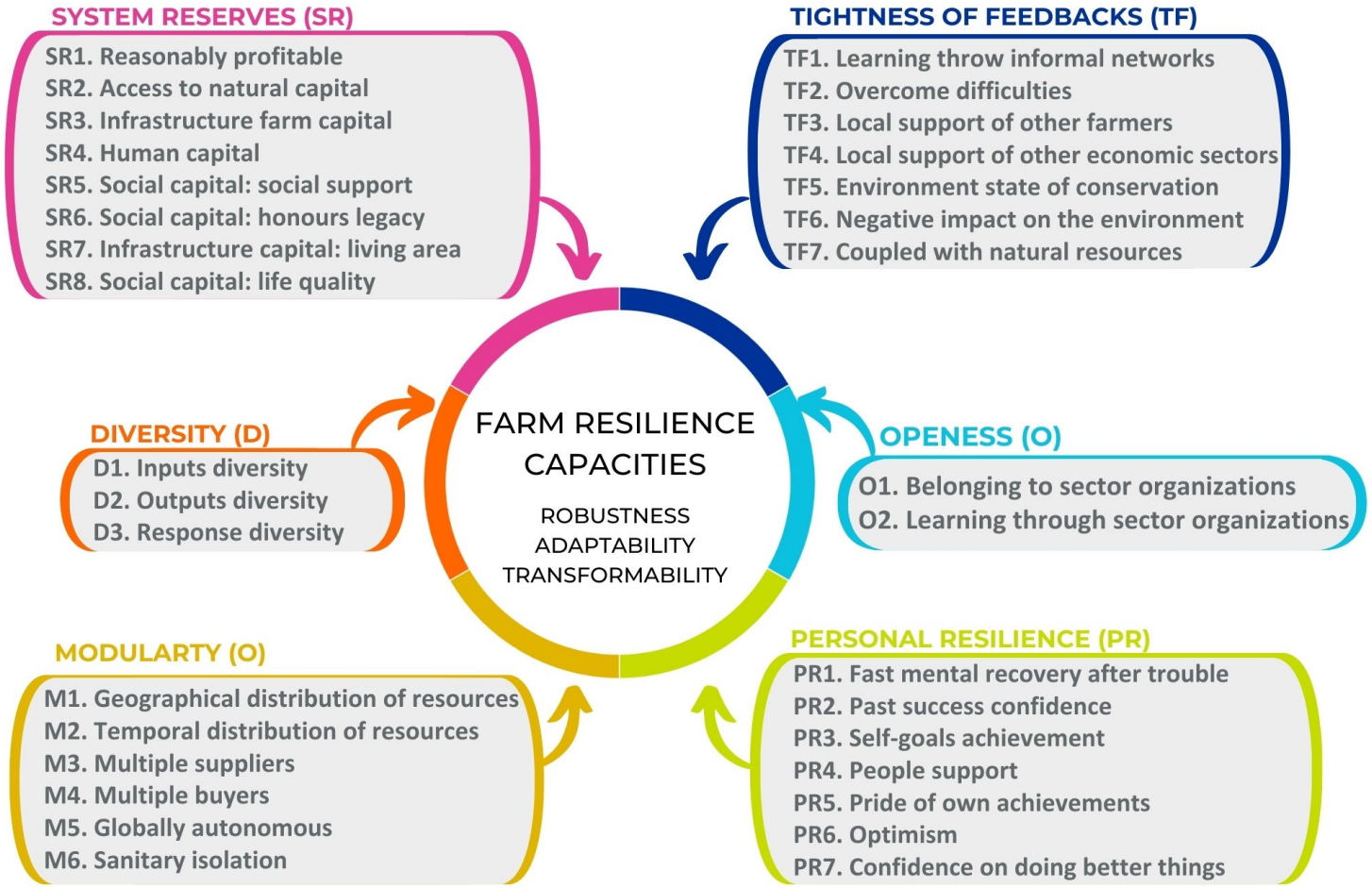
Which results from farm characteristics:

- **Resilience principles**: generic system characteristics
- **Resilience attributes**: specific system characteristics

Methods. **Resilience framework; principles and attributes**

Principles:

1. System reserves
2. Diversity
3. Tightness of feedbacks
4. Openness
5. Modularity



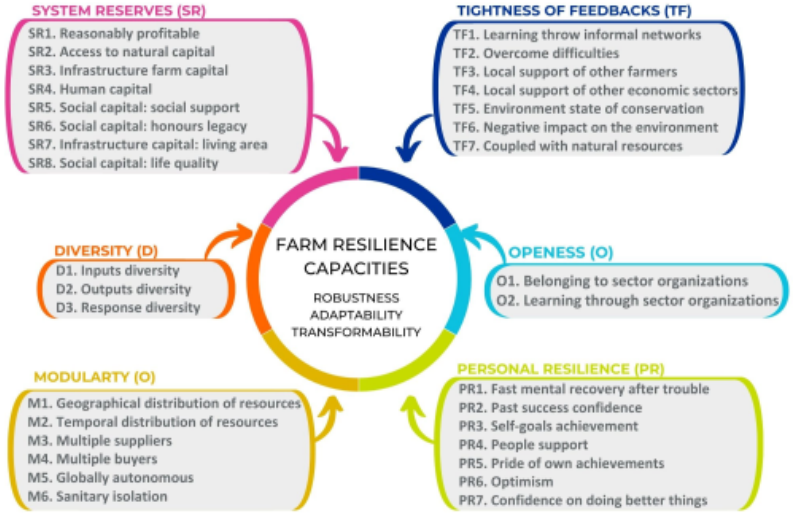
Based on *Resilience Alliance, 2010; Cabell y Oelofse, 2012; Meuwissen et al., 2019; Paas et al., 2021*

Methods. **Resilience indicators development**

Identified farm attributes were evaluated by:

1. Farmer self-assessments; likert type scales.

Infrastructure capital: living area	My family and I have access to the services we need in our daily lives in areas close to our home
Social capital: life quality	My work as a farmer gives me a good quality of life
Natural capital	My farm has access to the natural resources it needs to guarantee its viability



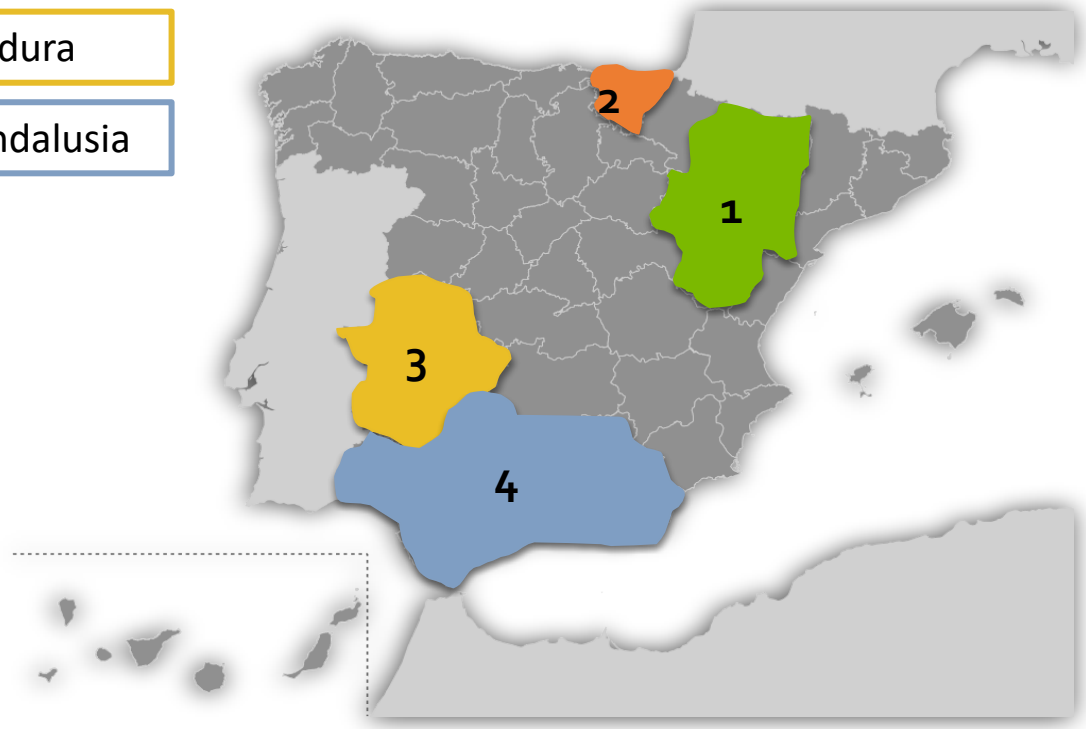
2. Technical farm features (Objective indicators).

