

ASSESSING THE REGIONAL IMPACT OF COHESION POLICIES THROUGH A TERRITORIAL PROOFING TOOL

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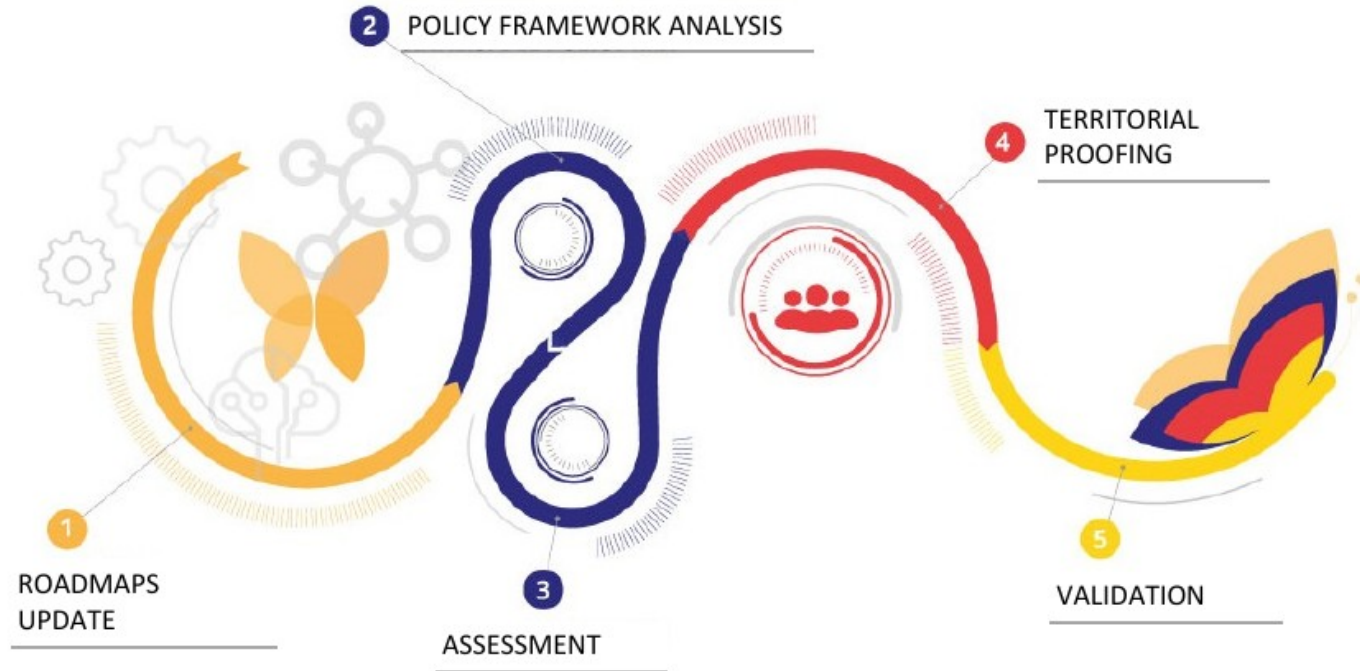
Outline of the presentation

I. The framework

Smart Specialization Strategy

- The European Commission's **Cohesion Policy** aims to **reduce differences between regions** and to ensure growth across Europe.
- A **Research and Innovation Strategy for Smart Specialisation (RIS3)** is currently a prerequisite for regions in order to receive funding from the European Regional Development Fund (ERDF).
- RIS3 is a key element for place based innovation policies, building on each region's **strengths, competitive advantages and potential for excellence**.

