



International integration and local development: The case of Abruzzo, with a focus on L'Aquila

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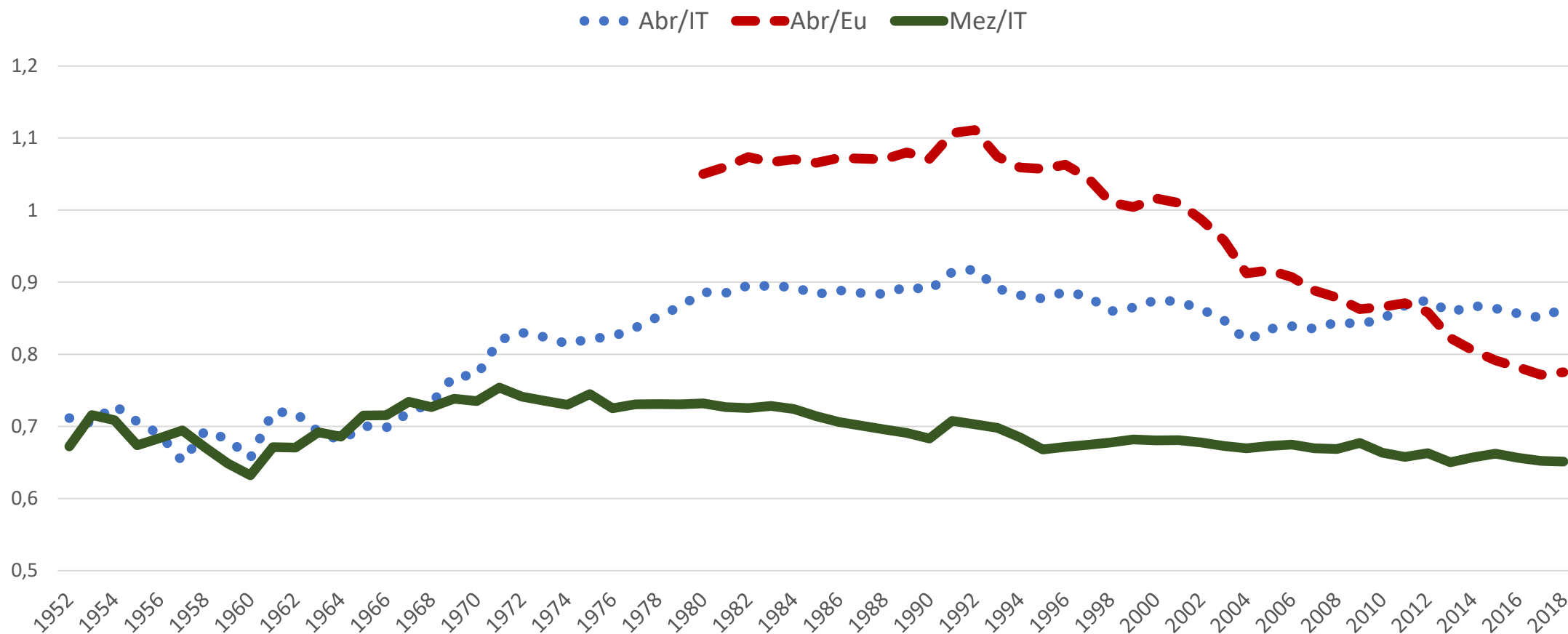
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Outline

- International integration and local development: the main channels
- The international position of the Abruzzo economy
 - Exports
 - Multinational enterprises
- 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
- Conclusions

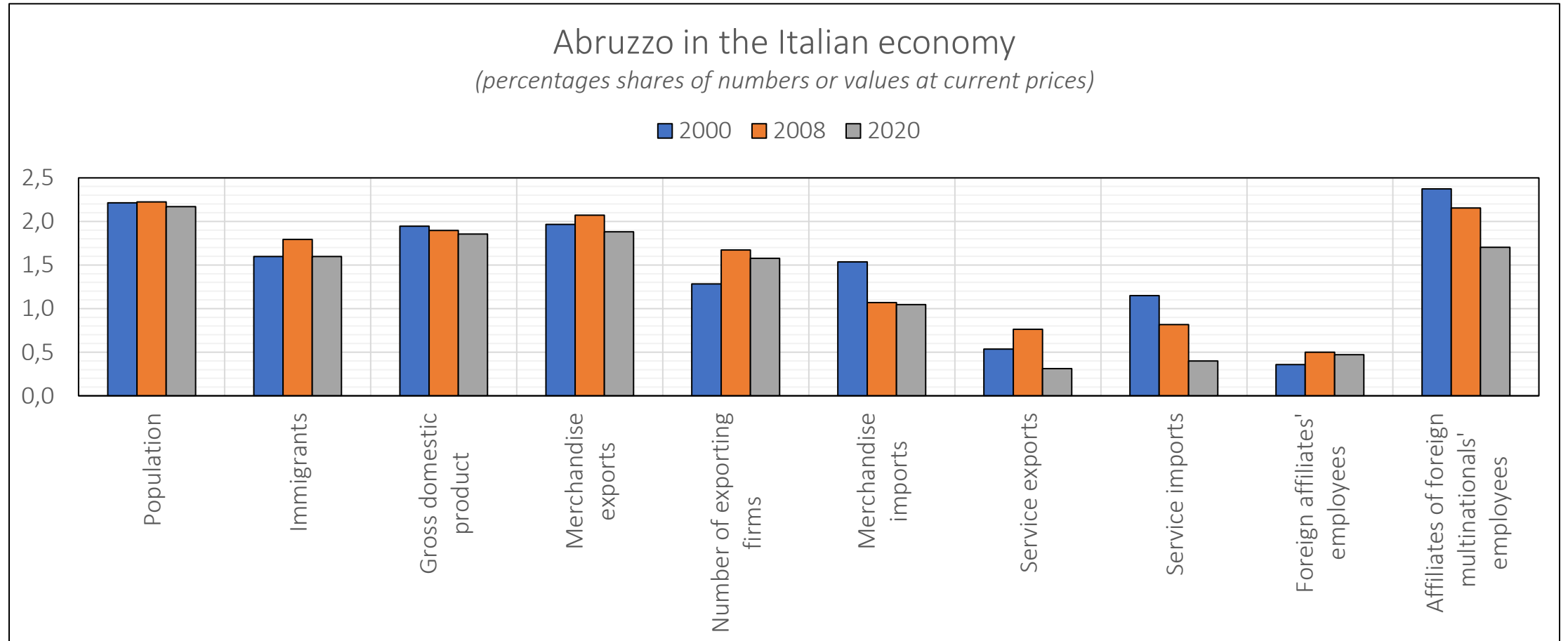
The tale of a faded miracle: the Abruzzo convergence (per-capita income – constant 2005 prices)