- Distance to supermarkets, schools, hospitals
- Days off per week, and years, working hours
- Common lands, pastures area, crop área, ha per females…

Material. **Farm sample**

Small ruminant farms

1. Meat sheep in Aragon
2. Dairy sheep in the Basque country
3. Dairy sheep in Extremadura
4. Meat and dairy gotas in Andalusia

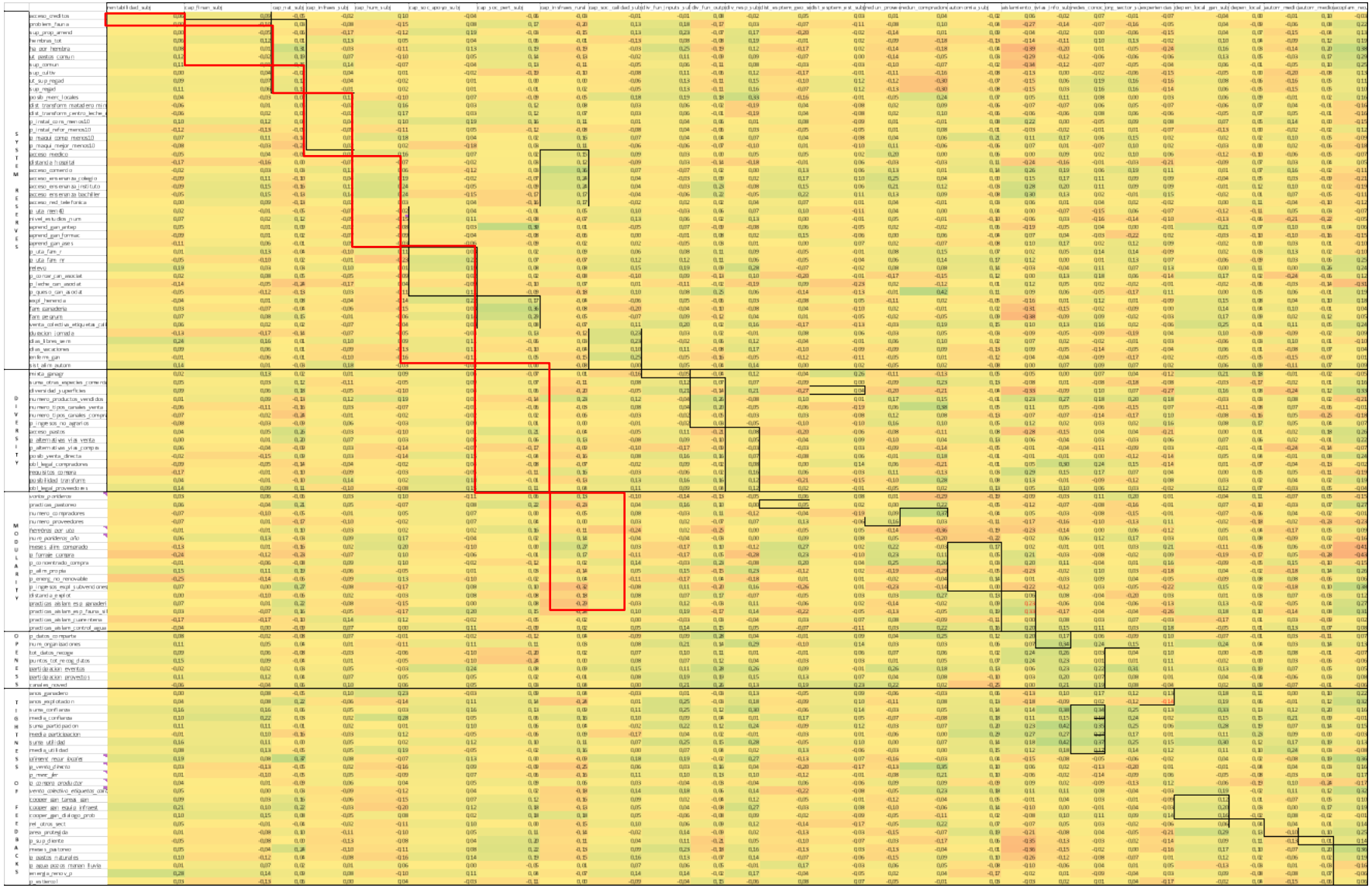


Region	Nº surveys
Aragon	57
Basque country	41
Extremadura	9
Andalusia	53
TOTAL	**160**