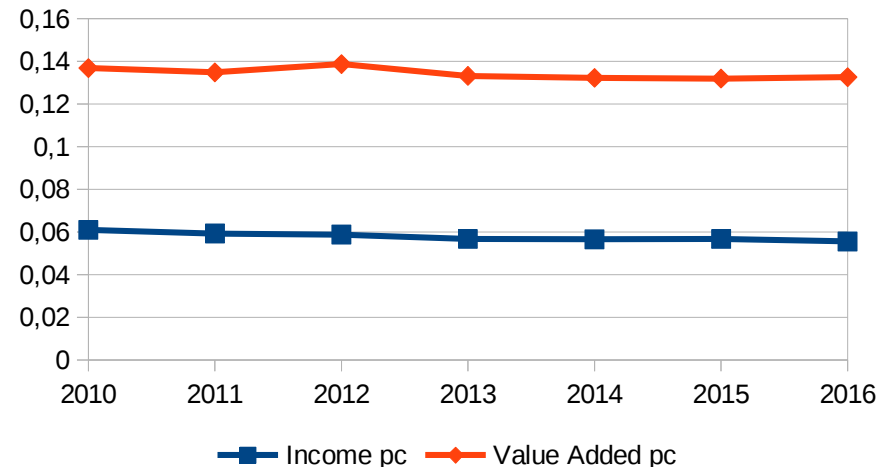
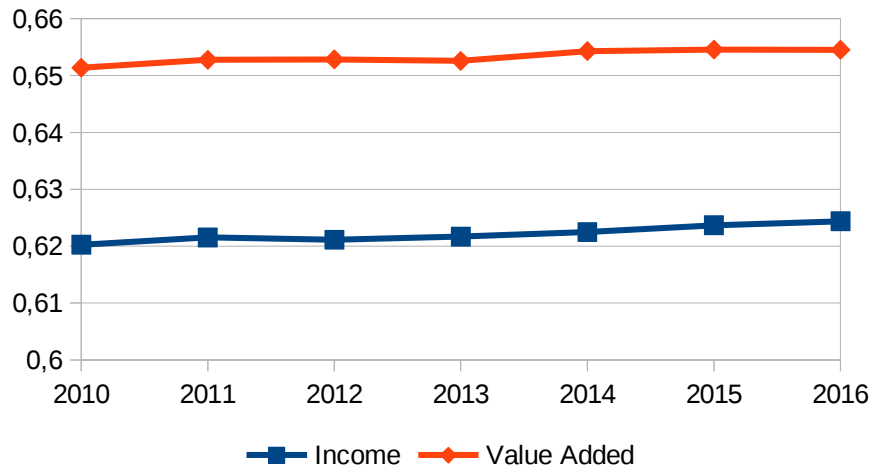
- The method adopted by the Tuscany Region for the **development of the RIS3** was strongly market-oriented and translated into **five priority areas** (Energy, Sustainable Development and Rural Economy; Intelligent territories; Social innovation; Smart manufacturing; Research System and Human Capital) and **three technological priorities** (ICT; Smart factory; Chemistry and nanotechnologies).
- During the **participatory process**, representatives from Universities, research centers, business associations, manufacturers, innovation poles and technological districts developed **sector- and technology-specific roadmaps to implement RIS3**.
- In 2017, the regional administration began a **Mid Term Review of the roadmaps**.



- The **main objectives of the MTR** process are: **update** the previous roadmaps; **assess** the extra-regional positioning (H2020, GVCs, IDE, S3 Thematic Platforms); **validate** the new strategy through technical expert validation and public consultation.
- Before validation: **territorial proofing** (assess the cohesive effects of RIS3 and overcome development traps).

Tuscany and territorial cohesion

GINI index for Disposable Income and Value Added across Tuscany (trend 2010 – 2016, calculated on LMAs)



- Territorial disparities are **rising in terms of concentration of resources**, though per capita values show a slight reduction in recent years.
- Disposable income is more evenly distributed than value added (**redistribution effect** of internal mobility of labour).

II. Research questions

- The Cohesion Policies focus on inter-regional cohesion but **intra- regional disparities** should also be addressed (especially by Regional Administrations).
- Specific policy actions (i.e. Urban Agenda) are aimed at fostering the quality of life and the competitiveness of urban areas as engines of regional growth and innovation, but this could increase **core-periphery divergences** within regions.
- Research Question 1: what is the (potential) outcome of RIS3 in terms of internal cohesion?

