



# Globalization and sustainable development: The case of the Abruzzo region

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Meeting between the Osnabrück University of Applied Sciences and the University of L'Aquila  
Acquasanta Building, 23<sup>rd</sup> October 2023, h 9:30



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DELL'AQUILA



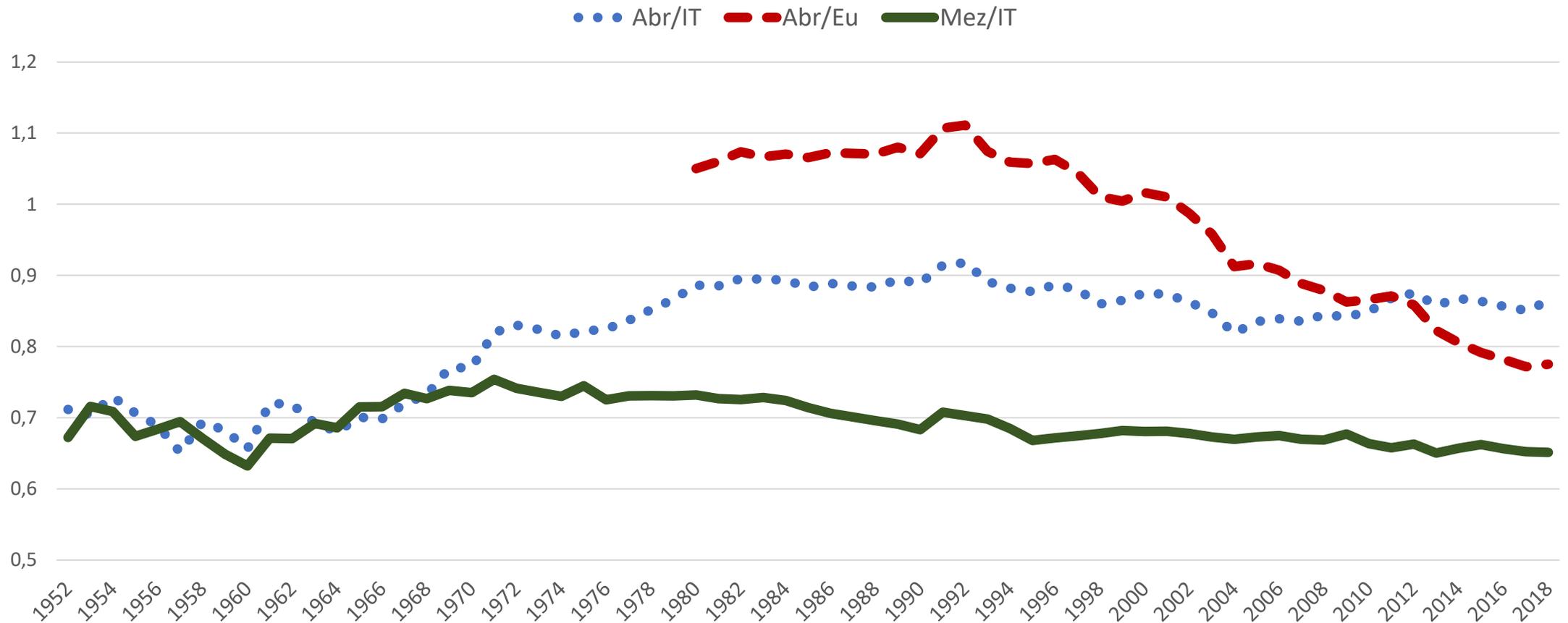
# Outline

- International integration and local development in Abruzzo: the Tale of a Faded Miracle
- A focus on L'Aquila
  - Back in the past: external linkages and local development
  - Challenges of the reconstruction: bridging connections
  - Deep in the future: the innovation eco-system
- Civic universities and sustainable development: concluding remarks

# International integration and local development in Abruzzo

The tale of a faded miracle

# The tale of a faded miracle: the Abruzzo convergence (per-capita income – index numbers at constant 2005 prices)



# The tale of a faded miracle: the Abruzzo convergence

- Geographic features
  - Relative proximity to more developed regions
  - Hydroelectric energy endowment
- Social features
  - Entrepreneurial propensity
  - Low rate of criminality
- Regional development policies, transforming the structure of the regional economy
  - Transportation infrastructures: motorways
  - Border effect



# The tale of a faded miracle: the Abruzzo convergence

- Two engines of industrial development
  - Externally-controlled firms (multinationals)
  - Local production systems, similar to industrial districts
- Convergence factors
  - Employment rate
  - Labour productivity, sustained by
    - Structural change
    - Capital deepening
    - Increase in education levels
    - R&D expenditure
    - Knowledge spillovers from externally-controlled firms



# What happened since the Nineties?

- End of regional development policies
- Increase in international competition
  - Foreign direct investment attraction
  - Trade competition
- Structural problems
  - Traditional specialization of small firms
  - Weak position in international production networks

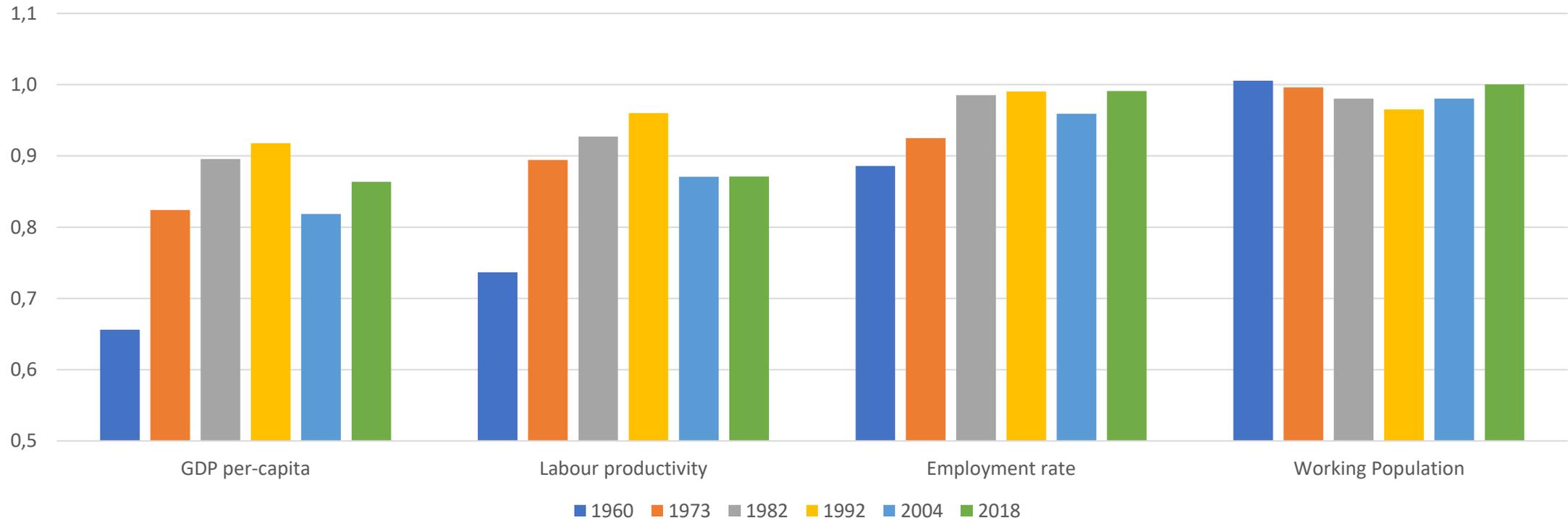


# The main problem remains the gap in labor productivity

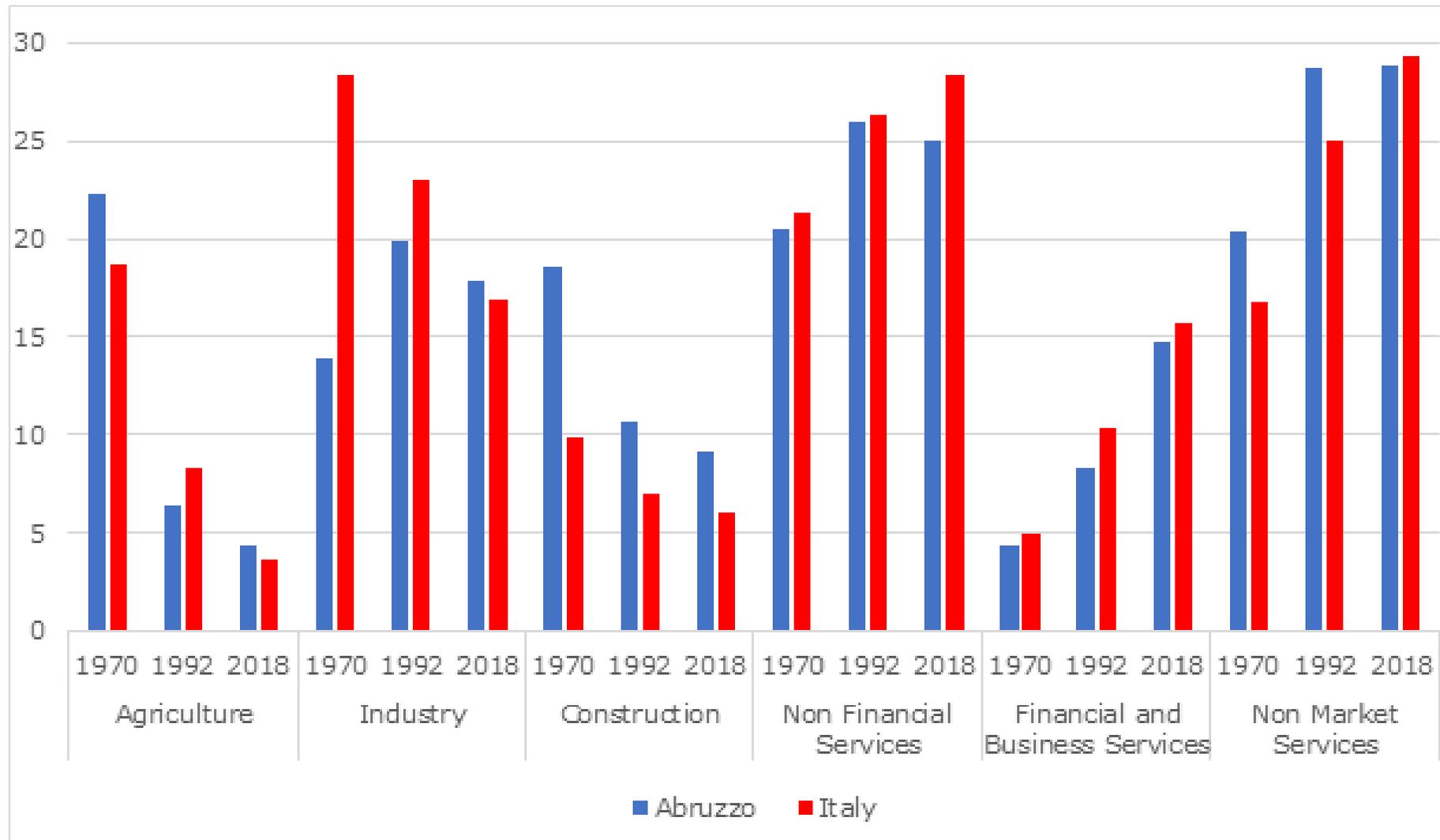
## Abruzzo per-capita GDP: a decomposition analysis

(Index value Italy = 1)

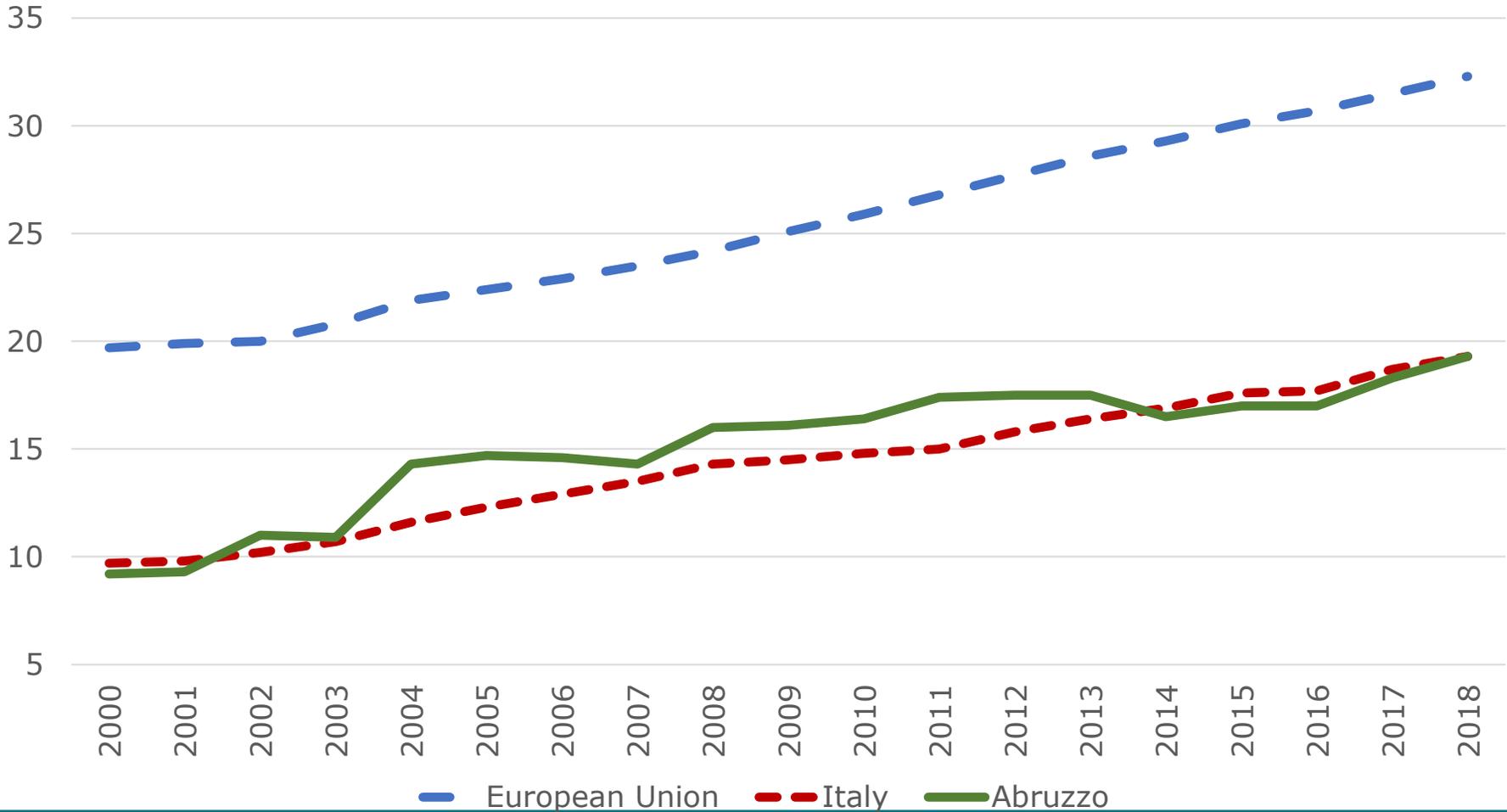
Constant 2005 prices. Source: 1960-1995 CRENoS; 1996-2018 Istat



## Structural change: employment shares by sector (in percentage)



# Population aged 25-64 with tertiary education (per cent)



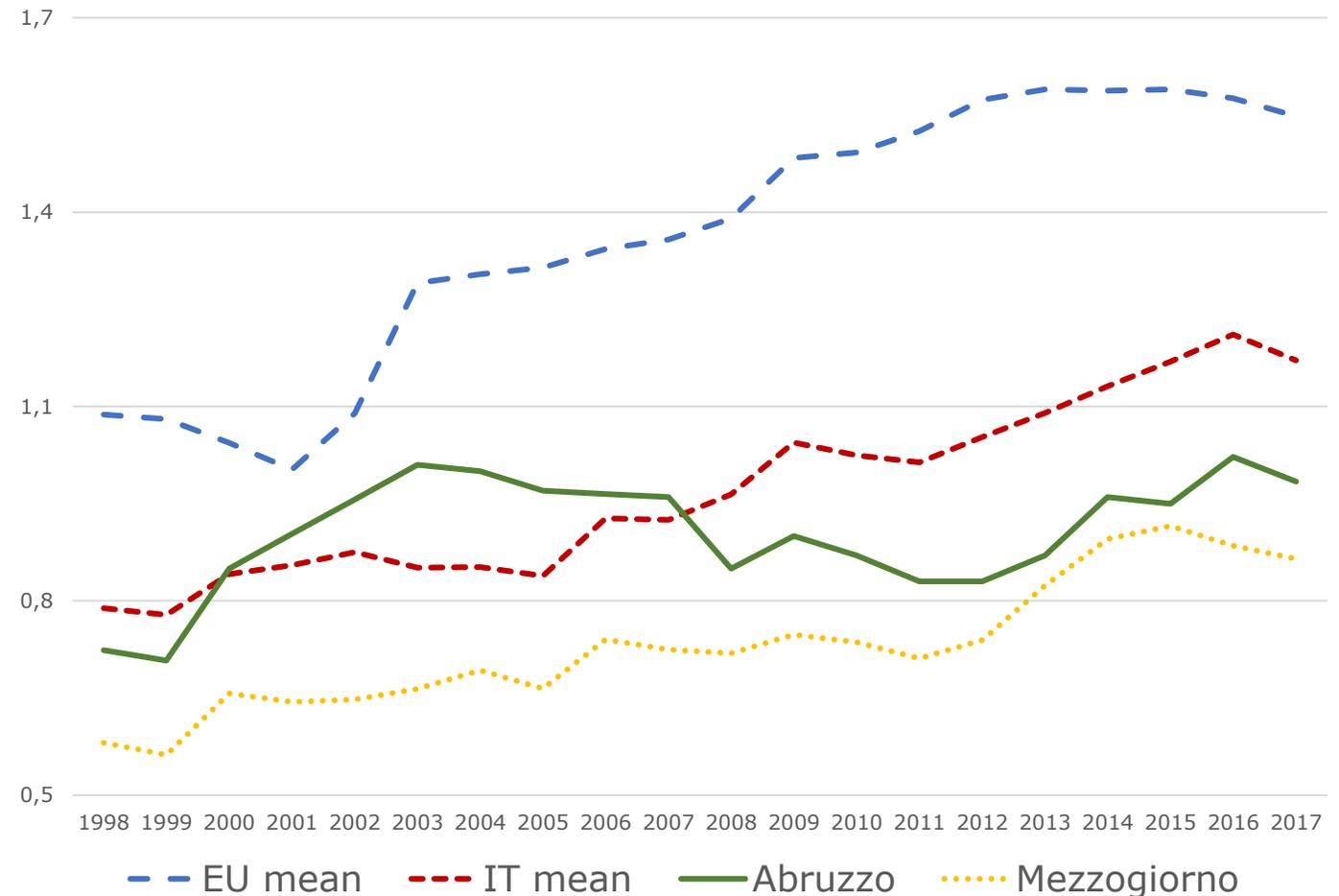
# Spending in R&D investment fell below the national average.

One of the causes of the productivity gap in the Abruzzo economy is the stagnant trend in total spending on R&D, which instead in Italy and also in the South has taken on an increasing trend, although remaining well below the European average.

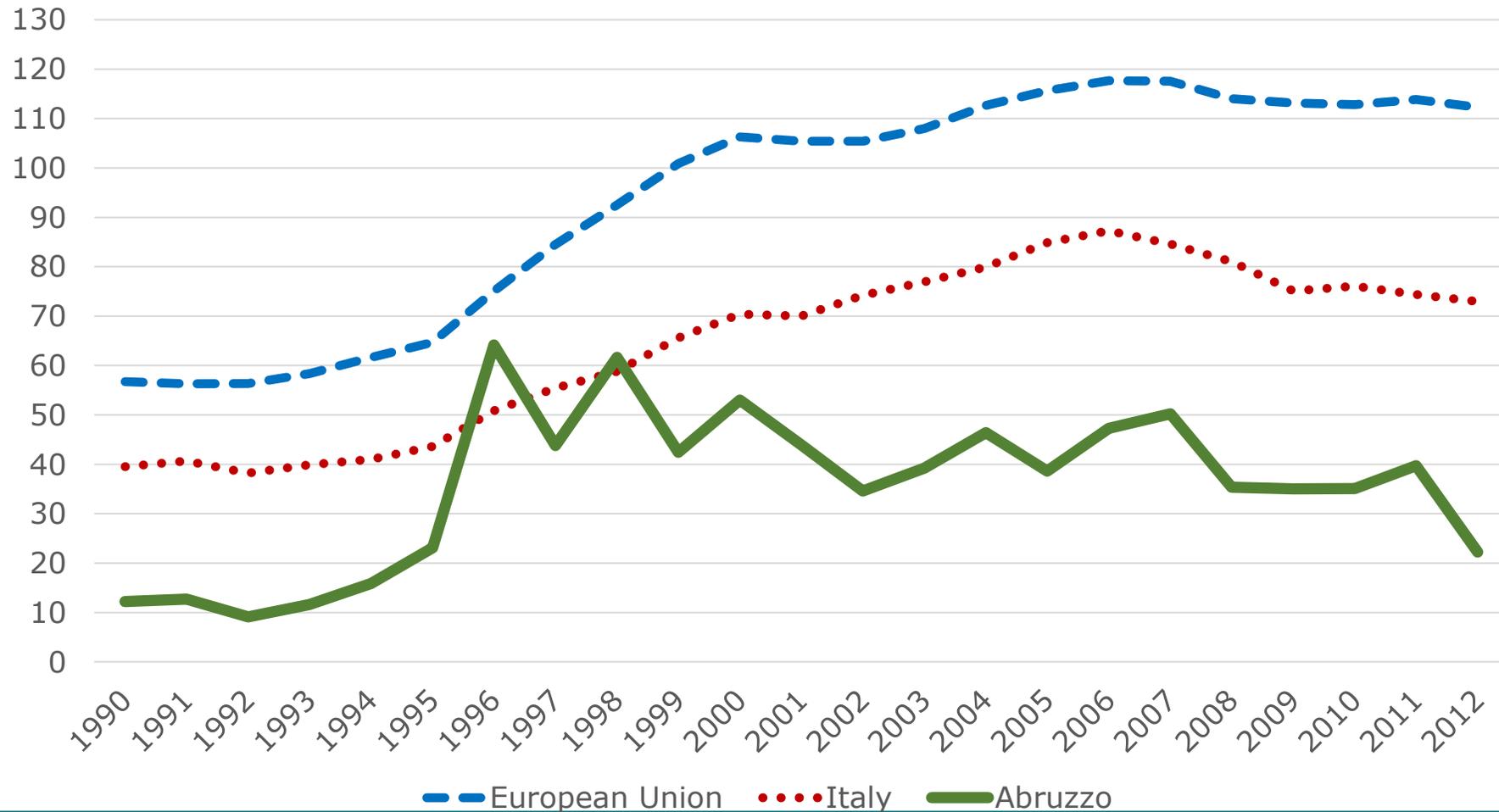
The problem mainly concerns business expenditure on R&D and confirms the weakness of an industrial system based mainly on small companies and multinationals that do not carry out their R&D activities in Abruzzo.

Public investment in R&D is not enough to compensate for this gap.

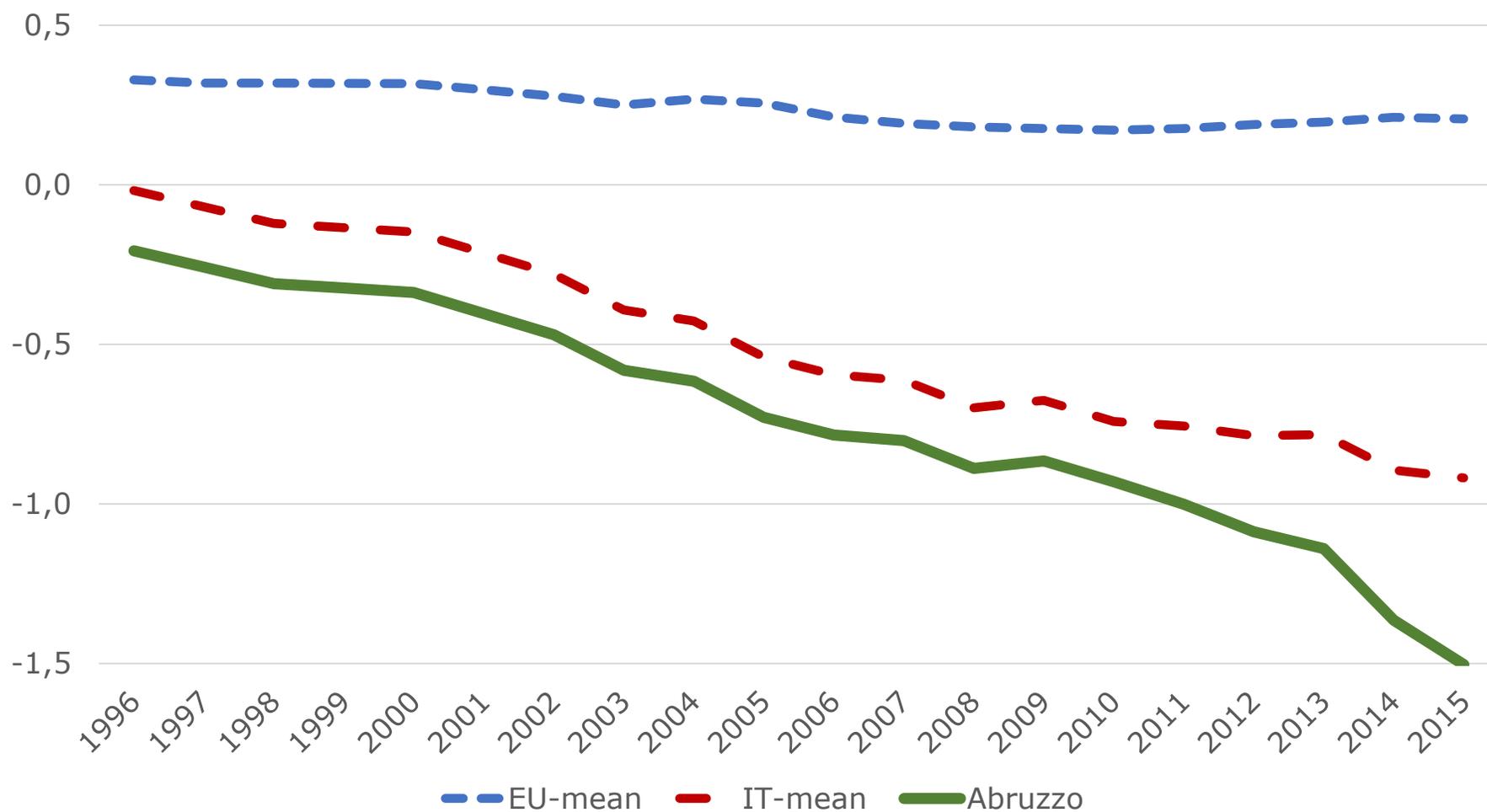
Spending in R&D as a percentage of GDP



# Patents per million inhabitants



# European Quality of Government Index (EQI)



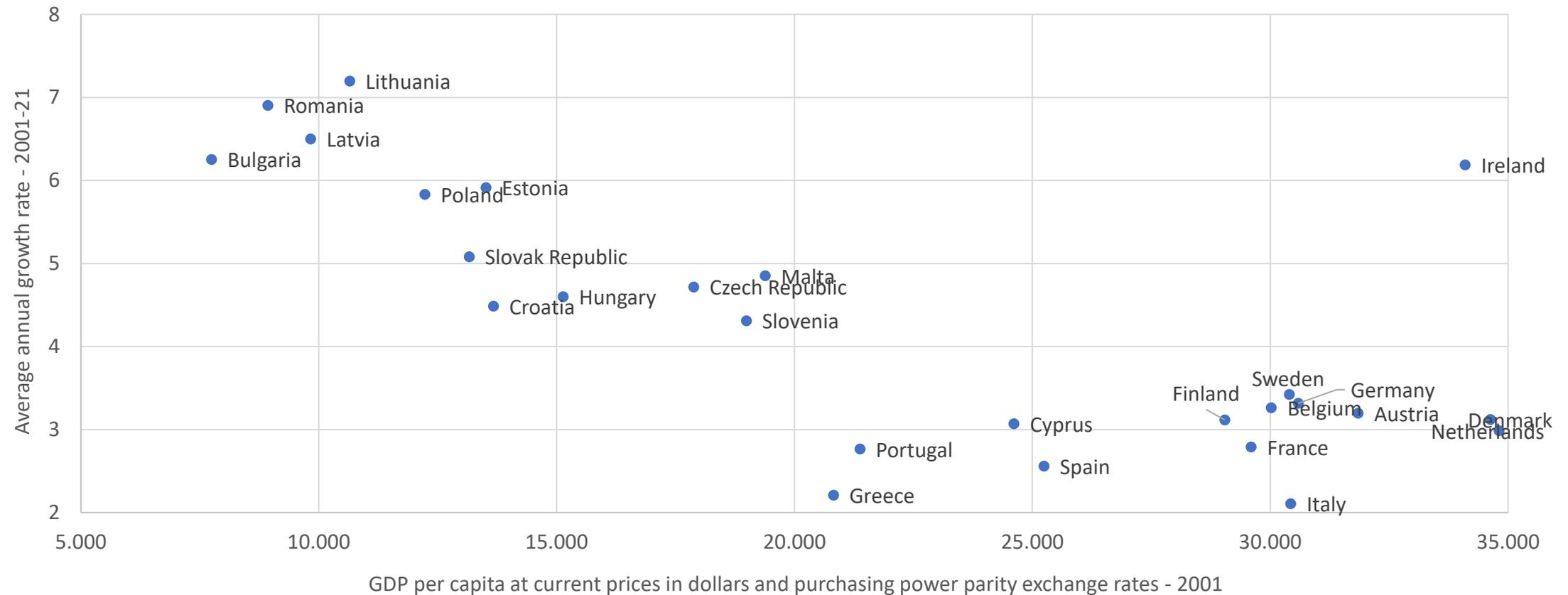
# From the «Abruzzo miracle» to the «development trap»

## Main factors:

- Lack of **innovation capacity in local enterprises**
- Poor **connections** between **large externally controlled companies** in the high-tech industry and **local companies**
- Poor **collaboration** between **companies, institutions and research and development centres**
- **Brain drain** due to mismatch between job supply and demand (higher share of graduates than in Italy)
- Poor **quality of local institutions** and inefficient **governance** structure.

# Regional or national development trap?

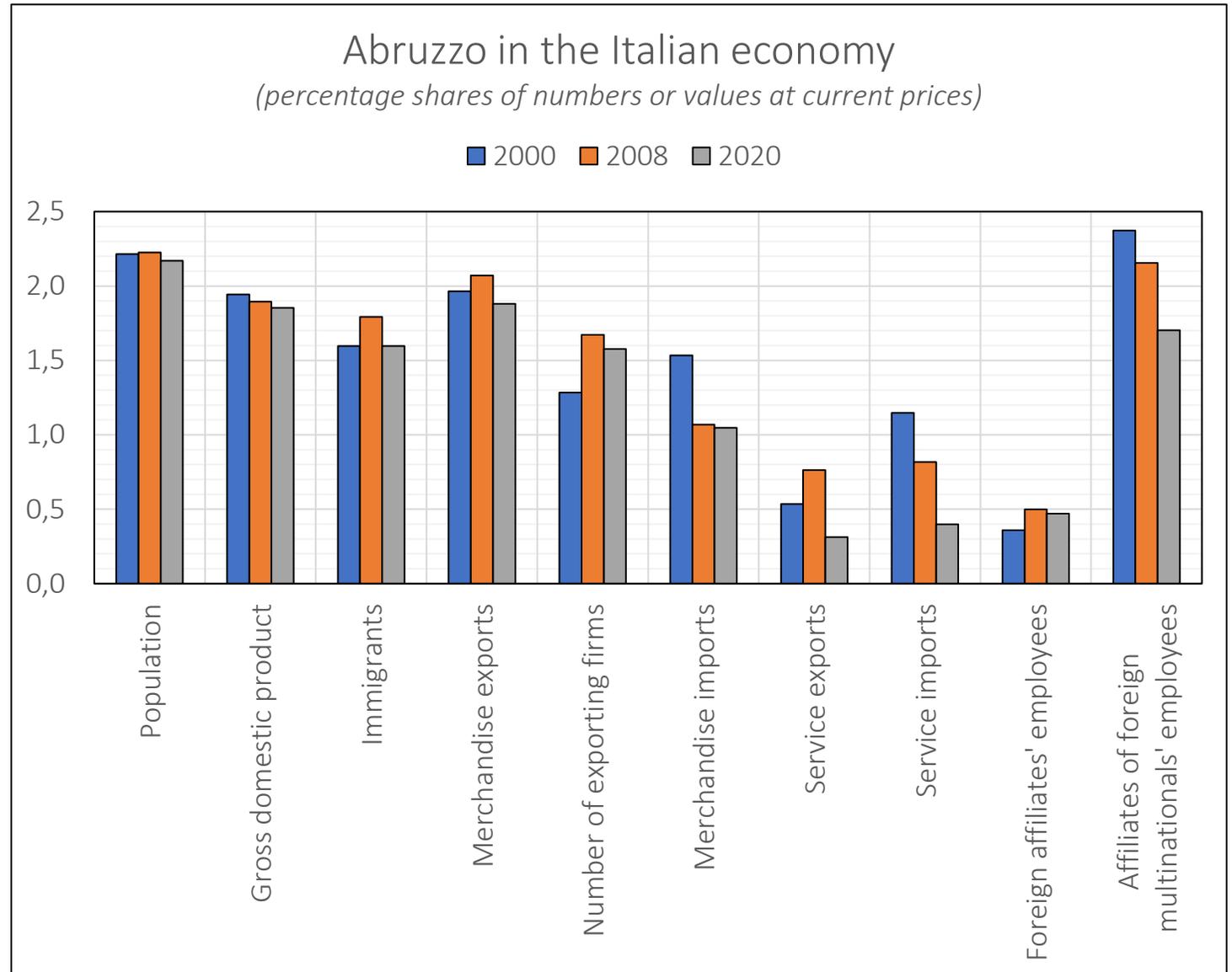
## Convergence and divergence in the European Union - 2001-21



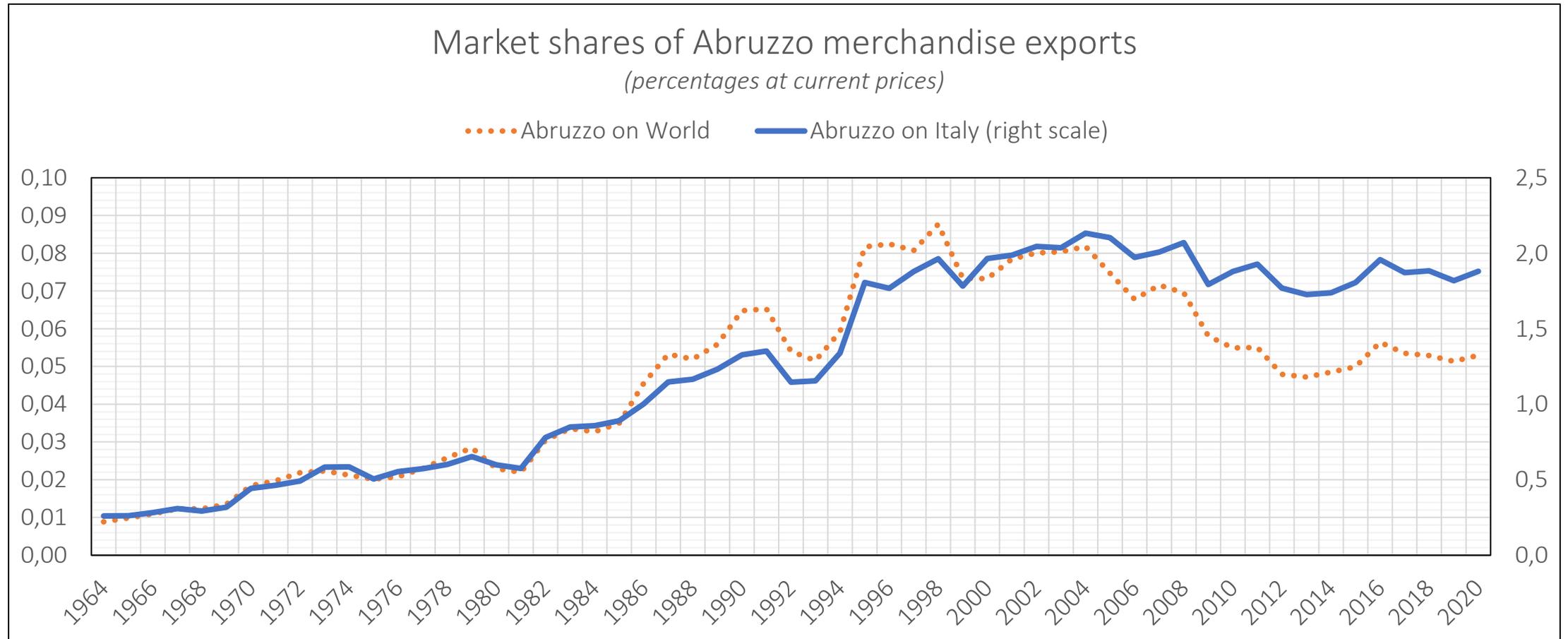
# International integration and local development: the main channels

- International market integration and competitive selection
  - Innovation → Internationalization
    - Only the most innovative firms can succeed in international markets
  - Internationalization → Innovation
    - Participation in international markets promotes innovation: learning by importing, exporting and producing abroad
  - Competitive selection involves also firms operating only on the domestic market
  - Internationalization can be seen as a form of organizational innovation
- International integration, innovation and local development: business networks, absorptive capacity and the proximity among innovation actors

# International integration of the Abruzzo economy



# The tale of a faded miracle: the Abruzzo convergence (export market shares)

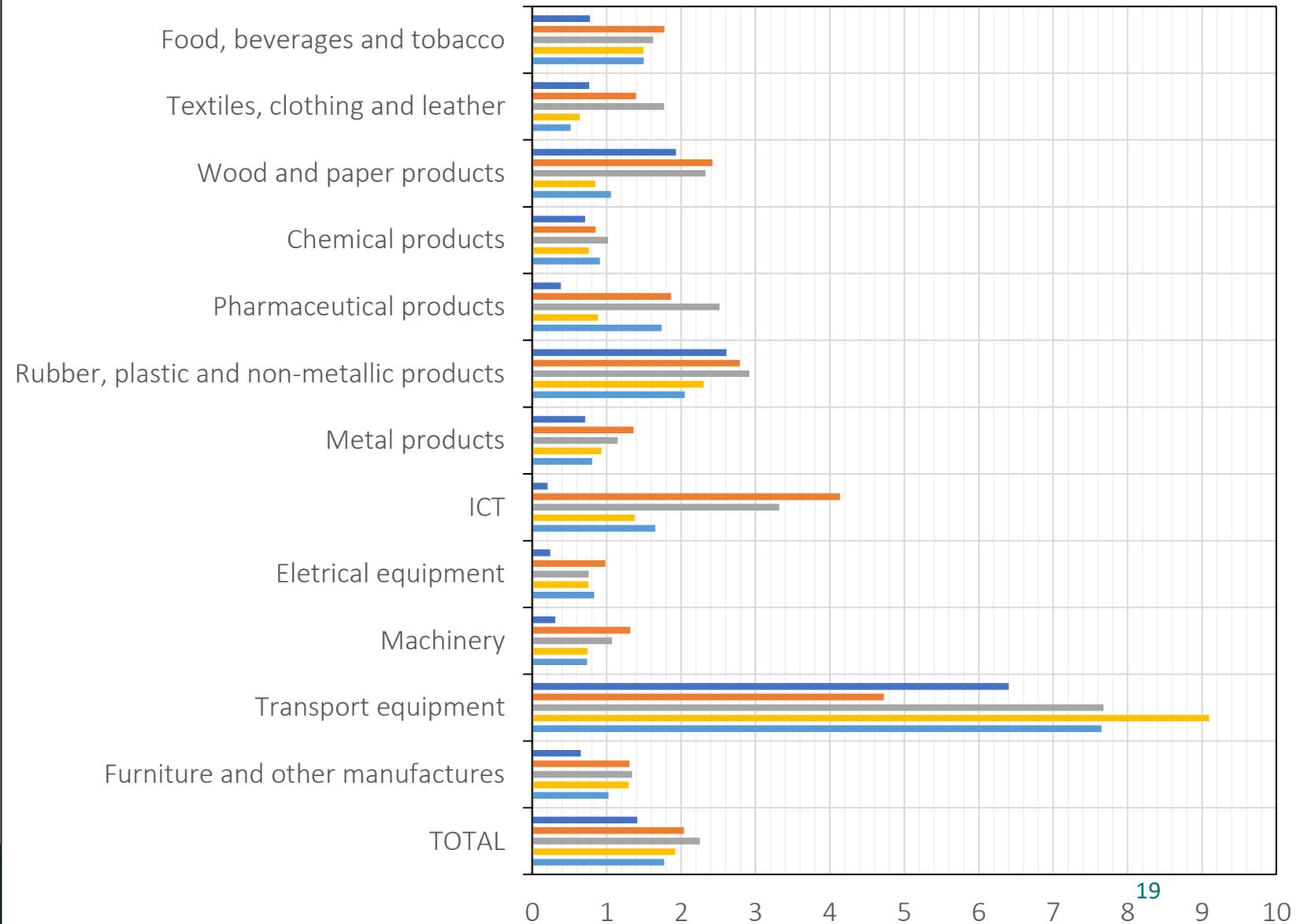


# A strongly polarized specialization pattern

## Abruzzo's shares of Italian exports, by sector

(percentages at current prices)

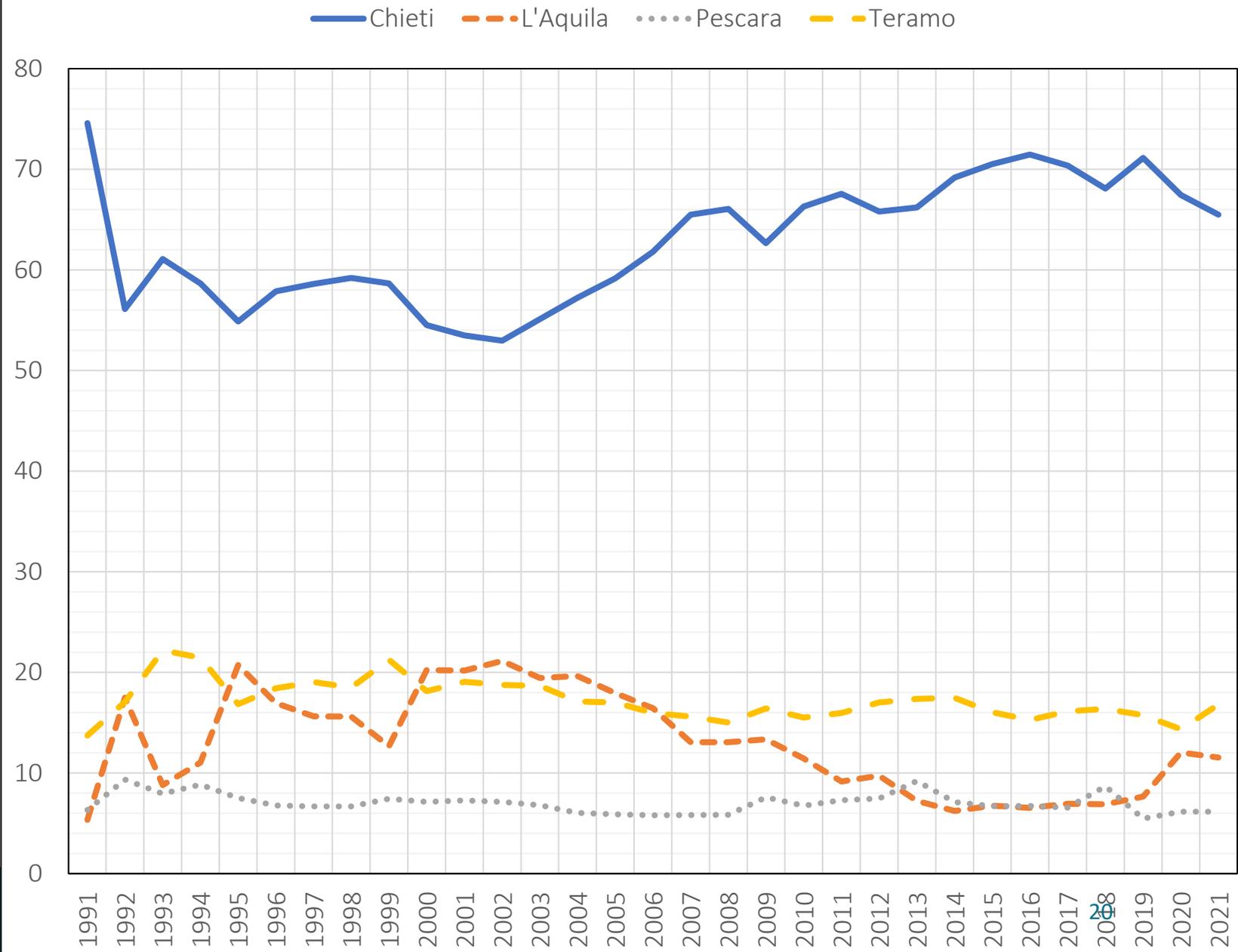
■ 1991 ■ 2000 ■ 2008 ■ 2019 ■ 2021



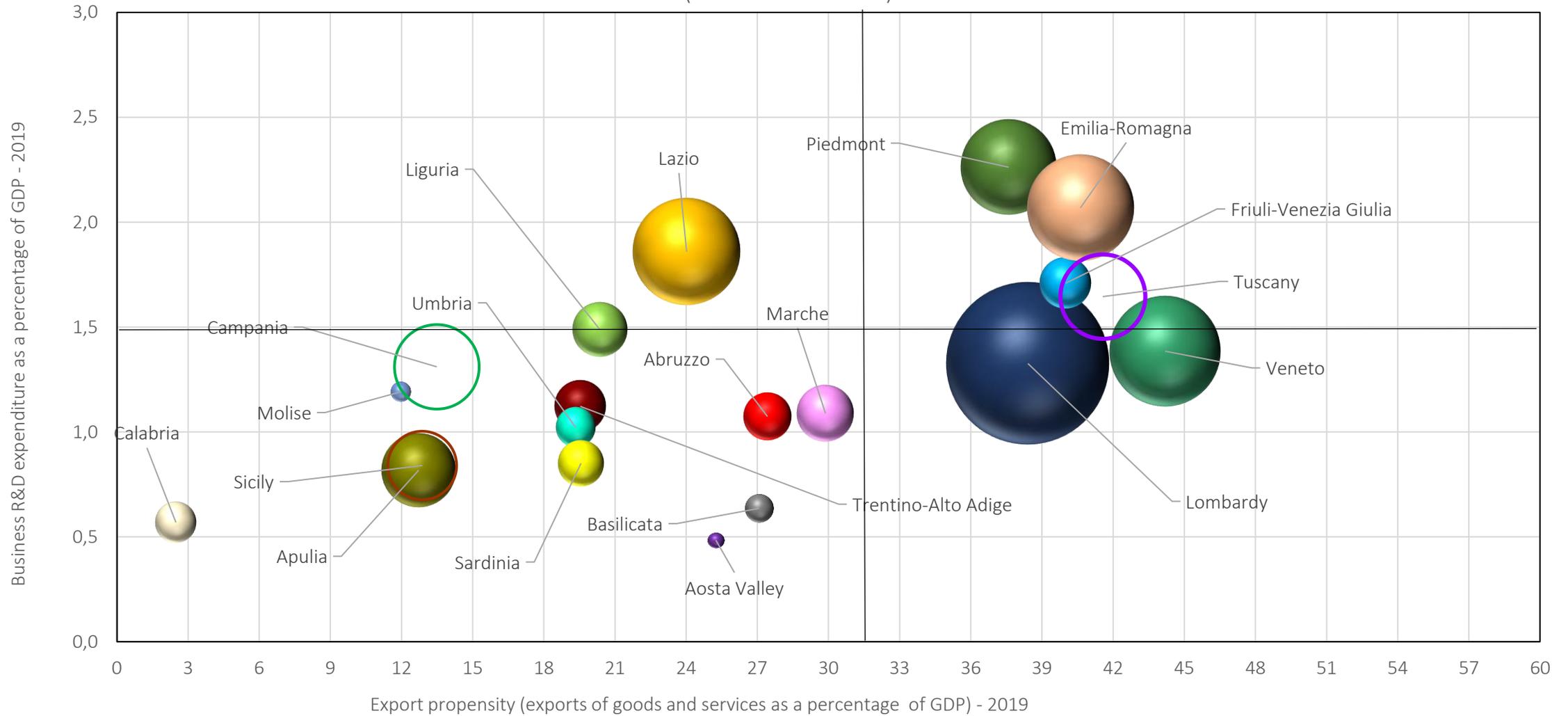
High territorial concentration

## Provincial shares of Abruzzo merchandise exports

(percentages at current prices)

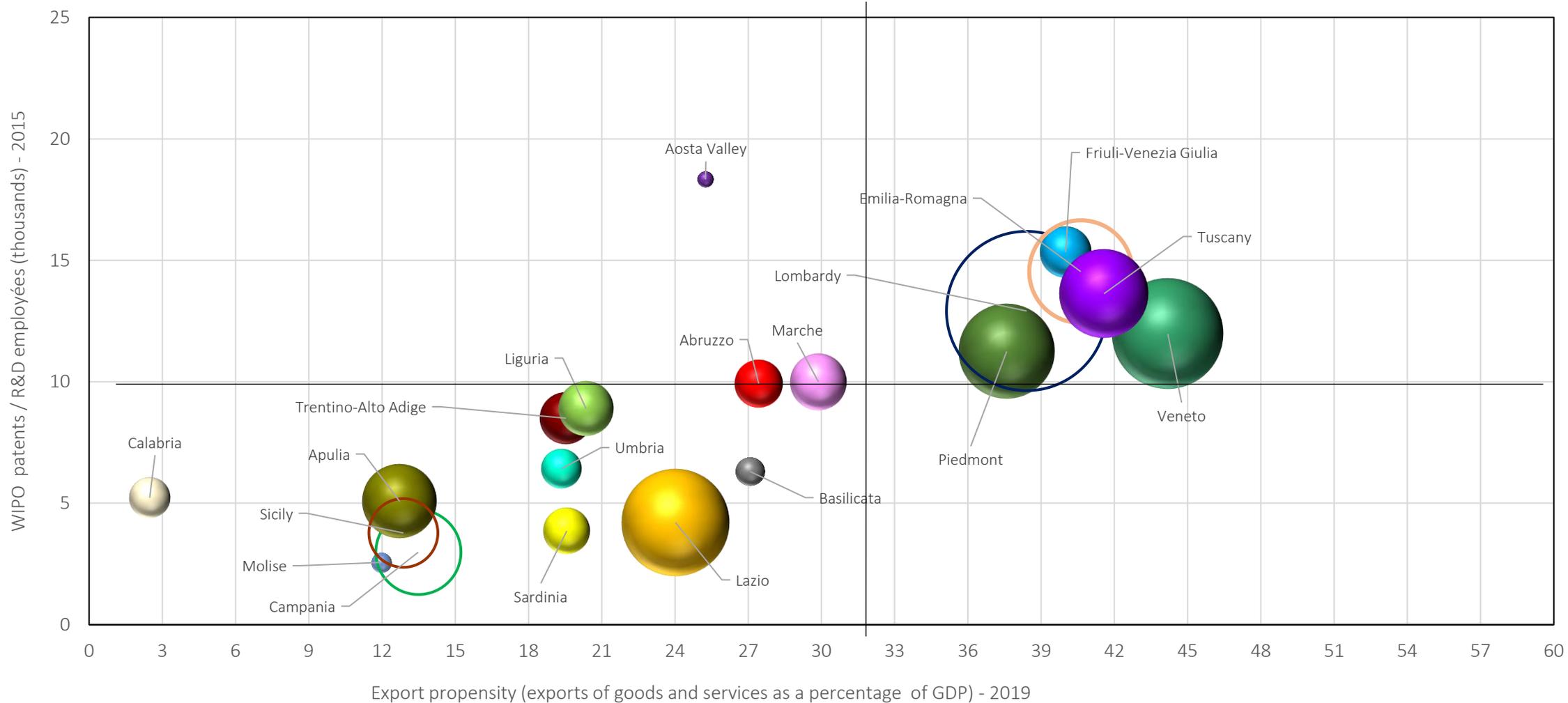


## Export propensity and business R&D expenditure (data source - ISTAT)



# Export propensity and patent productivity

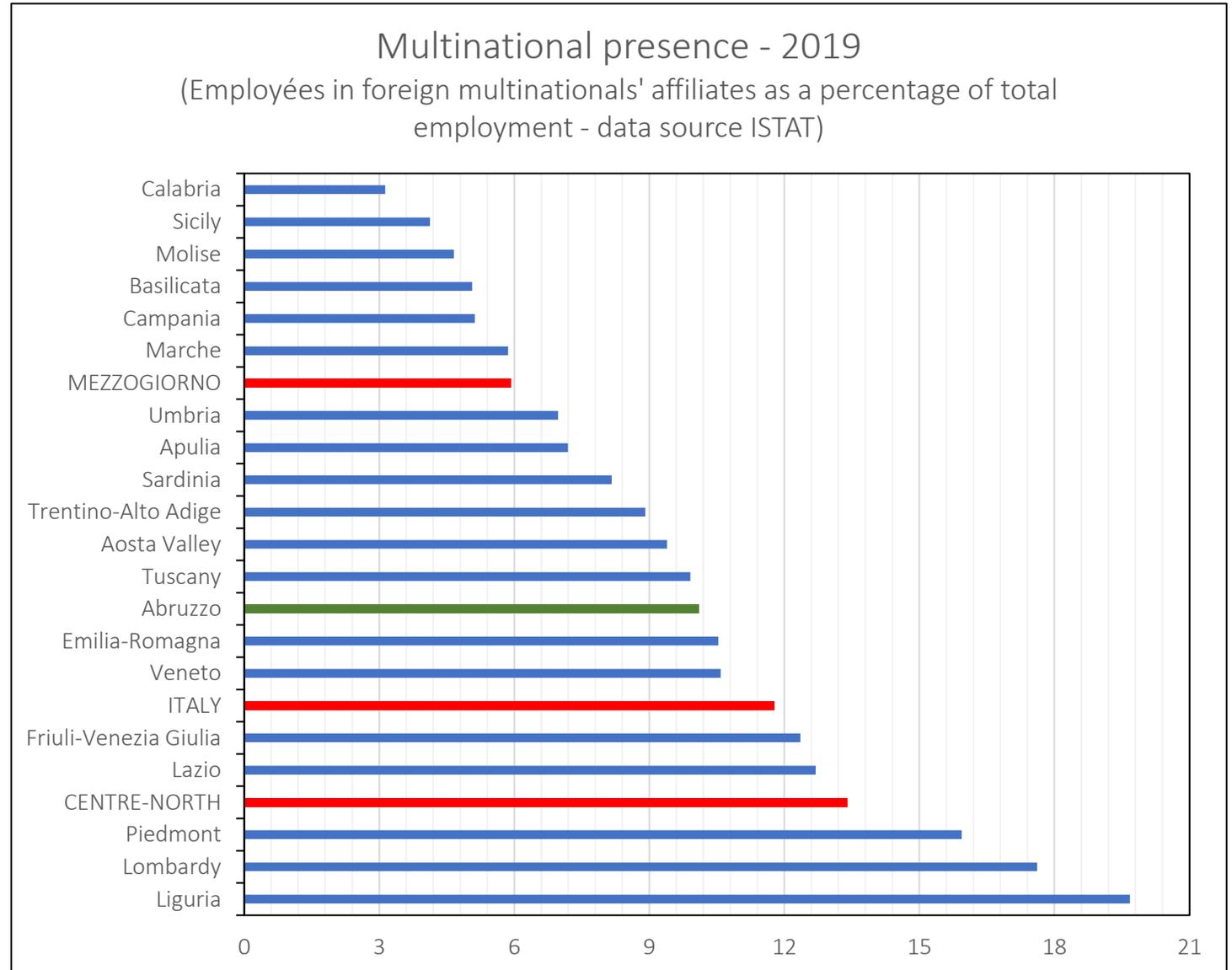
(data source - ISTAT)



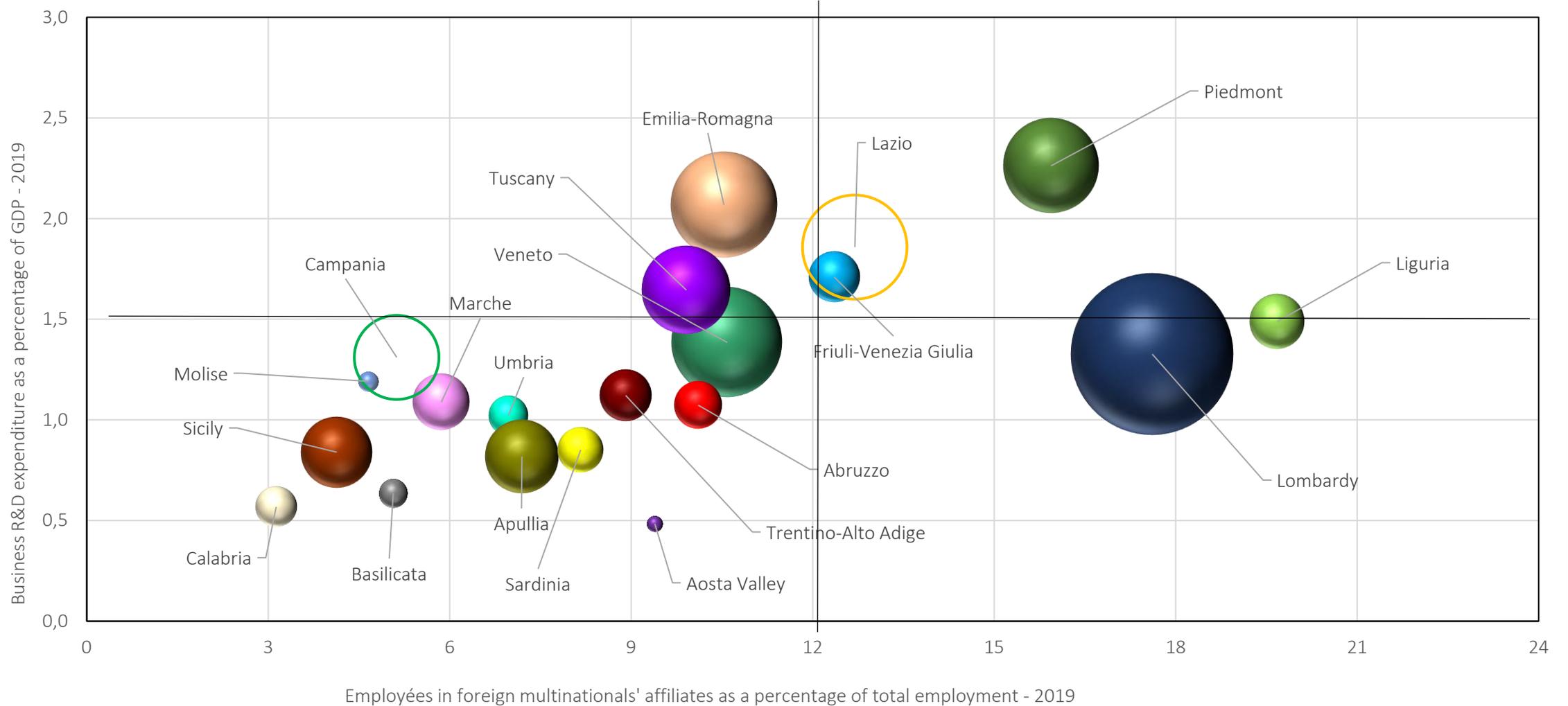
# International integration and local development: the role of multinational companies

- The presence of multinational companies can facilitate creation and dissemination of new knowledge
  - Direct effects of multinationals on host economies
  - Effects of multinational companies on the degree of competition in local markets
  - Vertical production links with local companies
  - Multinational can facilitate local firms' entry in international markets
  - Collaborations between multinationals and local research institutions
  - Effects of imitation by local firms
  - Labour mobility between local and multinational firms

Abruzzo is the Mezzogiorno region with the highest relative presence of foreign multinationals.

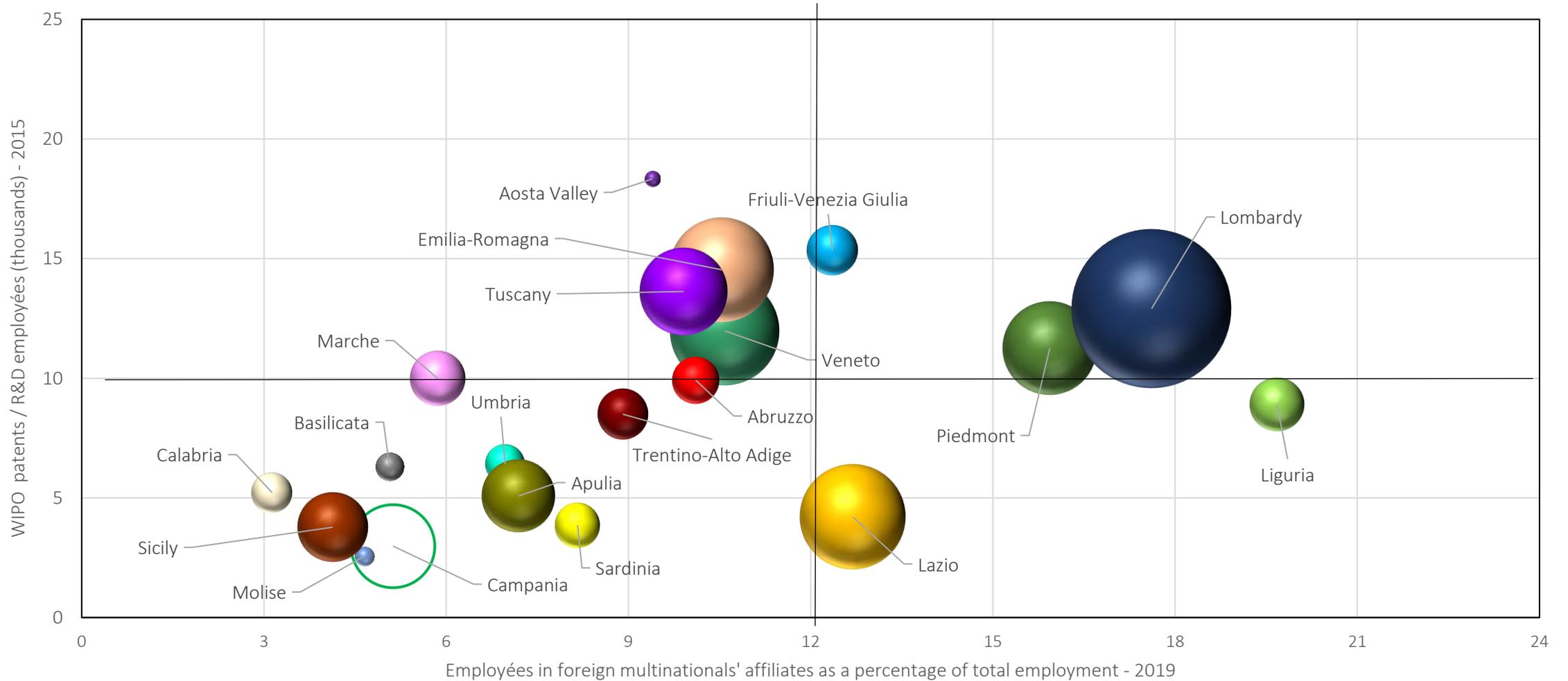


## Multinational presence and business R&D expenditure (data source - ISTAT)



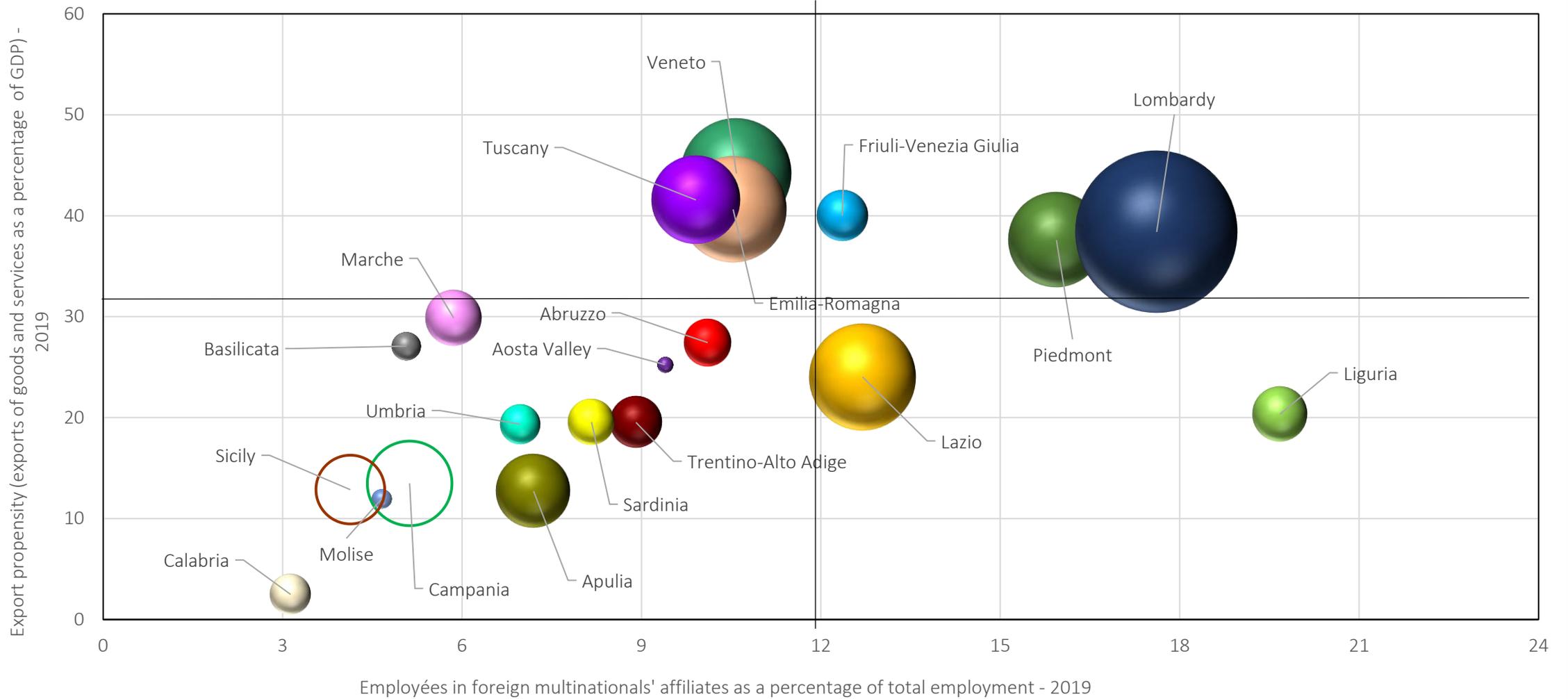
# Multinational presence and patent productivity

(data source - ISTAT e OECD Regpat)



# Multinational presence and export propensity

(data source - ISTAT)



# International integration and local development in Abruzzo: the challenges

- The regional economy's resilience to shocks is mostly based on large externally-controlled firms
- Spillover effects on local firms have been weak so far, although with important exceptions (the automotive system in the Chieti province)
- The social diffusion of the benefits of globalization has remained limited, also due to governance and participation problems, particularly in internal areas
- Earthquakes and other natural calamities have worsened the situation
- Big challenges for the regional innovation system, including the four universities

# A Focus on L'Aquila

- Back in the past
- Bridging connections
- Deep in the future

## Back in the past: external linkages and local development

- The power of L'Aquila in 13<sup>th</sup> century was based on the close connection between the city and its mother-villages, which had established the city as a federation, each of them building a borough and considering it as a part of the mother-village.



# Back in the past: external linkages and local development

- From its beginnings the city constituted an important market for the surrounding countryside, which provided it with a regular supply of food
- From the fertile valleys came the precious saffron.
- Surrounding mountain pastures provided summer grazing for numerous transhumant flocks of sheep, which in turn supplied abundant raw materials for export and, to a lesser extent, small local industries.
- This, in time, brought craftsmen and merchants from outside the area.
- Within a few decades L'Aquila became a crossroads in communications between cities within and beyond the Kingdom, thanks to the so-called "via degli Abruzzi".



# Back in the past: external linkages and local development

- In 1311 King Robert of Anjou granted L'Aquila with privileges which had a decisive influence on the development of trade.
- These privileges exempted all activities related to sheep-farming from customs duties on imports and exports.
- This was the period in which merchants from Tuscany (Scale, Bonaccorsi) and Rieti purchased houses in the city.
- Hence the conditions for radical political renewal: in 1355 the trade guilds of leather-workers, metal-workers, merchants and learned men were brought into the government of the city.
- Eleven years earlier, in 1344, the King had granted the city its own mint.



# Back in the past: external linkages and local development

- In the middle of the 14<sup>th</sup> century the city was struck by plague epidemics (1348, 1363) and earthquakes (1349).
- Reconstruction began soon, however. In the 14<sup>th</sup>–15<sup>th</sup> century Jewish families came to live in the city.
- The 15<sup>th</sup> century was the golden age of the city of L'Aquila. After the reconstruction, it prospered for its trade, especially of wool and saffron, extending its relations in France, the Netherlands and Germany, and quickly becoming the most important city of the Kingdom after Naples.
- In 1481 Adam of Rottweil, a pupil and collaborator of Johann Gutenberg, obtained permission to establish a printing press in L'Aquila.



## Back in the past: external linkages and local development

- The 1703 earthquake destroyed the city almost completely, killing more than one third of its population.
- In the 1712 census, L'Aquila showed 2,684 inhabitants divided into 670 families, of which 149 were strangers attracted by the possibilities offered by the reconstruction.
- In the following twenty years, until 1732, 160 new families arrived, contributing to the repopulation of the city.



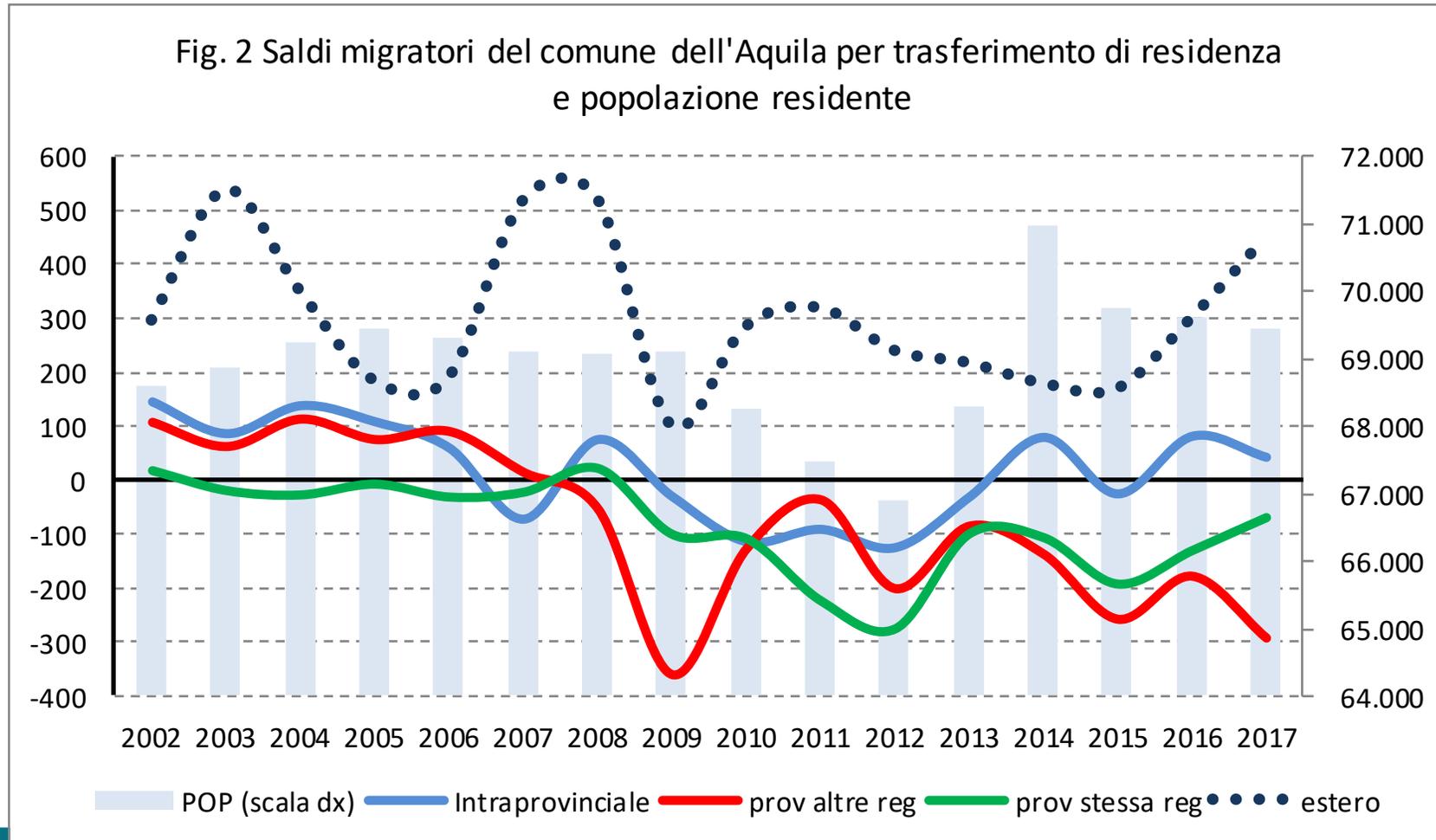
# The 2009 earthquake



# L'Aquila: the reconstruction challenges

- A slow reconstruction, whose economic benefits are captured by strong interest groups and are anyway going to fade over time
- A fragile urban system: elderly population, rentiers, public administration...
- A manufacturing base concentrated in few externally-controlled firms
- A weak public administration
- Limited social participation in local policies
- Widespread fear of international integration
  - «L'Aquila first»...
  - Invisible immigrant workers
- The difficult role of GSSI and the University of L'Aquila: developing connections between local communities and global innovation networks

# Bridging connections: migration balance in the municipality of L'Aquila



# Bridging connections: the regional specialization strategy

- Deep linkages between economic structure and growth capacity
- «Smart specialization strategy» of the Abruzzo region
  - Automotive
  - ICT/aerospace
  - Life sciences and pharmaceutical industry
  - Agri-food
  - Fashion and design
- The «Pescara charter»: Abruzzo as the region of sustainable industry



# Bridging connections: the «Territori Aperti» centre

- An integrated information system about areas exposed to natural disasters, connected to the European *SoBigData* network
- Research activities on areas exposed to natural disasters
  - ICT and applied data science
  - Legal aspects of big data analysis
  - Economic and social issues
  - Territorial and urban planning
  - Environmental and sanitary issues
- A Master in Post-Catastrophe Management for local administrations

# Bridging connections: HPC4DR consortium (High-Performance Computing for Disaster Resilience)

- **Resources**

- HPC4DR infrastructure, connected to the CINECA *Leonardo* hub in Bologna
- Big data made available by the digital transformation
- Human resources with specific HPC skills

- A **value chain** organized in four stages based on the Sendai Framework principles:

1. Hazard and probability of natural and anthropogenic disasters
2. Vulnerability and exposure to the impact of disasters
3. Preparedness and resilience to disasters
4. Reconstruction and sustainable development in areas hit by disasters

- Each stage uses **HPC** resources **directly and indirectly** benefits from the better-quality inputs produced by the upstream stages of the supply chain through HPC

- The ultimate goal is to increase the **resilience of local systems to natural and anthropogenic disasters**, providing citizens, businesses and public institutions with reliable scenarios and simulations

# Deep in the future: Darkside

- An international collaboration programme for the research of «dark matter» in the universe
- Argon-40 extracted from wells in Colorado and purified in a distillation tower 350 meters high in abandoned mines in Sardinia
- Silicon light detectors, with production chain entirely based in Abruzzo
- Development of ultra-pure structural materials (titanium, copper, teflon) and construction of the world's largest electron beam welding machine, also with a supply chain entirely based in Abruzzo.



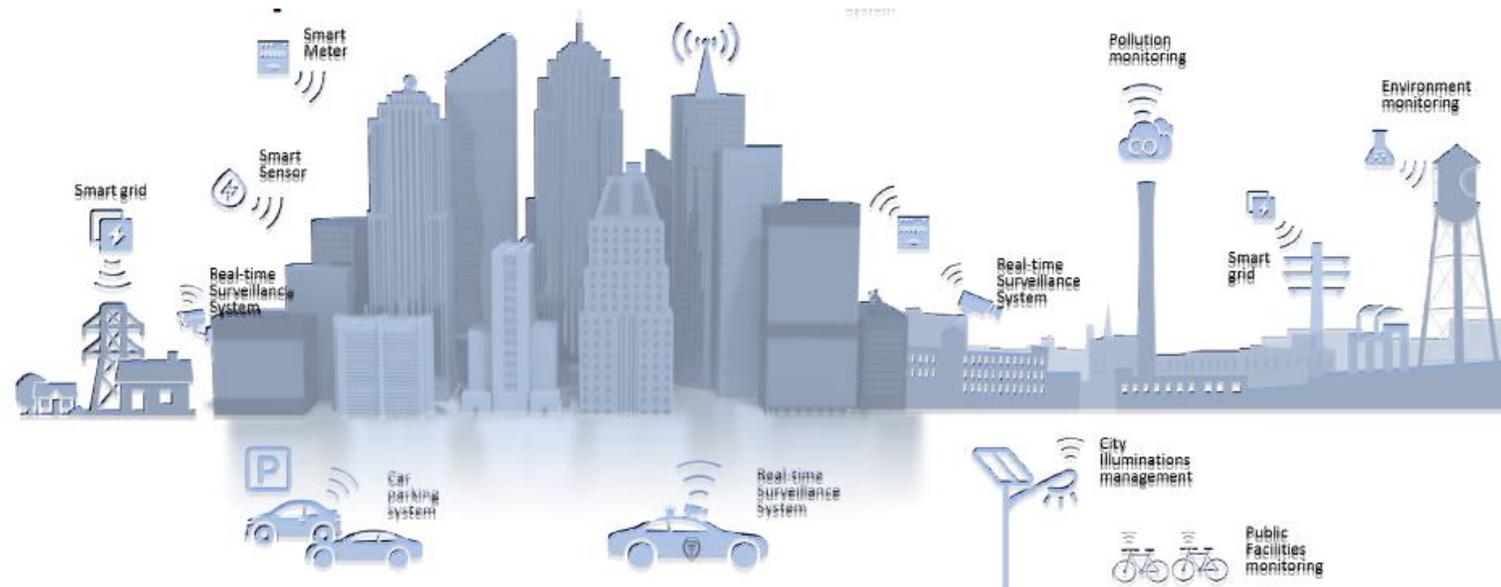
# Deep in the future: NUSES

- Silicon Photomultipliers in a space environment
- A new satellite for Astro-Particle Physics
- The search for precursory signals of seismic events



# Deep in the future: 5G

- Experimental activity to test innovative services for 5G services over the cities of Prato and L'Aquila.
- Applications in
  - E-Health
  - Industry 4.0
  - Smart Grid
  - Automotive
  - Media & Entertainment



# Deep in the future: ex-Emerge

- Intelligent Transport Systems exploiting the geo-localization with Galileo and 5G
- For the field tests Stellantis Ducato vans equipped to operate for daily services and to support emergencies with advanced and cooperative navigation functionalities to improve safety and minimize the journey's time



# The missions of «civic universities»

Concluding remarks

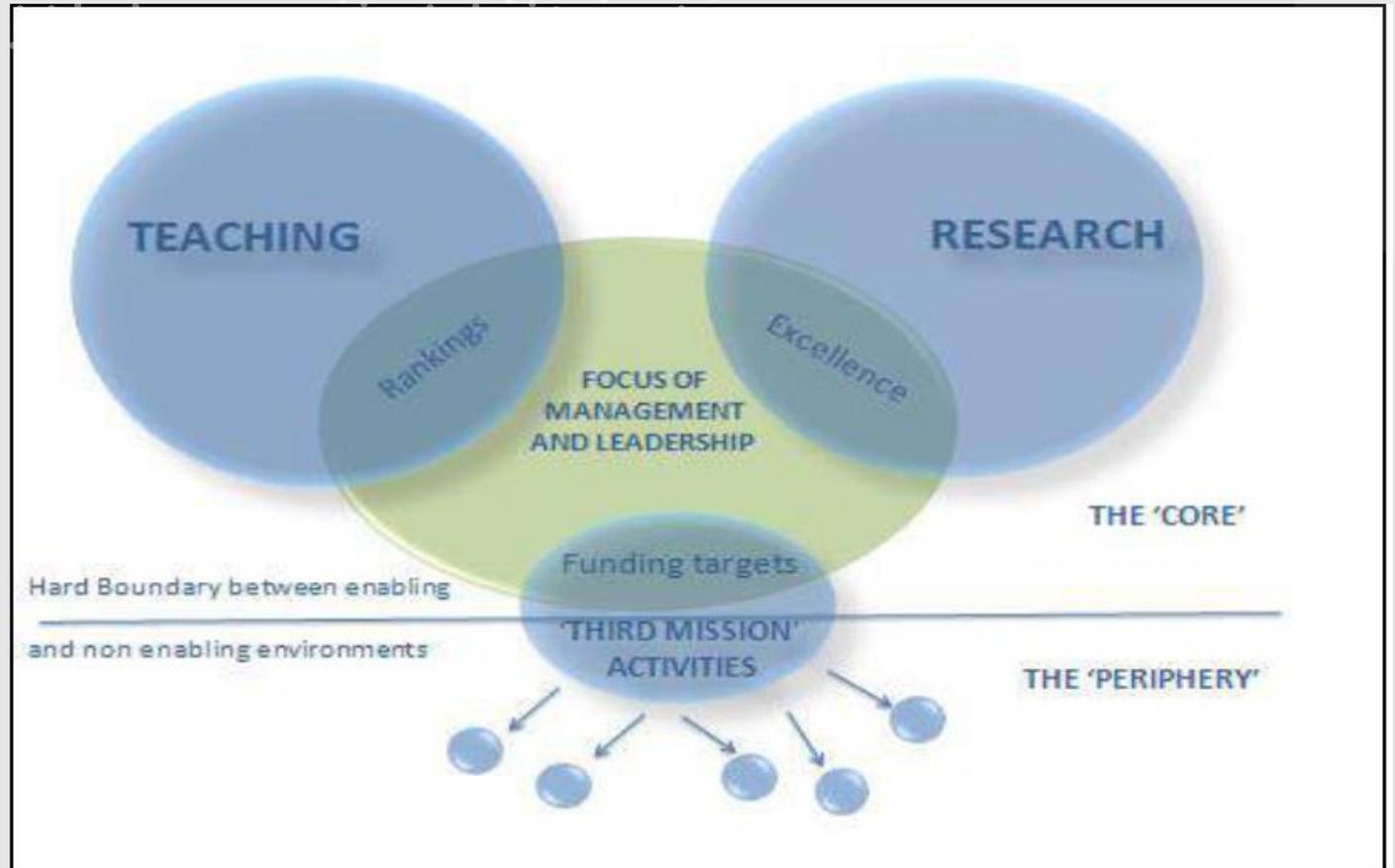
# The missions of «civic universities»

- Three missions in the history of universities:
  - starting in the Middle Ages as institutions of **higher education**,
  - they assumed the nature of **research** centres only in a later period.
  - More recently, the acquisition of the "third mission": the **entrepreneurial functions** of universities, initially limited to technology transfer activities and then gradually extended to all the different actions with which universities can contribute to **sustainable economic growth and societal progress**.
- Gradual intensification of relations between universities, institutions and local communities



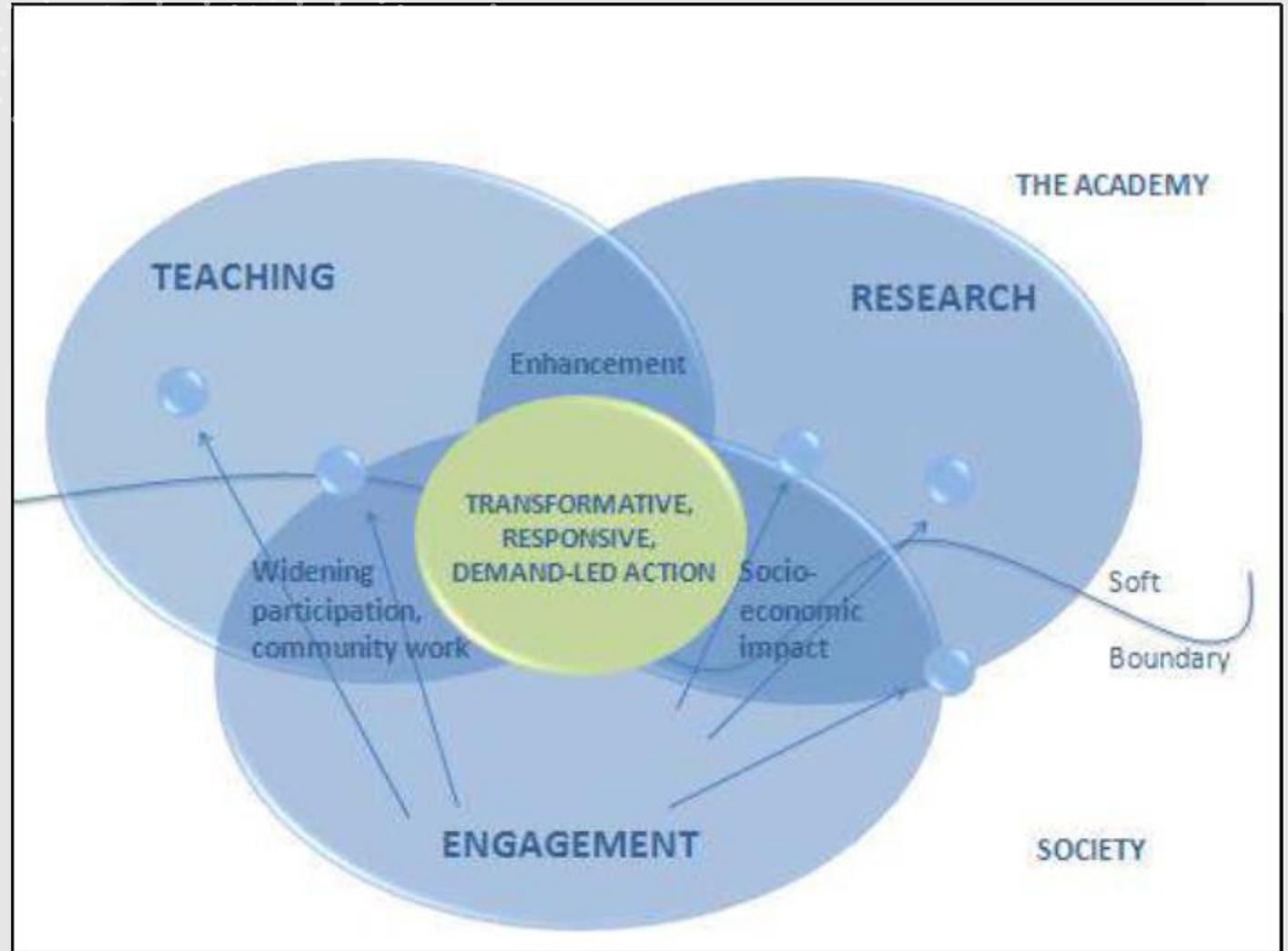
# The Un-civic University

(Goddard et al., 2016)

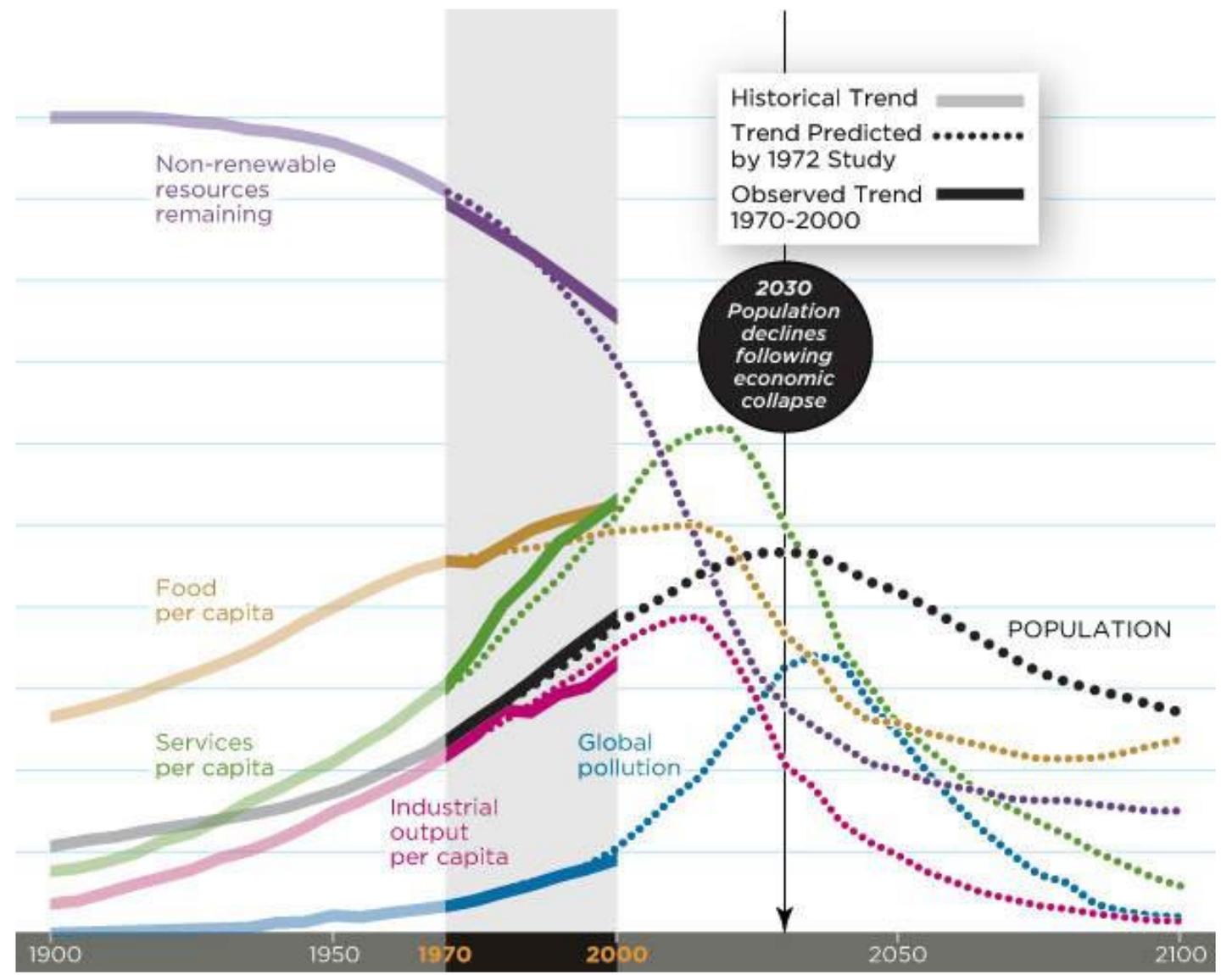


# The Civic University

(Goddard et al., 2016)



The Anthropocene and climate change: "The future we don't want"

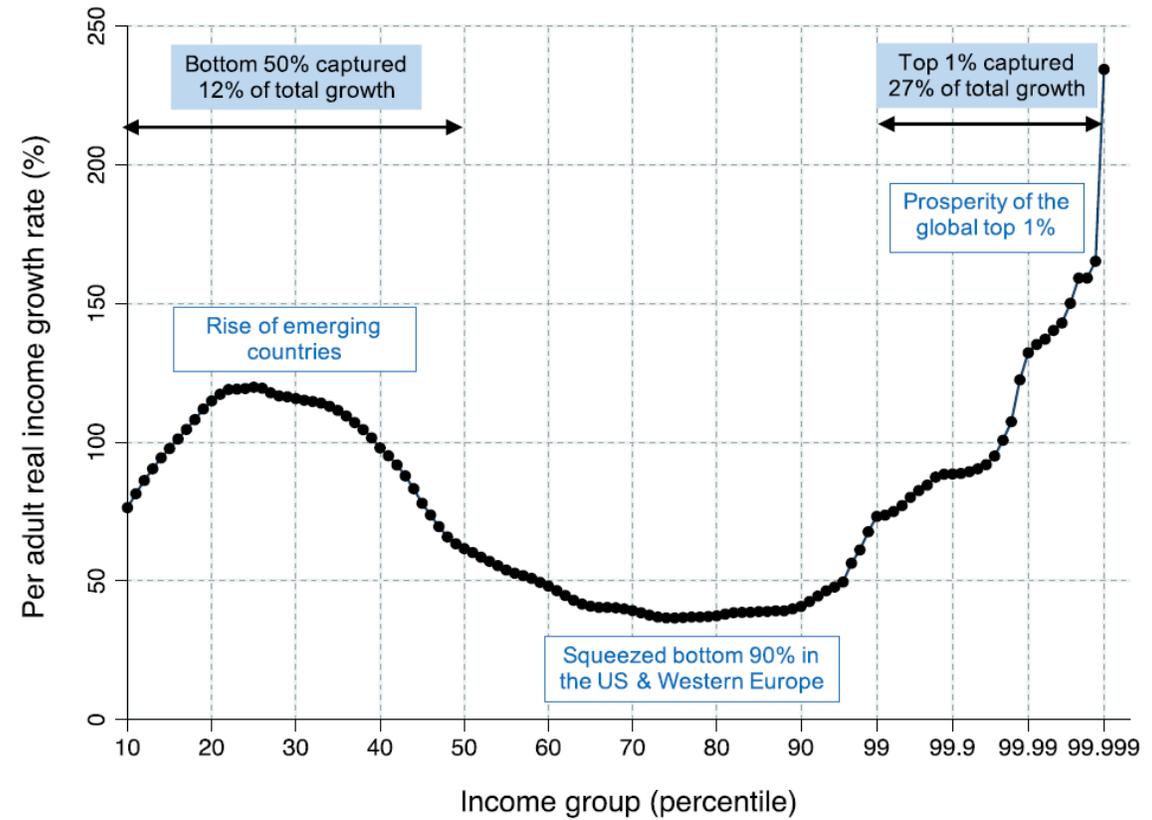


# «One Health»

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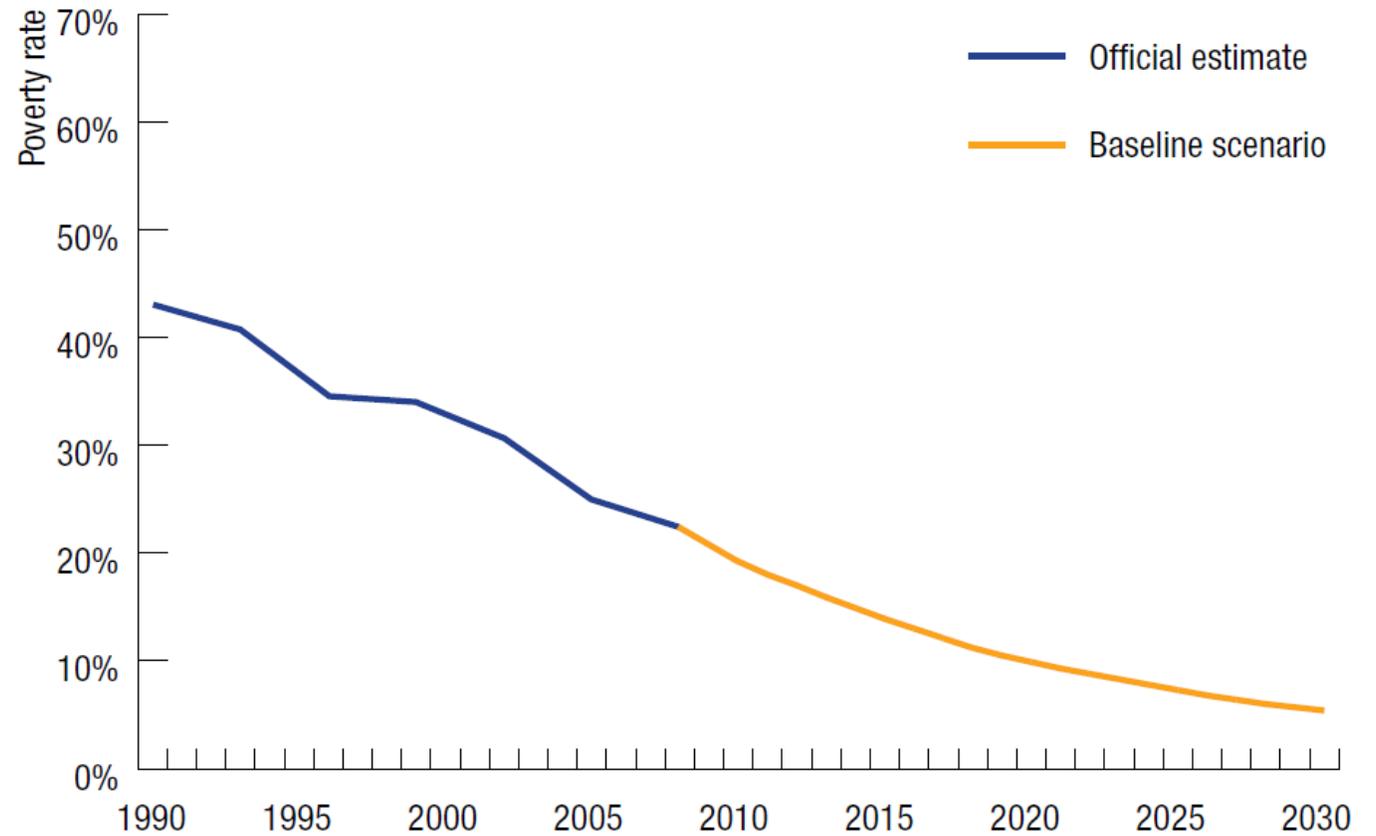
# Globalization and social inequalities



**Figure 2. Total income growth by percentile across all world regions, 1980-2016**

The vertical axis shows the total real income growth between 1980 and 2016 for each percentile of the global distribution of income per adult. The bottom 10 percentiles are excluded as their income levels are close to zero. The top 1% is divided into smaller groups (up to the top .001%) so as to better account for its share in total global growth captured. Source: WID.world.

# Globalization and poverty in the world



# The missions of «civic universities»: sustainable local development

- The natural result of this vision is the civic university's commitment to contribute to the achievement of the **Sustainable Development Goals** set by the international community in the United Nations 2030 Agenda.
- Greater importance in cases, such as that of L'Aquila, in which
  - **university students** represent an important **share of the total population**
  - the university is one of the essential parts of the **economic base of the local system**, so much so that it can be configured as an element of comparative advantage and a factor of development
  - the university is located in **relatively disadvantaged areas**
  - and/or in areas more **vulnerable to natural or anthropogenic disasters**



# The missions of «civic universities»: international openness

- The cultural and social interaction between the university and its local community can go so far as to affect the **identity of the city and its symbolic representation**, as perceived by its inhabitants and from the outside.
- As the urban system evolves as a "**university city**", his **university** is rooted more and more deeply, while continuing to play the fundamental role of **connecting node with international networks of knowledge creation and dissemination**, which is the essence of its function as a "**civic university**".
- The goal is to increase the degree of **international openness** of the local systems in which university activities are carried out,
  - **Rejecting identitarian obsessions**
  - **Defending the ethical, economic and social value of globalization**
  - **Generating opportunities for encounter and mutual enrichment between different cultures.**



# The missions of «civic universities»: social and environmental justice

- Have inequalities increased?
- Inequality of what?
  - Income
  - Wealth
  - Opportunities
  - Social recognition
- Inequality between whom?
  - Between people around the world
  - Between people in individual territories
  - Between territories in the world
  - Between countries in the world
  - Between regions within countries
  - Between generations (over time)
- Reactions to inequalities (or their perception)
  - Common sense and its manipulation
  - Increasing inequalities and the revolt of “places that don’t matter” (A. Rodriguez-Pose)



# The missions of «civic universities»: social and environmental justice

- **Sustainable development**

- **Environmental** aspects: our responsibility towards future generations and other forms of life
- **Economic** aspects: a new pattern of growth, based on the idea of the «circular economy»
- **Social** aspects: contrasting inequalities

- The idea of **social justice** as «sustainable substantial freedom», that is «the capacity to expand the freedoms we have reason to value» (Amartya Sen, *The Idea of Justice*, 2009) and to ensure at least the same freedoms for the next generations (**environmental justice**)

- Article 3 of the Italian Constitution (1948):

«**All citizens** have equal social dignity and are **equal** before the law, **without distinction of sex, race, language, religion, political opinion, personal and social conditions.**»

It is the duty of the Republic to **remove those obstacles of an economic or social nature which constrain the freedom and equality of citizens, thereby impeding the full development of the human person and the effective participation of all workers in the political, economic and social organization of the country.**»



# The missions of «civic universities»: international cooperation, peace and strong institutions

- The state of international relations
  - Russia's aggression against Ukraine and the war in Palestine show the tragic threats nationalist ideas and identitarian obsessions pose to international peace and security
  - The rhetoric of competitiveness and nationalist policies
  - The nationalist hoax: global challenges and local powers

«Anche le guerre diventeranno più rare, finché esse non scompaiano del tutto, nel giorno in cui sia per sempre fugato dal cuore e dalla mente degli uomini **l'idolo immondo dello Stato sovrano**»

« Even wars will become rarer, until they disappear completely, on the day when **the filthy idol of the sovereign state** will be banished forever from the hearts and minds of men»

Luigi Einaudi («Il mito dello Stato sovrano», in *Risorgimento liberale*, 1945)