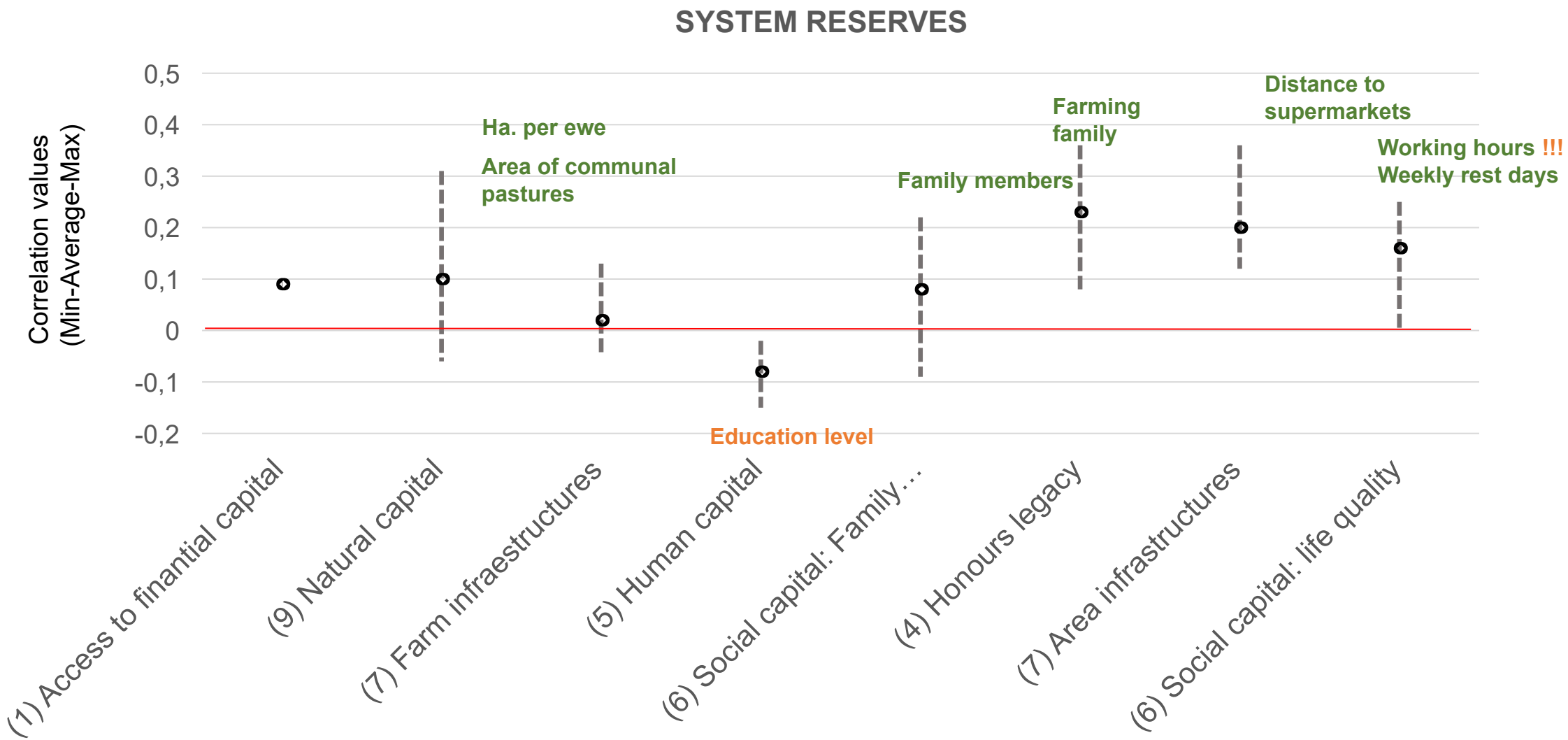
Statistical analysis

Farmer self-assessments

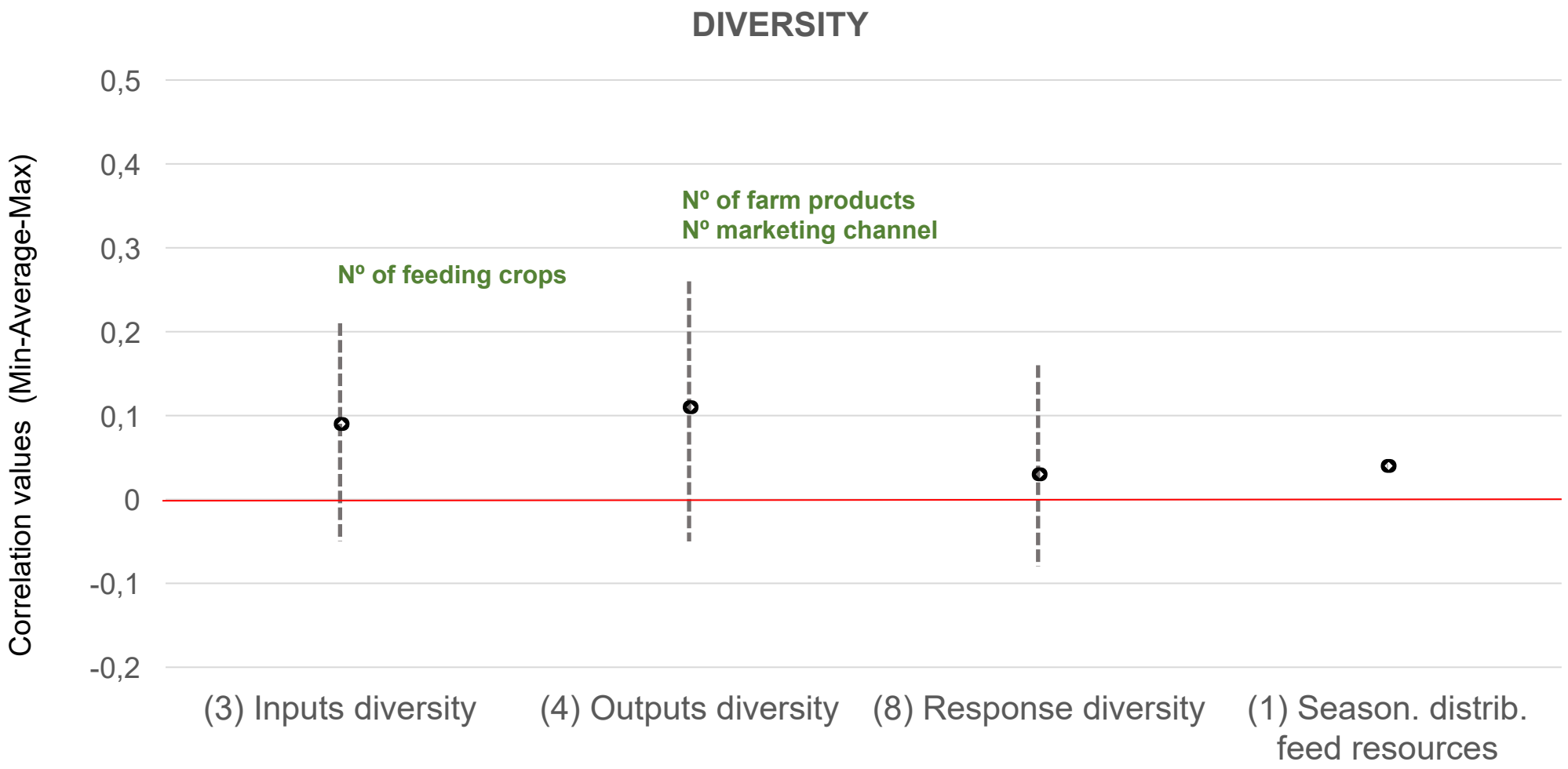
Technical farm indicators



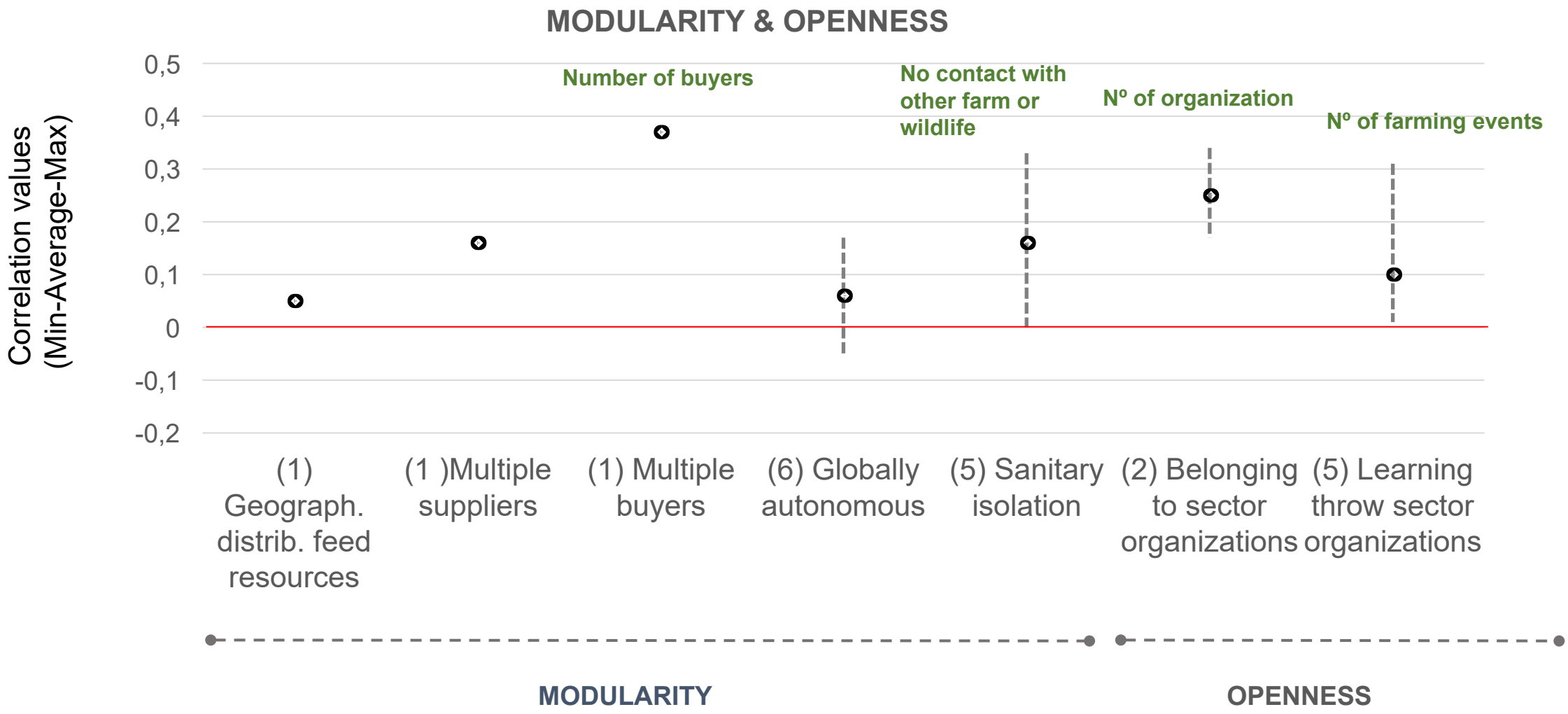
Results


SYSTEM RESERVES
Correlation values (Min-Average-Max)
0,5
0,4
0,3
0,2
0,1
0
-0,1
-0,2
Ha. per ewe
Area of communal pastures
Education level
Family members
Farming family
Distance to supermarkets
Working hours !!!
Weekly rest days
(1) Access to finantial capital
(9) Natural capital
(7) Farm infraestructures
(5) Human capital
(6) Social capital: Family…
(4) Honours legacy
(7) Area infrastructures
(6) Social capital: life quality