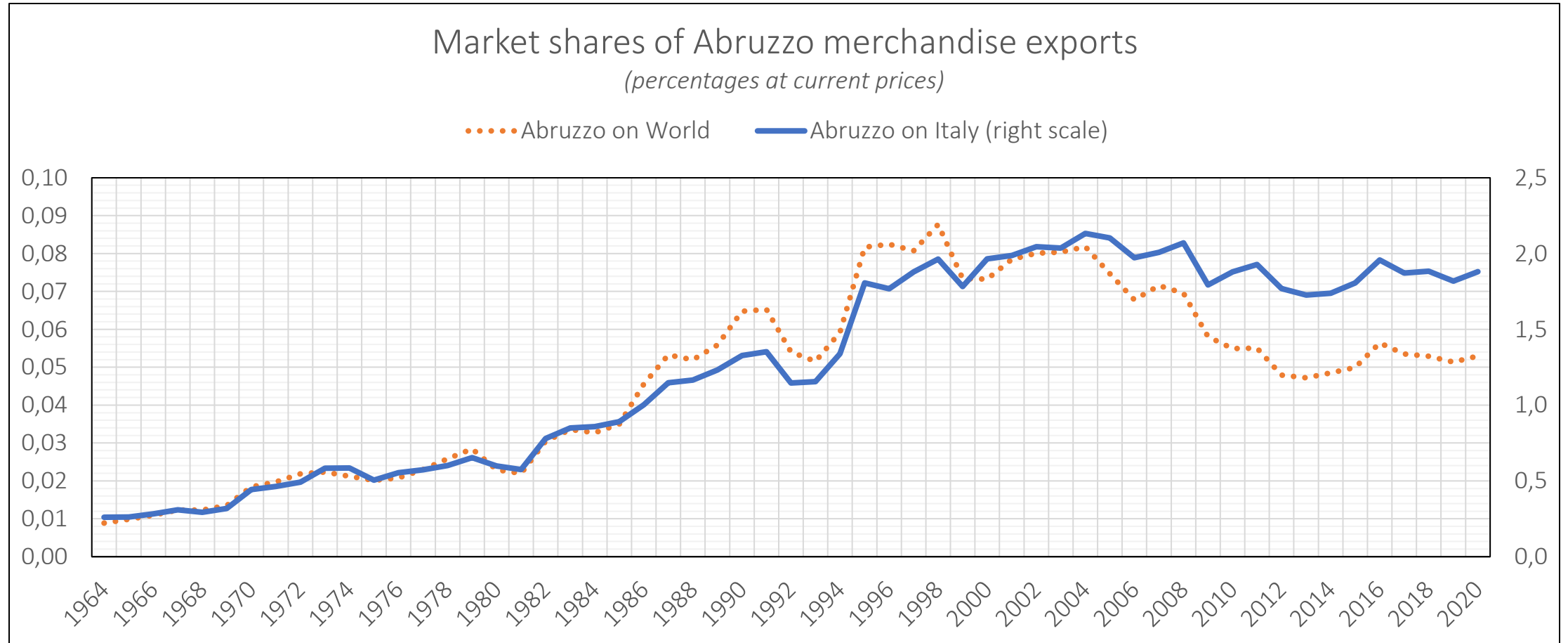
International integration and local development: the main channels

- 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

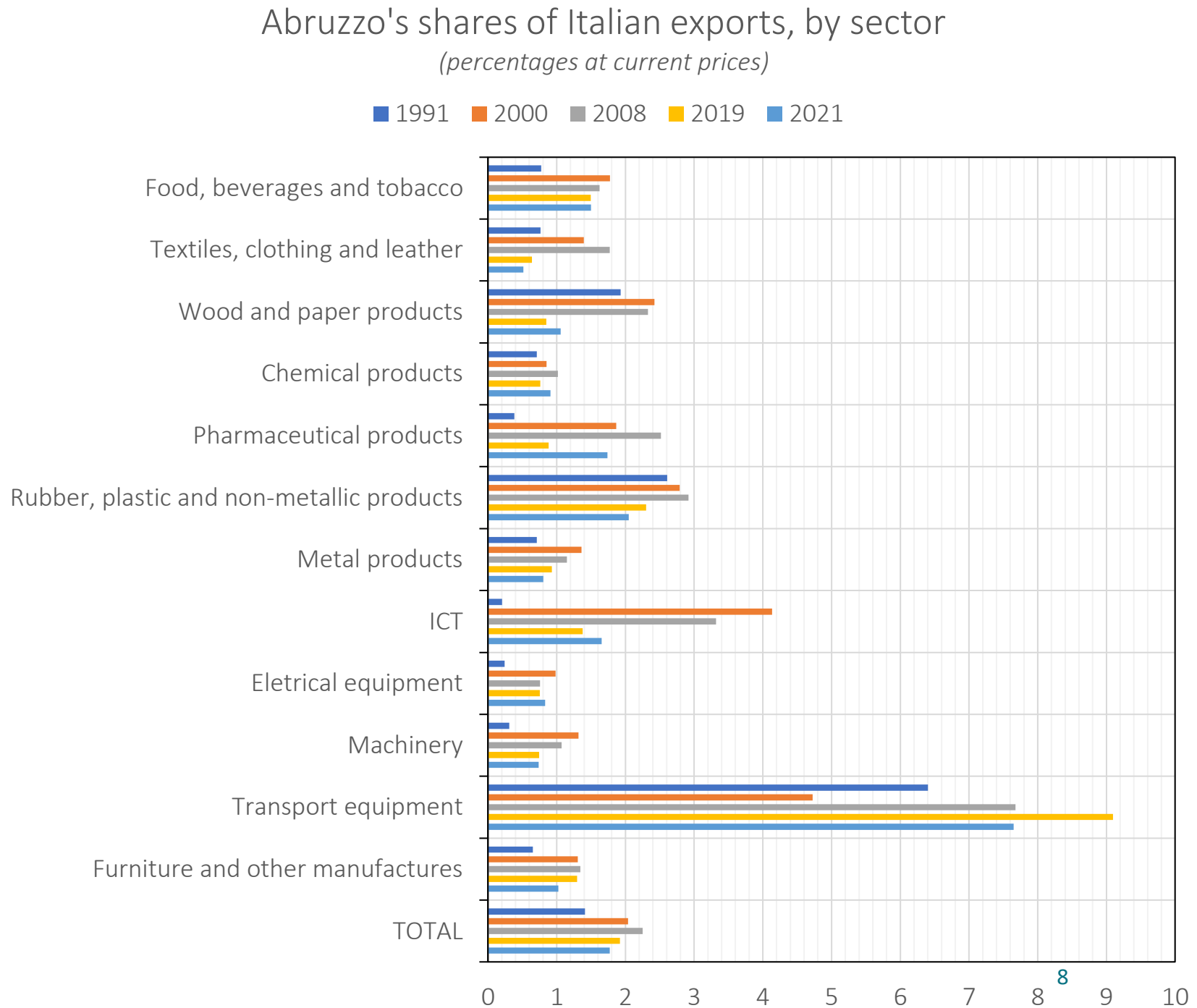
International integration of the Abruzzo economy



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



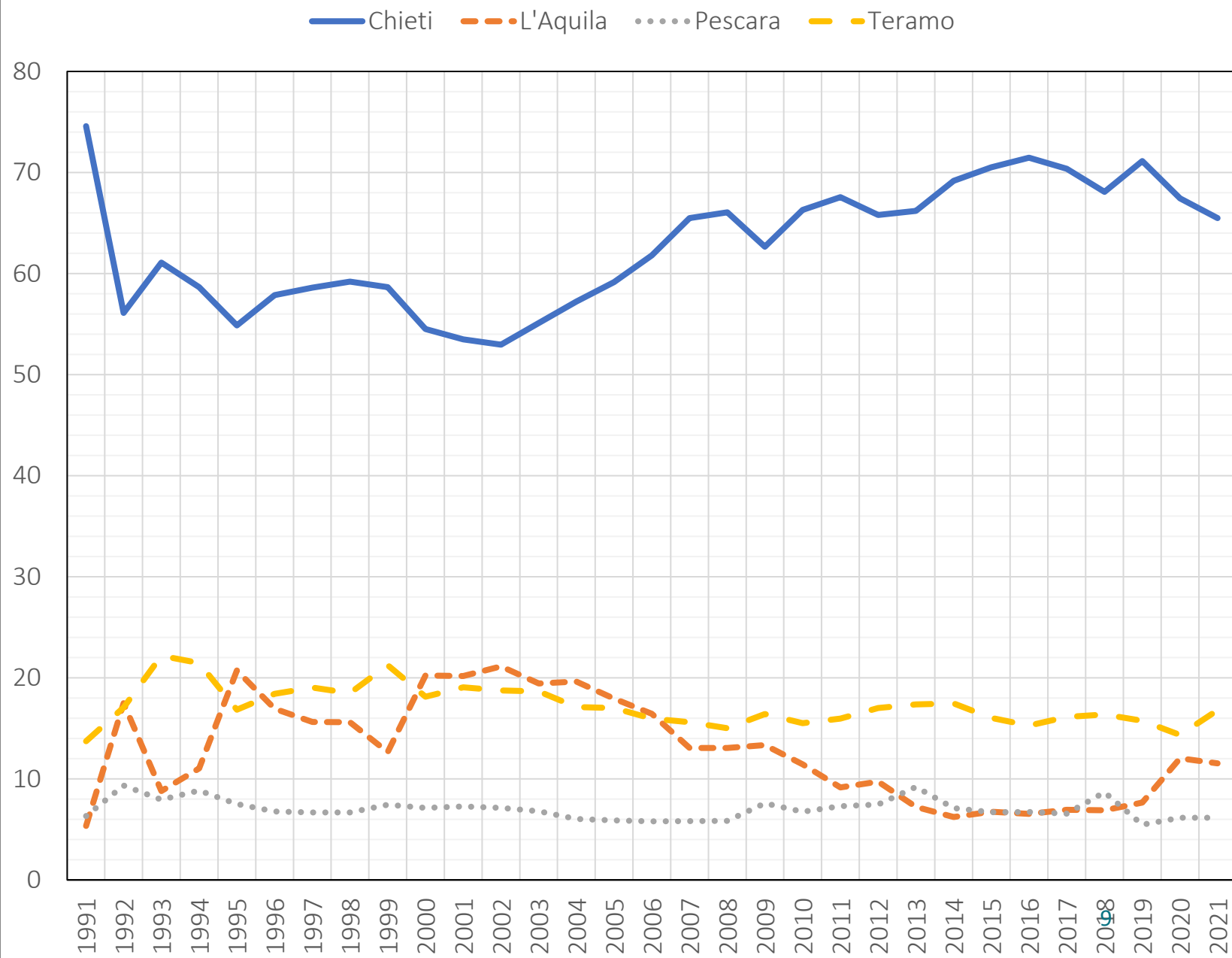
A strongly polarized specialization pattern



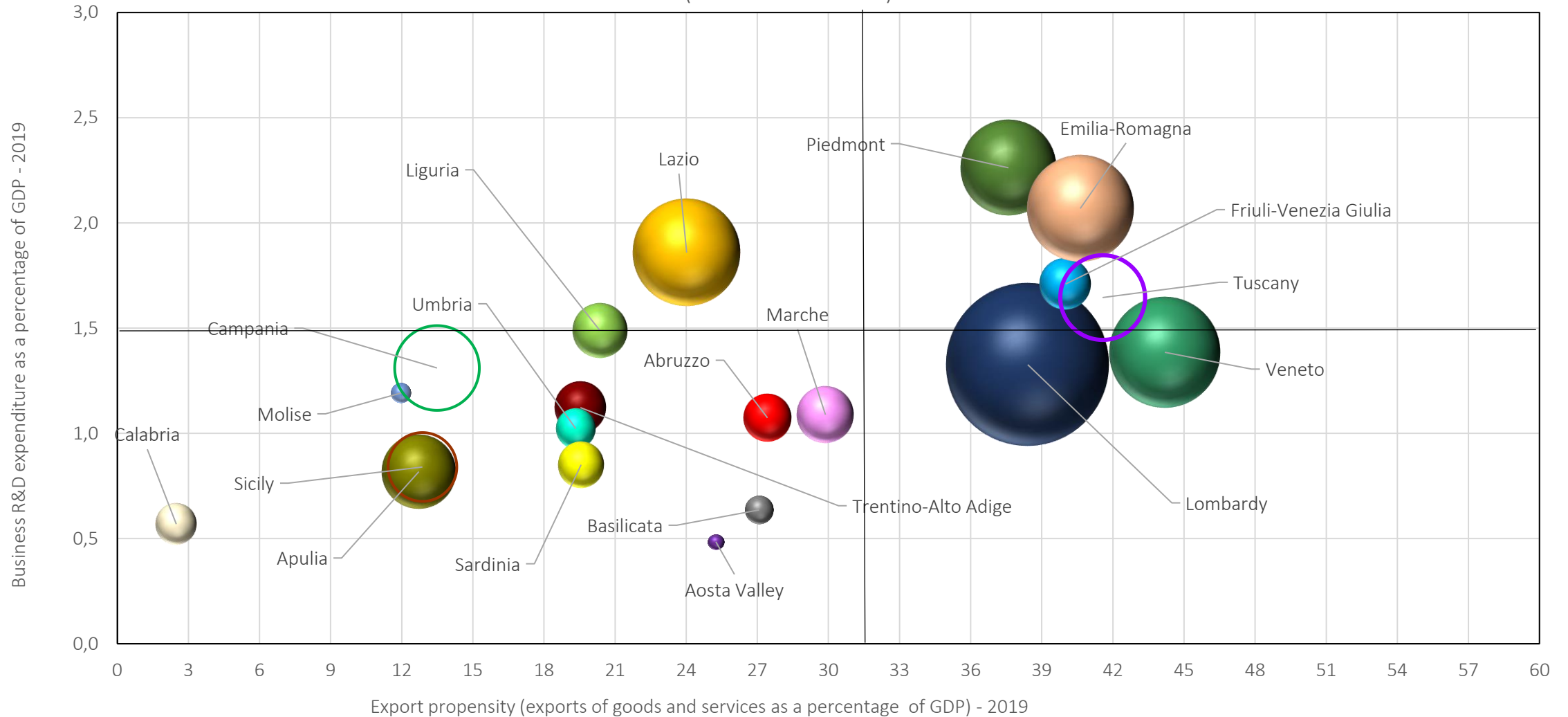
High
territorial
concentration

Provincial shares of Abruzzo merchandise exports

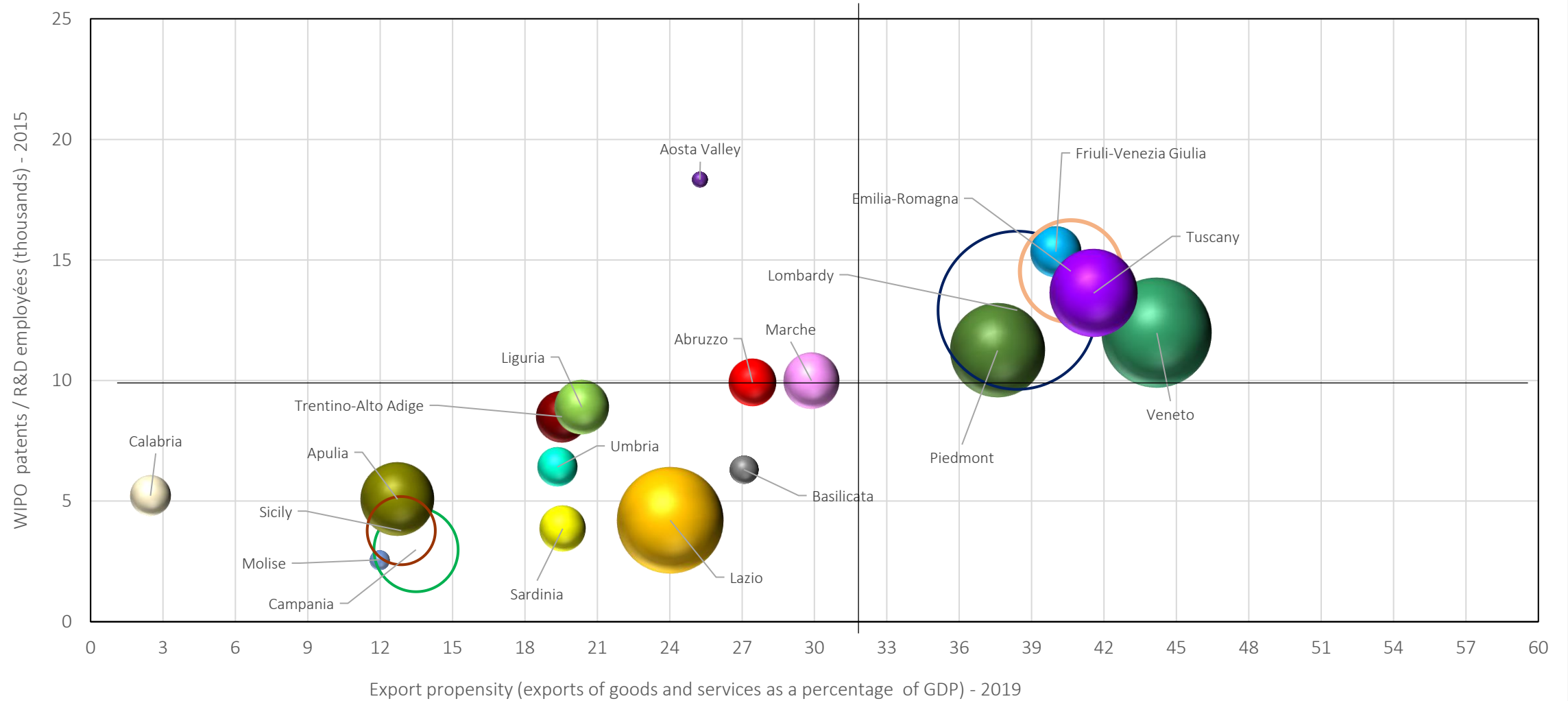
(percentages at current prices)



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



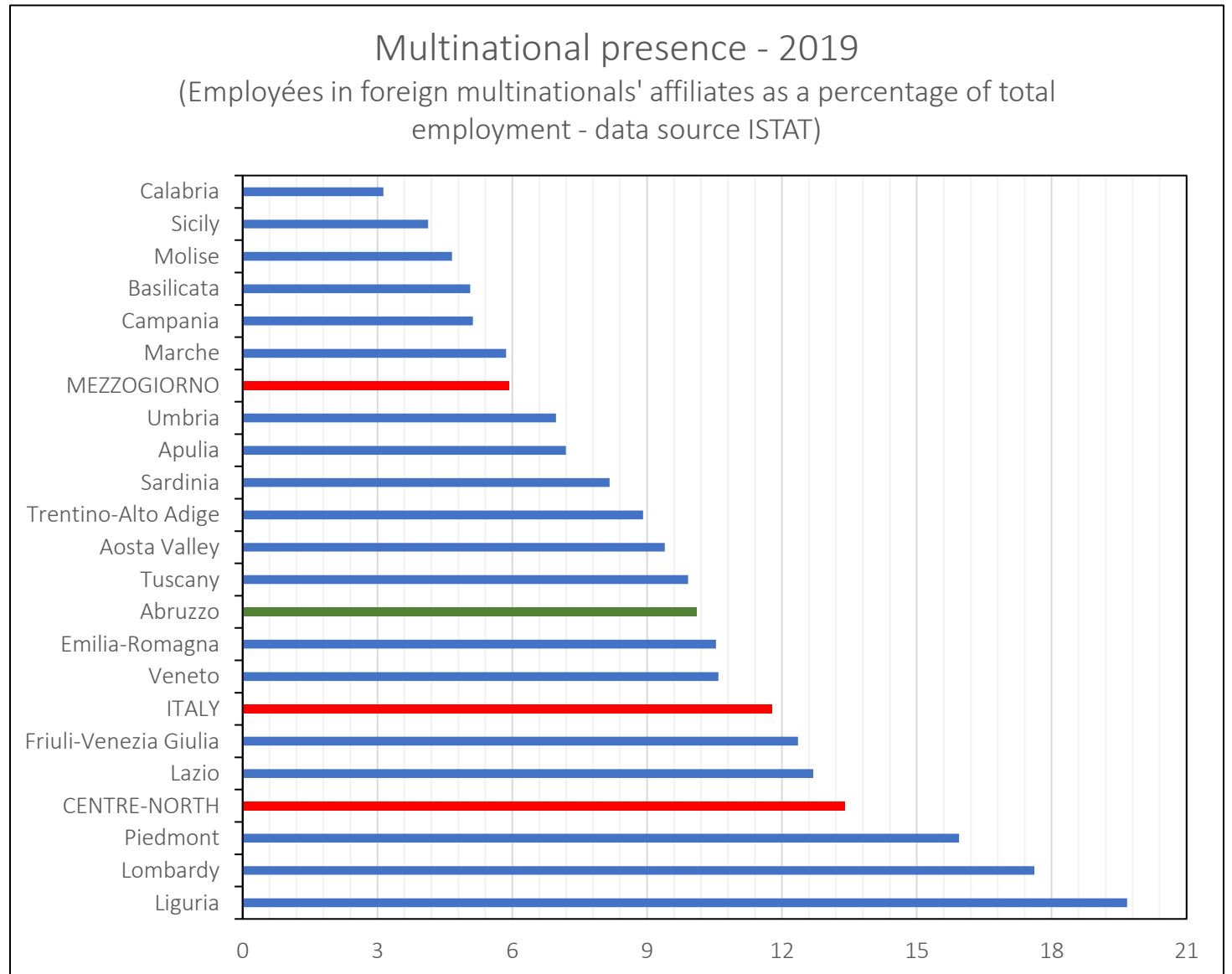
Export propensity and patent productivity (data source - ISTAT)



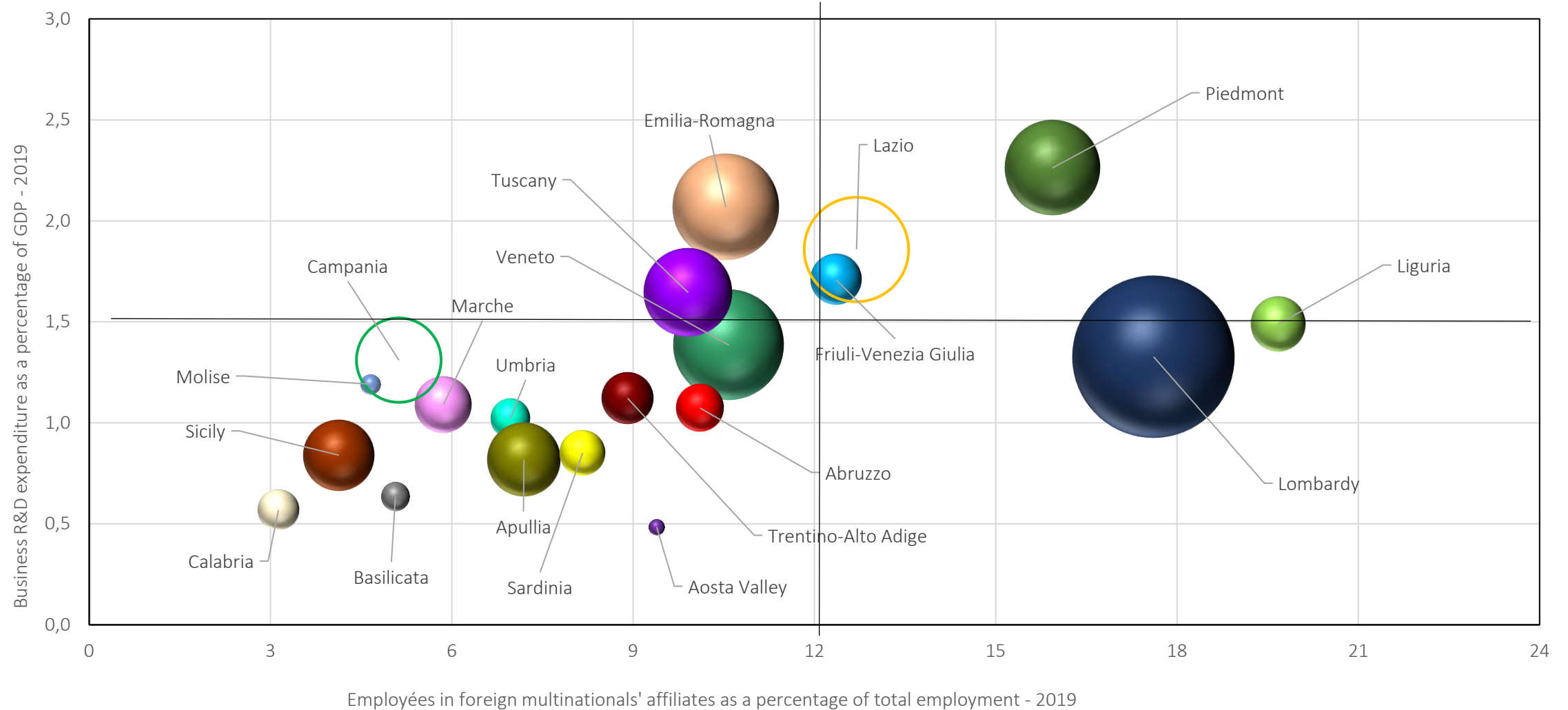
International integration and local development: the role of multinational companies

- 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.

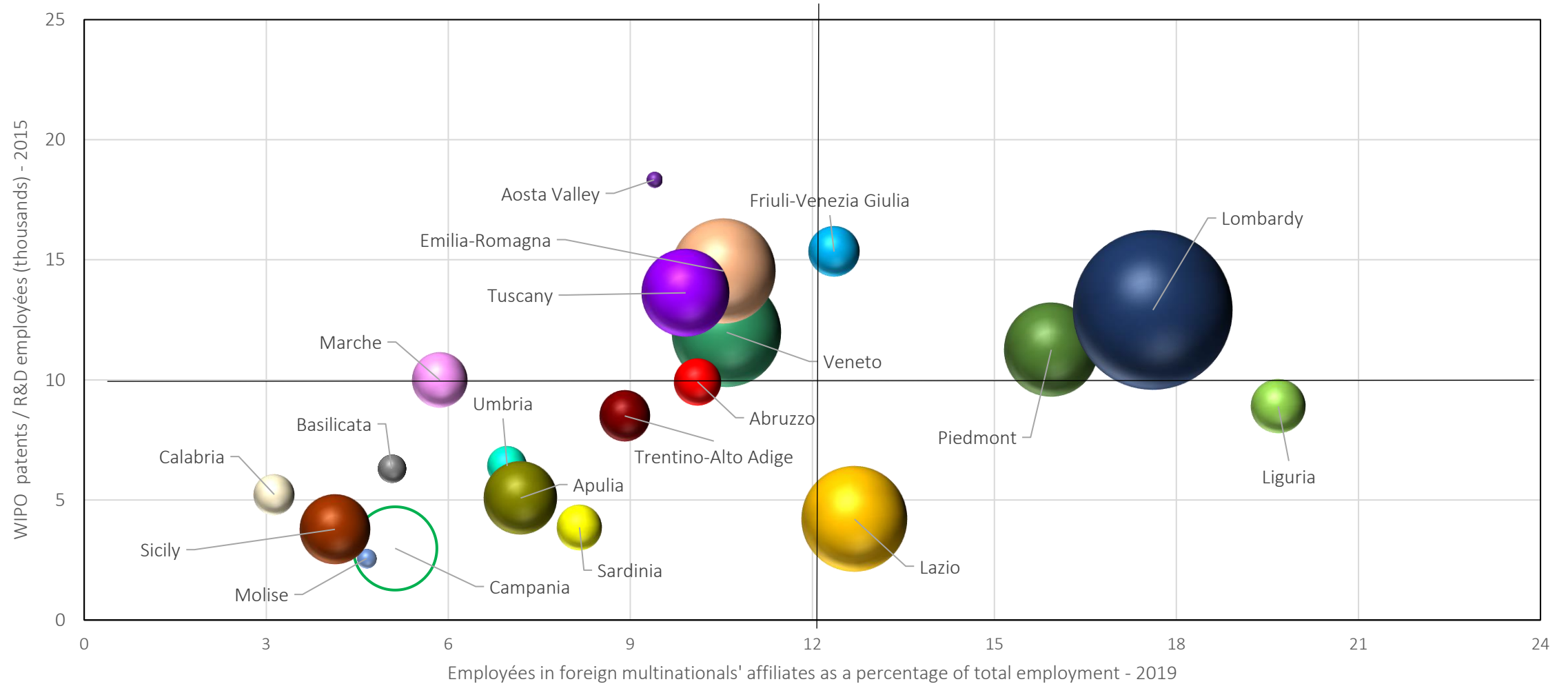


Multinational presence and business R&D expenditure (data source - ISTAT)

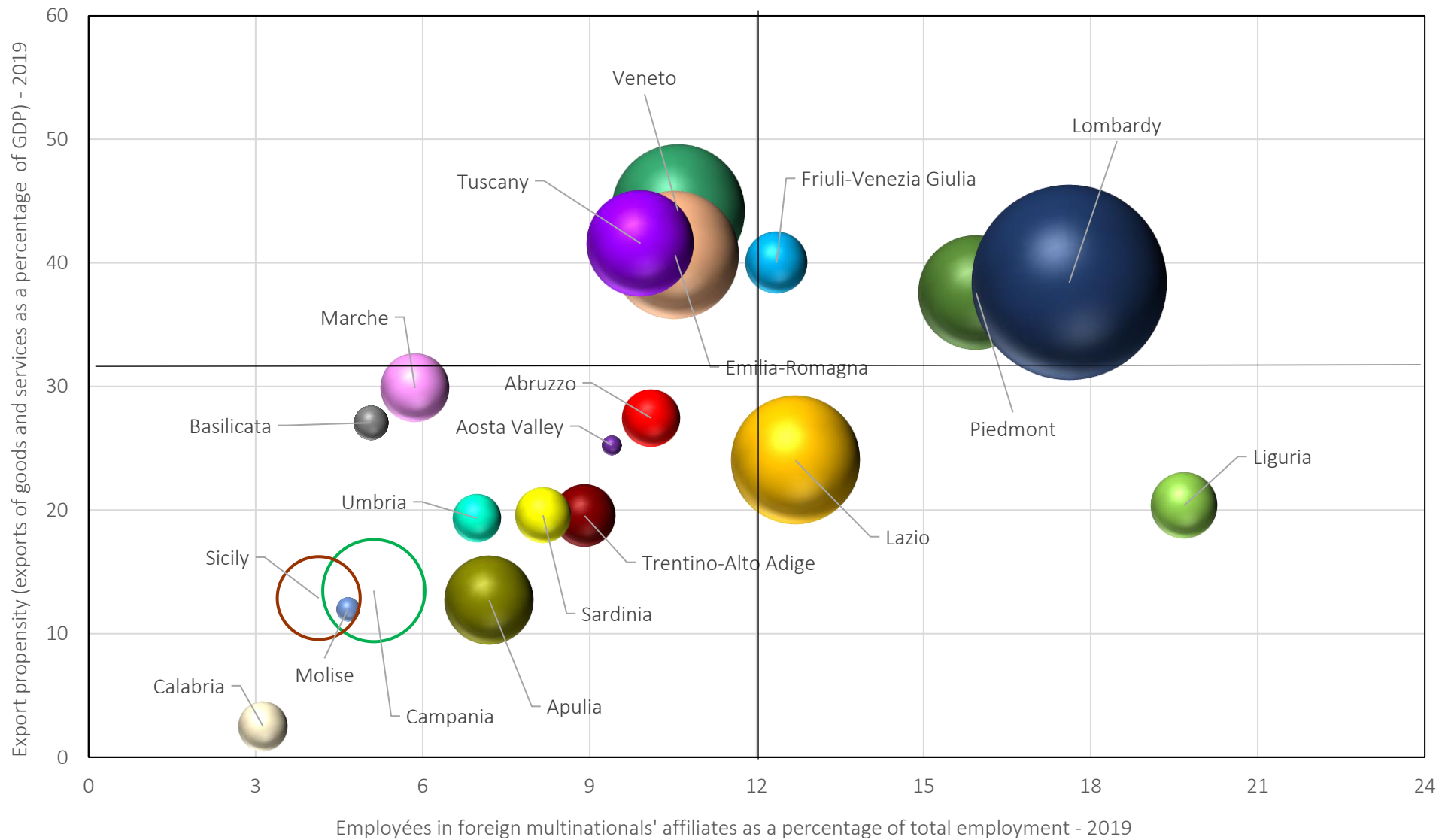


Multinational presence and patent productivity

(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

Back in the past: external linkages and local development

- The power of L'Aquila in 13th 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 14th century the city was struck by plague epidemics (1348, 1363) and earthquakes (1349).
- Reconstruction began soon, however. In the 14th–15th century Jewish families came to live in the city.
- The 15th 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.



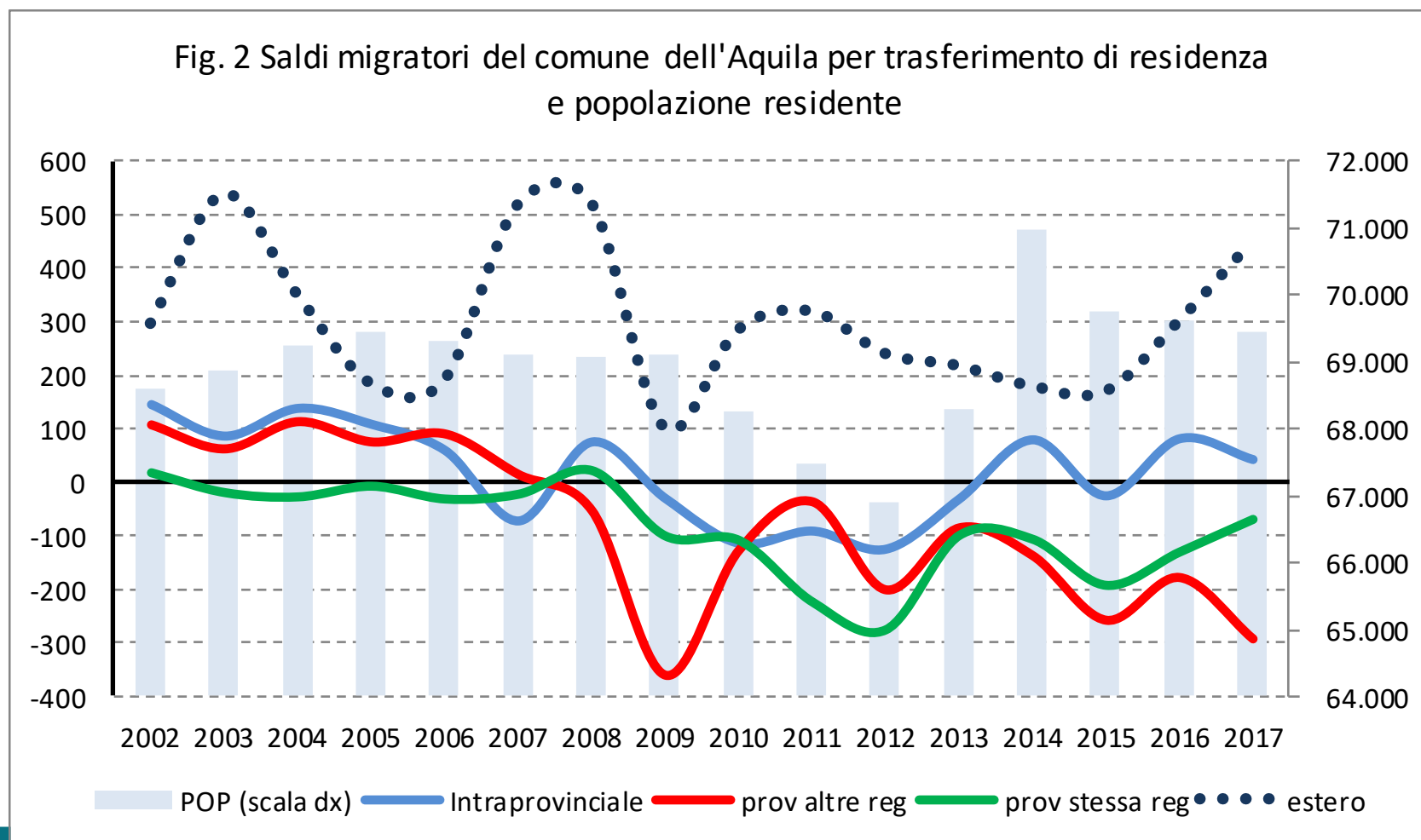
The 2009 earthquake



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

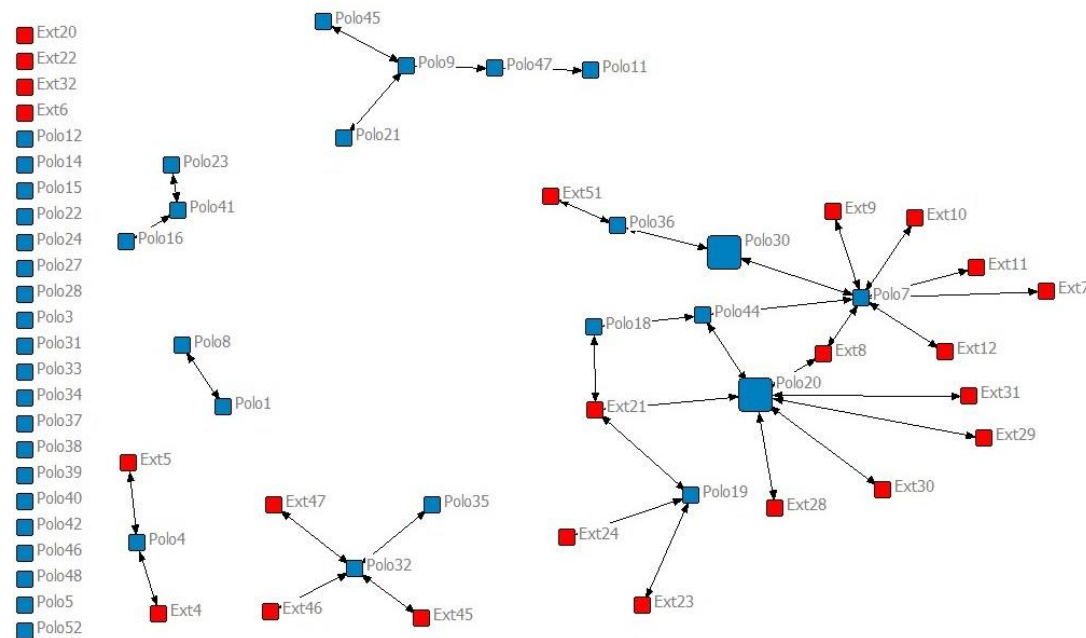


Bridging connections: the regional specialization strategy

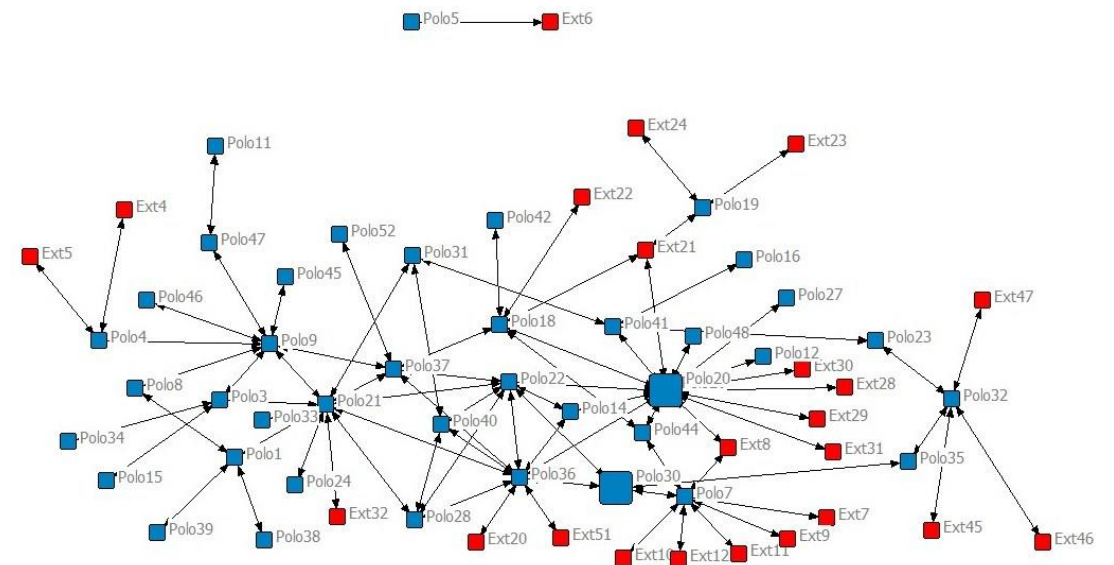
- Deep linkages between economic structure and growth capacity
- «Smart specialization strategy» of the Abruzzo region
 - Automotive
 - ICT/aerospace
 - Life sciences and pharmaceutical industry
 - Agri-food
 - Fashion and design
- The «Pescara charter»: Abruzzo as the region of sustainable industry

Bridging connections: regional innovation poles

ICT Abruzzo innovation pole: innovation network *before* the birth of the Pole (2012)



ICT Abruzzo innovation pole: innovation network *after* the birth of the Pole (2014)



Bridging connections: the «Territori Aperti» project

- 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.



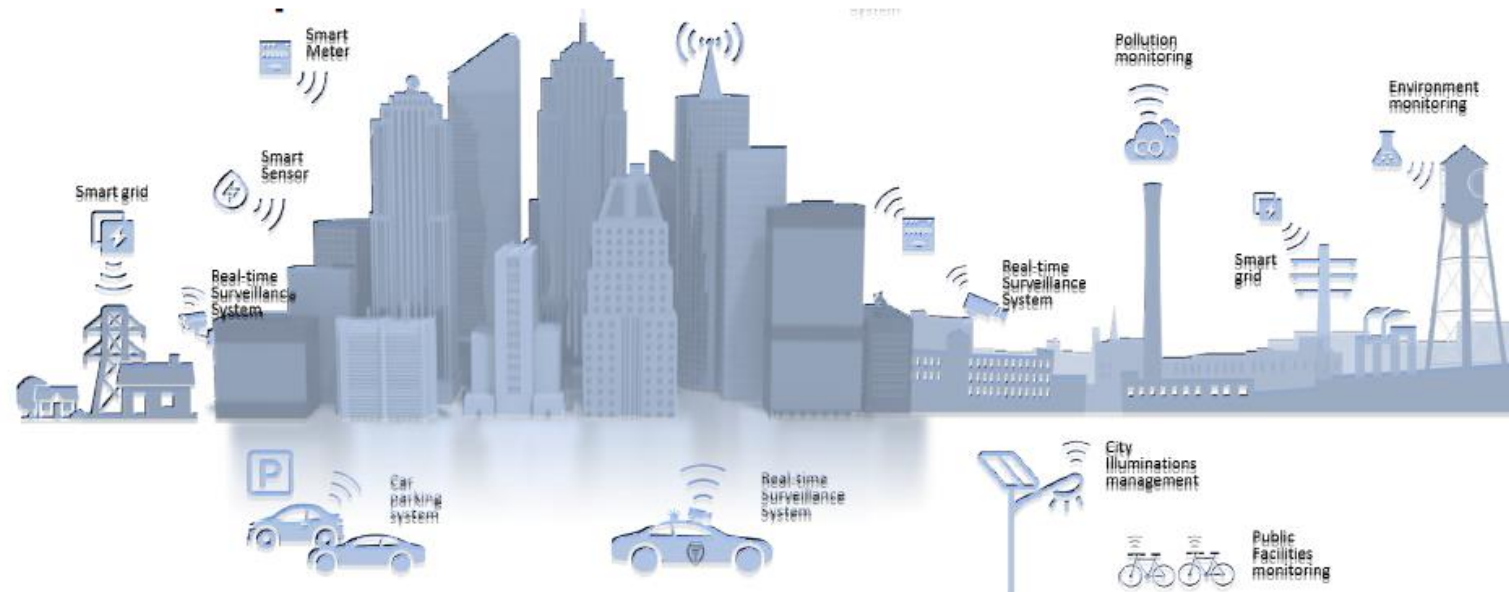
Deep in the future: NUSES

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



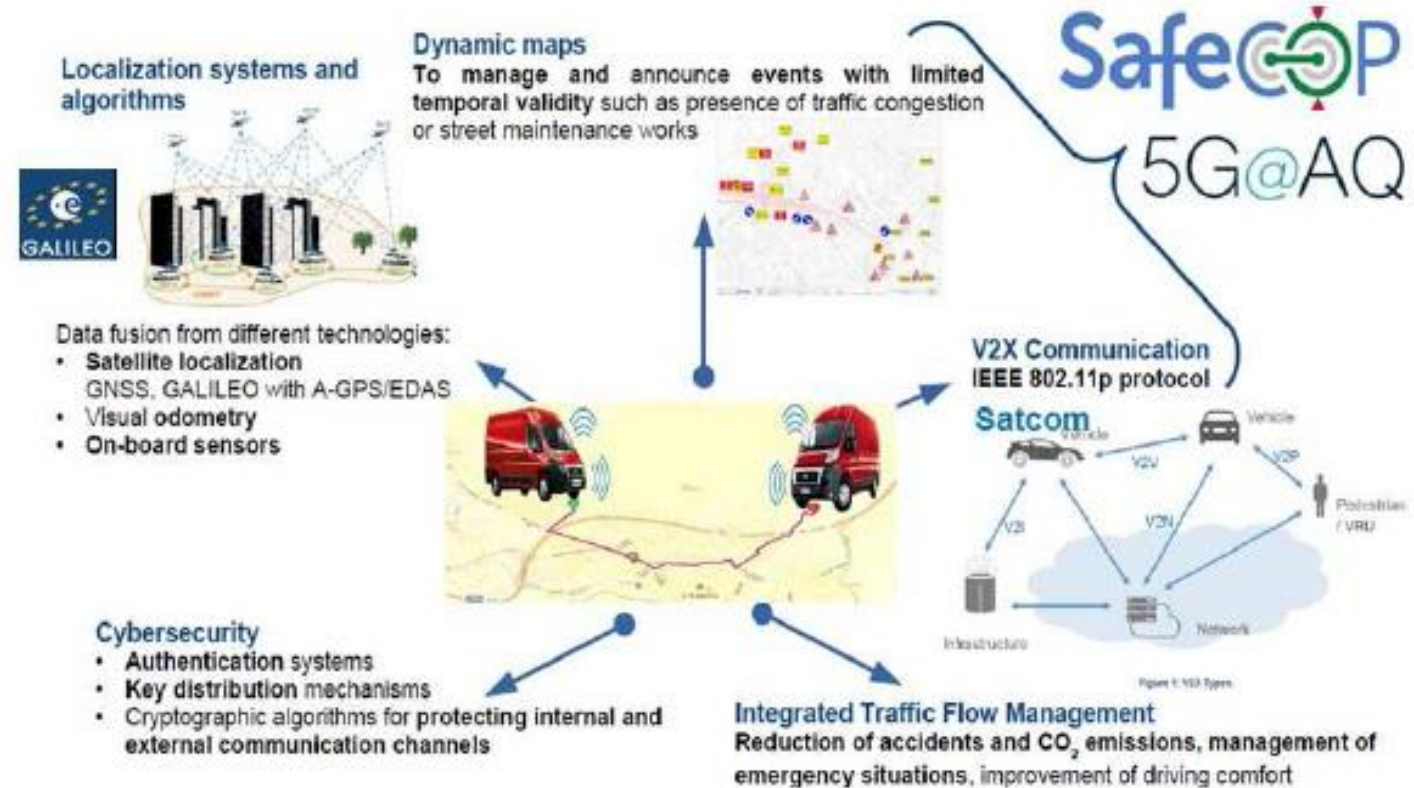
Deep in the future: 5G

- Experimental activity (2017-2021) to test innovative services for future 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 Ducato vans of FCA will be 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



Concluding statements

- International integration is a fundamental driver of economic growth and societal progress
- The nationalist (and localistic) backlash can be explained by the increase in inequalities of income, wealth and opportunities
- However, the increase in inequalities is not due to globalization
- It is mostly the result of mechanisms of wealth accumulation, that are affected by political choices at the domestic level, e.g. fiscal policies
- The most important challenge for the education system is defending the ethical, social and economic value of international integration in all its dimensions