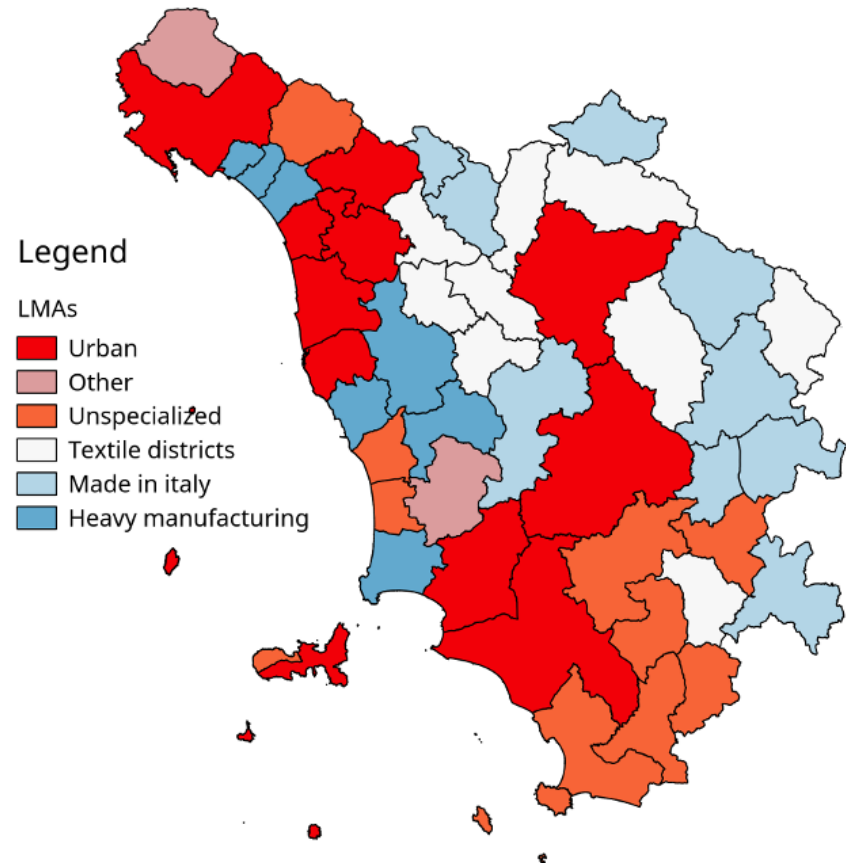


- **Territorial endowments** affect the local capability of attracting economic activities and generate growth and opportunities for the population, but are unevenly distributed within the region.
- Innovation policies aimed at specific sectors may need specific **infrastructures and localized factors** with different intensities.
- The “**place based**” approach suggests that local factors and specializations should be considered leverage points to rethink **local growth strategies**.
- **Research Question 2: which is the relation between different territorial endowments and the capability of exploiting specific RIS3 policies?**

III. Methodology and data

- Unit of analysis: **Labour Market Areas**
- LMAs are sub-regional geographical areas where the bulk of the labour force lives and works. They respond to the need for meaningfully **comparable sub-regional areas** for the reporting and analysis of statistics.
- LMAs are defined on a functional basis, the key criterion being the **proportion of commuters who cross the LMA boundary on their way to work.**

LMAs in Tuscany by specialization



- To describe and analyze local endowments we need **data at the sub regional level**, which is not always available (i.e. macro-economic estimates)

5 dimensions of local endowments:

- **1. Demography**

Dependency ratio: people aged 0 to 14 and 65+/people aged 15-64, measures the pressure on productive population.

Depopulation dummy: 0 if population increased between 2011 and 2015, 1 otherwise

- **2. Infrastructure:**

Transportation: access time to nearest highway by municipality, weighted by population

Digital infrastructure: share of households reached by ultrabroadband > 30Mbps

- **3. Human capital**

Higher education: share of resident population with an academic degree.

Medium education: share of resident population with an high school diploma.

- **4. Economic environment**

Diversity structure of local productive system: Related Variety Index and Unrelated Variety Index (Frenken et al., 2007).

Export intensity: share of foreign and interregional exports on total production.

- **5. Local Public Services**

Quality of LPS: 0 – 10 index of quality in local public services by municipality weighted by population (OPENCIVITAS project)

Public expenditure: per capita expenditure by municipality weighted by population

- **Step 1:** Assess territorial disparities in local endowments comparing inequality indexes across dimensions.
- **Step 2:** Cluster LMAs by similarities in local endowments.
- **Step 3:** Evaluate the correlation between the presence of specific sector industries (as defined by the RIS3 roadmaps) and local endowments.
- **Step 4:** Assess the cohesion potential of RIS3 policies by the territorial distribution of the economic units activated by homogenous groups of roadmaps.

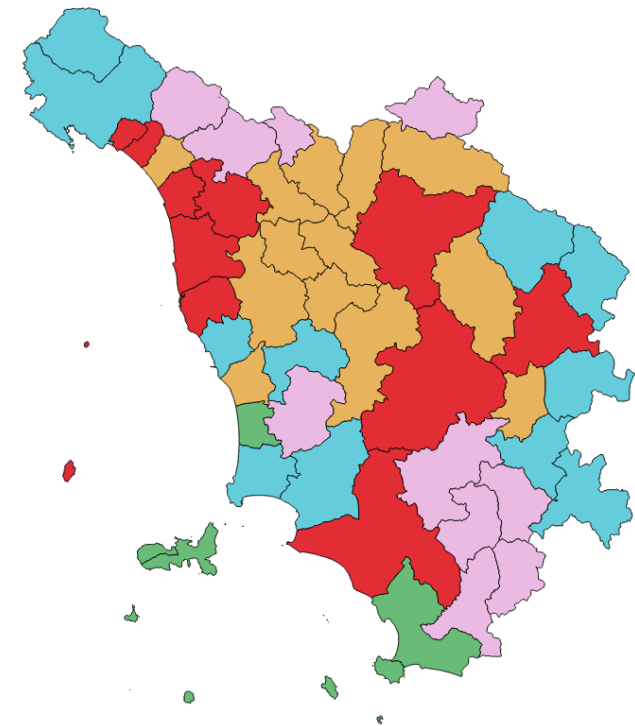
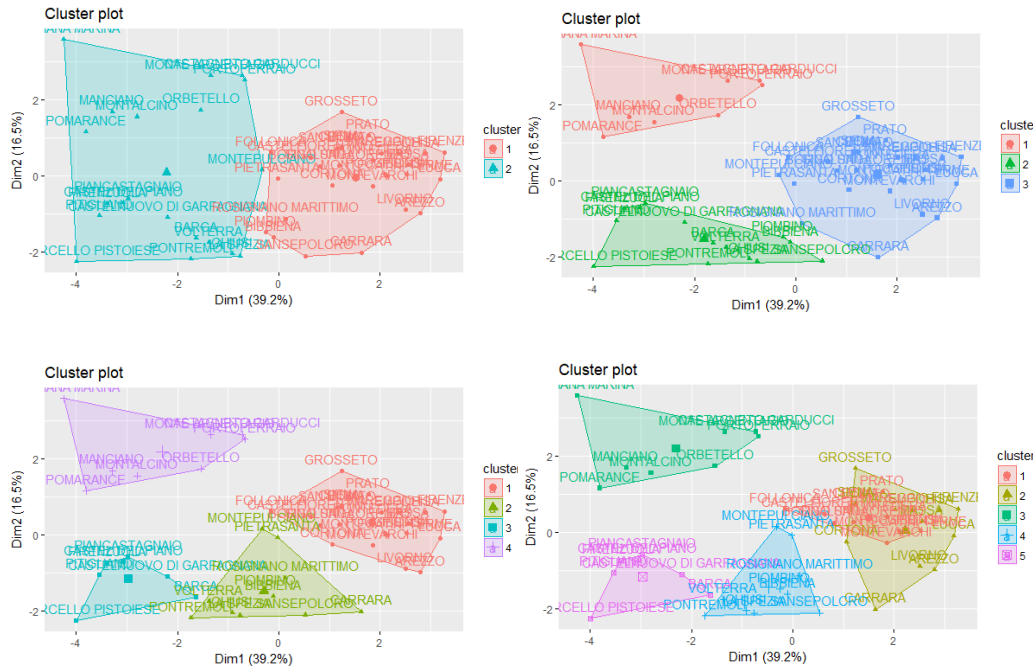
IV. Preliminary results

Analyzing territorial disparities

Dimensions of territorial endowments ranked by inequality index

Dimension	Coefficient of Variation	Gini Index	Theil Index
Transport infrastructure	0,693	0,380	0,230
Digital infrastructure	0,639	0,365	0,188
LPS Expenditure	0,405	0,166	0,061
Openness to trade	0,396	0,225	0,082
LPS Quality	0,306	0,173	0,052
Higher education	0,284	0,146	0,037
Related Variety Index	0,216	0,117	0,026
Unrelated Variety Index	0,089	0,050	0,004
Dependency Ratio	0,085	0,047	0,004
Medium Education	0,082	0,047	0,003

Clustering territories using a simple K-means algorithm on the local endowments indicators



The result is 5 cluster which identify pretty accurately urban areas, industrial districts and peripheral zones.

Which factors matter?

- **Correlation analysis** between the territorial distribution of the economic sectors directly activated by the roadmaps and territorial endowments.
- This could **suggest public intervention in specific areas** to reduce territorial disparities and ensure a more equal access to growth potential.
- Simple **OLS regression** shows interesting results, but both the data and the model can be **further improved**.

Textile & fashion roadmap vs. Digitalization in manufacturing

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1.540e+00	3.928e-01	3.920	0.000358 ***
Unrelated V.	-8.913e-02	8.000e-02	-1.114	0.272177
Related V.	-5.760e-02	7.968e-02	-0.723	0.474226
Dependency ratio	-7.387e-01	2.876e-01	-2.569	0.014247 *
Higher Education	4.043e-01	6.262e-01	0.646	0.522397
Medium Education	-1.955e+00	6.482e-01	-3.016	0.004547 **
LPS quality	9.005e-03	6.310e-03	1.427	0.161717
Transport infra.	-7.573e-04	4.216e-04	-1.796	0.080396 .
LPS expenditure	-1.499e-04	6.151e-05	-2.437	0.019612 *
Digital infra.	1.760e-02	5.568e-02	0.316	0.753713

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				

Residual standard error: 0.06995 on 38 degrees of freedom
Multiple R-squared: 0.4874, Adjusted R-squared: 0.3525
F-statistic: 3.613 on 10 and 38 DF, p-value: 0.001905

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-1.871e-01	2.539e-01	-0.737	0.465724
Unrelated V.	2.228e-01	5.629e-02	3.958	0.000311 ***
Related V.	-1.827e-01	5.560e-02	-3.286	0.002154 **
Dependency ratio	-1.734e-01	1.935e-01	-0.896	0.375621
Higher Education	-5.249e-01	4.274e-01	-1.228	0.226745
Medium Education	-5.571e-02	4.267e-01	-0.131	0.896796
LPS quality	-9.794e-04	4.678e-03	-0.209	0.835249
LPS expenditure	-2.746e-05	4.577e-05	-0.600	0.551975
Transport infra.	1.098e-04	3.143e-04	0.349	0.728794
Digital infra.	-1.975e-02	4.148e-02	-0.476	0.636665

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Residual standard error: 0.05217 on 39 degrees of freedom
Multiple R-squared: 0.4083, Adjusted R-squared: 0.2718
F-statistic: 2.991 on 9 and 39 DF, p-value: 0.00831

Outline of the presentation

V. Conclusions and future lines of research

- RIS3 objectives include the promotion of territorial cohesion and the exploiting of territorial advantages, but the sectors activated could be located in already richer and more productive areas within regions. Thus, an **assessment of the cohesion potential** of these policies can be useful for administrations to ensure internal equality.
- Cohesion potential varies across different roadmaps, although preliminary results show that **polarization effects are non-neglectable** and regional administrations should be aware of this potential outcome.
- Local endowments play a role in attracting economic activities with varying degrees of intensity, but **actual cause-effect relationship should be investigated further**.

- Cohesion effects can be augmented by **inter-firms linkages** (production chains) and by the **redistribution effect of salaries**. This is currently being addressed by parallel works at IRPET. Cohesion measured by territorial distribution of disposable income could better reflect the different roles played by different territories.
- Local endowment **indicators can be expanded/corrected** to reflect more accurately the role of territories in attracting specific sector firms (i.e. higher education in scientific fields, research infrastructure, specific local public services, etc.). This is obviously subject to actual **data availability** at the sub-regional level.
- Including a time-series analysis could help **separate correlation effects from causal relationship** between local endowments and economic performances.

Thank you for your attention!

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