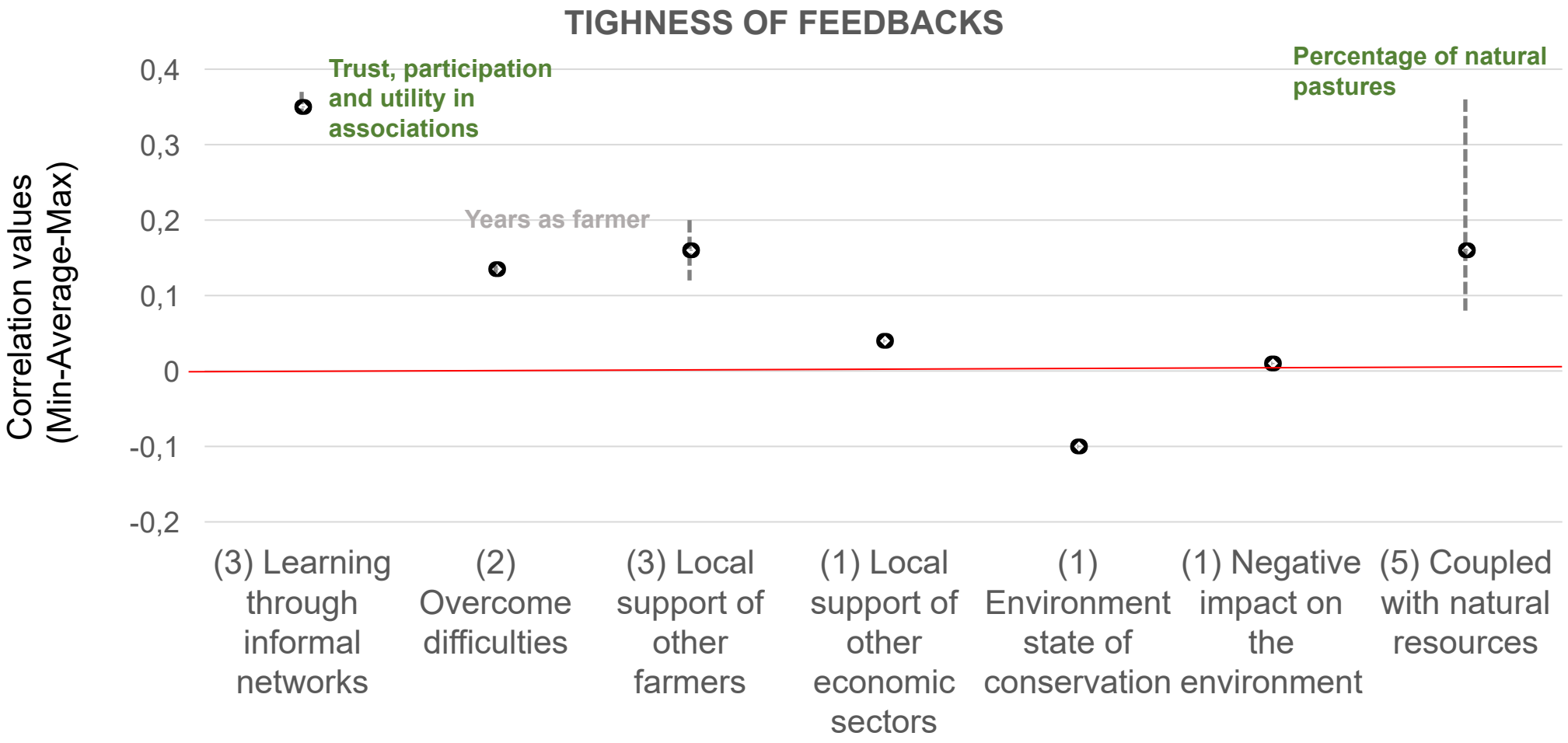
Results


DIVERSITY
Correlation values (Min-Average-Max)
0,5
0,4
0,3
0,2
0,1
0
-0,1
-0,2
Nº of farm products
Nº marketing channel
Nº of feeding crops
(3) Inputs diversity
(4) Outputs diversity
(8) Response diversity
(1) Season. distrib. feed resources

Results


MODULARITY & OPENNESS
Correlation values (Min-Average-Max)
0,5
0,4
0,3
0,2
0,1
0
-0,1
-0,2
Number of buyers
No contact with other farm or wildlife
Nº of organization
Nº of farming events
(1) Geograph. distrib. feed resources
(1)Multiple suppliers
(1) Multiple buyers
(6) Globally autonomous
(5) Sanitary isolation
(2) Belonging to sector organizations
(5) Learning throw sector organizations
MODULARITY
OPENNESS

Results


TIGHNESS OF FEEDBACKS
Correlation values (Min-Average-Max)
0,4
0,3
0,2
0,1
0
-0,1
-0,2
Trust, participation and utility in associations
Years as farmer
Percentage of natural pastures
(3) Learning through informal networks
(2) Overcome difficulties
(3) Local support of other farmers
(1) Local support of other economic sectors
(1) Environment state of conservation
(1) Negative impact on the environment
(5) Coupled with natural resources

Conclusions

- In most cases, there is a positive correlation between self-assessment and objective indicators…
- This correlation is far from being strong, and vary across attributes.
- The clearest alignment (0,3/0,4) is found in attributes of natural, social capital, infrastructures, openness, learning through networks, and couple with natural resources.
- The highest discrepancy (-0,1/-0,2) is found in human capital, and state of conservation of environment.

Conclusions

- Results suggests that the two types of measures are not interchangeable.
- Two ways of inferring resilience, which approximates better to “true” resilience?
- The choice of measuring approach should be done with care.
- Merits and limitation of different approaches should be made fully transparent.

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Thank you!

Project PID2020-120312RA-I00 funded by: