Comparative Analysis Supporting Cohesion Policy Evaluation Based on STeMA Model: Insights from Tuscany and Emilia-Romagna

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Un'analisi comparativa a sostegno della valutazione STeMA delle politiche di coesione: spunti di riflessione da Toscana ed Emilia Romagna

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Abstract. This paper illustrates the work of the Florence Research unit, in particular the intermediate work of selection of indicators related to the topic "productivity", for their inclusion in the STeMA model for the evaluation of territorial cohesion policies. As already indicated in the first working paper of this PRIN, we have combined for this selection the concept of "productivity" with that of "territorial competitiveness", more correct for a survey about geographical economies (NUTS 3) as unit of analysis. The selection identified around 250 indicators, which were progressively reduced through a screening process. At the end, 12 indicators were included in the STeMA model. We have subsequently discussed the NUTS 3 geographical distribution of some of these indicators, inserting them within a synthetic reconstruction of the regional articulation of Italian development. Then we discussed deeper the cases of Tuscany and Emilia Romagna, emphasizing the aspects of analogy and diversity, both in the development model and in territorial policies.

Keywords: productivity, competitiveness, indicators, regional development, territorial policies.

Riassunto. Il contributo illustra il lavoro dell'unità di ricerca di Firenze, in particolare il lavoro intermedio di selezione degli indicatori relativi al tema "produttività", per la loro inclusione nel modello STeMA ai fini della valutazione delle politiche di coesione territoriale. Per questa selezione, come già segnalato nel primo working paper di questo PRIN, abbiamo unito al concetto di "produttività" quello di competitività, inteso come "competitività territoriale", più corretto per una indagine che non ha come unità di analisi le imprese, ma le economie territoriali. La selezione ha identificato circa 250 indicatori, che sono stati progressivamente ridotti con un processo di screening. Al termine 12 indicatori sono stati inclusi nel modello STeMA. Successivamente abbiamo osservato la distribuzione geografica NUTS 3 di alcuni di questi indicatori, inserendoli

all'interno di una sintetica ricostruzione dell'articolazione regionale dello sviluppo italiano. Infine abbiamo discusso più a fondo i casi della Toscana e dell'Emilia Romagna, sottolineando gli elementi di analogia e di diversità, sia nel modello di sviluppo sia nelle politiche territoriali.

Parole chiave: produttività, competitività, indicatori, sviluppo regionale, politiche territoriali.

1. Introduction

Within the research work of the PRIN 2015 - Territorial Impact Assessment of territorial cohesion of Italian Regions (henceforth PRIN 2015) covered in this special issue, our Local Research Unit was assigned to investigate the aspects relating to the theme *productivity*, and in this respect, to provide an analytical focus regarding Tuscany and Emilia-Romagna. As already discussed in the contribution published after the first year of activity (Dini, Martellozzo 2018), our research work has been systematically characterized by synergistically crossing the themes *productivity* and *competitiveness* (framed in this PRIN 2015 as *territorial competitiveness*). In this way, we have defined a broader and more appropriate thematic enucleation of the topic – rather than referring solely to Productivity *per se* – which resulted in a preliminary identification of few hundreds of indicators for its investigation. The initial number was reduced to circa 40 indicators due to data availability and relevance criteria. Then the selected list was given to the Principal Investigator Unit, where a further screening process reduced them to 12.

In here, we firstly describe the methodological assumptions at the base of the selection procedure of the indicators; while in the second part we briefly cover the procedural key steps that narrowed down to the twelve indicators chosen to be used in the STeMA model (Prezioso et al. 2005). In the third and fourth sections – consistently with the methodological rationale of the entire PRIN 2015, and with the choice of the NUTS 3 level (*Nomenclature des unités territoriales statistiques*. EUROSTAT 2018) as the minimum territorial unit of analysis – we describe the provincial distribution of the most significant indicators at the national level for Italy. In the fifth paragraph, instead, we aim at problematizing some evidences focusing on the regional aggregates of Tuscany and Emilia-Romagna. Nevertheless, before presenting the regional analysis, it is worth to highlight some aspects encompassing both Regions.

2. From Productivity to (territorial) Competitiveness

According to Marginal or Neoclassical Economics, in order to identify the efficiency conditions of the economic process, *productivity* is a central and exhaustive concept, which can be exemplified through the Cobb-Douglas Production Function (1928) and the subsequent Solow Model (1956), conveying the famous *Neoclassical Production Function*. In all these formalizations (and in the subsequent ones that stemmed from those) production is a function of the application of capital and labour, which consequently are the only determinants – together with technology – of economic growth. This assumption makes productivity completely central in the marginal analysis of the economic process, with the so-called TPF, Total Factor Productivity, which becomes its main efficiency indicator. The Marginalist School derives it from a strongly reductionist reading of Smith's Theory of Value, and in particular of the relationship between *productivity* and *technical division of labour*. We have already had occasion to recall (Dini, Martellozzo 2018) how this view is challenged within economics itself. Smith's analysis of the relationship between *specialization* and *productivity* does not solely cover the technical division of labour within a company, but also the social division of labour between companies, hence characterizing the entire productive sector, and thus shaping geographic economies and territories. This strong connection with the physical and concrete nature of economic processes is lost by the marginalist abstraction, hitherto is conversely well known by the Keynesian School, which contested (Kaldor 1957) the ability of the TPF to appropriately indicate the real factors since the Solow Model of growth was released. In here we also posit that *productivity*, when entirely sensed through economic indicators, is poorly equipped to disentangle the real complexity of geographic economies. Therefore, we adopted a definition that does not exclusively build upon the concept of productivity, but interlaces it with *competitiveness*.

Competitiveness derives from Smith's formulation of *Competition,* and in the analysis and interpretation of the economic process by *orthodox economics*[1] is consid-

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[1] In the thought of Adam Smith the term "Competitiveness" indicates the condition of market efficiency. Competition transforms "private vices" of the producers into "public pleasures", that is public virtues able to ensure collective benefits. In the later theorizations of the Classical school (J. S. Mill 1848) Competition between producers is the means to identify the correct use of resources among alternative uses. In the Marginalist School (Jevons 1871; Walras 1874) and later in the economic mainstream up to the present, Competition between producers ensures the equilibrium of prices within which ethics (zero over-profits) and practice (optimal allocation of resources, growth) come together in a natural and efficient way.

ered as central as *productivity* (if not more). Nonetheless, *competitiveness* is also considered extremely important both in economic geography and in regional sciences. As a matter of fact, its definition has been being used for more than thirty years (Endogenous Development, GREMI's Milieu of Innovation, Californian School of Externalities, Flexible Specialization etc.) and it is linked to a set of transdisciplinary territorial indicators. This territorial significance already characterized heterodox economics in the late-twentieth-century with the recovery of Marshall's externalities (Marshall 1890; Becattini 1979), and which could also refer to Hirschman's theories on social capital in economic development.

Although different, the before mentioned theories believe that *competitiveness* maintains complex relationships not solely with *micro/macro-economic variables but also with non-economic (as well as social, political, cultural, and environmental) values* (Camagni 2017). In this perspective, it is more suitable to detect/decode the complexity of the relations of a regional aggregate. It isn't random that applied economics surveys, even with mechanistic and quite rough criteria, search of a quantification of competitiveness through complex indexes. In this regard, one of the most acknowledged metrics is the *Global Competitiveness Index* developed since 2005 within the World Economic Forum; it is referred to national economies and it stems on the basis of 12 components (Schwab, Sala-i-Martin 2015). These are: Institutions, Infrastructures, Macroeconomic stability, Health and primary education, Higher education and training, Efficiency of the commodity market, Efficiency of the labour market, Efficiency of the financial market, Technological readiness, Market size, Corporate sophistication, Innovation.

3. The methodological approach in the selection of regional territorial competitiveness indicators

The selection process of indicators is composed of few subsequent steps, which have been necessary to overcome some limitations. These difficulties can be essentially reduced to two problems. The first refers to the fact that the ensemble of indicators often used in literature to investigate this topic are not always collected diachronically in a systematic way, both for the area under investigation and at the geographical detail needed. For example, the PRIN 2015 focuses on whole Italy, but its intent is to identify a methodology that can be likely extended to other EU countries. It is therefore necessary to choose indicators that are consistently available at the NUTS 3 level. The second limitation, as previously

anticipate, deals with the complex - and not exclusively - economic nature of the *productivity/competitiveness* dimension, as we have decided to characterize it.

It is due to these limitations that the selection process focused on measures and dimensions aimed at capturing the complexity of a multifaceted territorial competitiveness. At first, an exploratory survey was carried out, as exhaustive as possible, of the indicators used in literature to deal with the *competitiveness/productivity* dimension, based on their availability at the NUTS 2 or NUTS 3 level. This resulted in a set of more than 400 indicators. The main sources for this search were the several online repositories from the Italian and European statistics institutes (ISTAT and EUROSTAT), and in particular the Database of Territorial Indicators for Development Policies from ISTAT. This database groups indicators according to either their main macro-thematic area, or the development objective they mainly aim and to which they can be reasonably related.

Subsequently, the selection was refined according to few additional criteria. The first criterion has been *redundancy* among indicators, which was assessed and resulted in a smaller selection of circa 250 elements. Then, we filtered these 250 indicators according to their temporal (and up-to-date) coherence with the reference years covered in the PRIN 2015 (2016-2018); this led to a further shrunk of the selection to 165 indicators. These indicators broadly covered all the twelve thematic areas used by the Global Competitiveness Index, and, in particular, those of the six areas Institutions, Infrastructures, Health and Primary Education, Higher Education and Training, Labour Market Efficiency, Innovation. At this point, it is worth to note that the selection obtained resulted in some overlapping with other thematic areas studied in the PRIN 2015 by other Local Research Units.

In fact the full set of these indicators refers to an interpretation of *territorial competitiveness* intended as the capacity of a given geographical economy to respond to the demands of change (market integration and re-specialisation, technological change) not only through the competitiveness of its firms, but through the efficiency of local governance processes; in other words a territorial system able to make interact public and private actors and to provide consistent and effective responses. It is a plurality of paths that leads, in different ways, to the appreciation of the local condition, and that leads to the concept of *territorial capital*, another of the key terms studied within the PRIN 2015.

Therefore, in light of these considerations we carried out a further selection building upon a more rigorous definition, in order to identify (when possible) complementary – or not covered – indicators with the ones
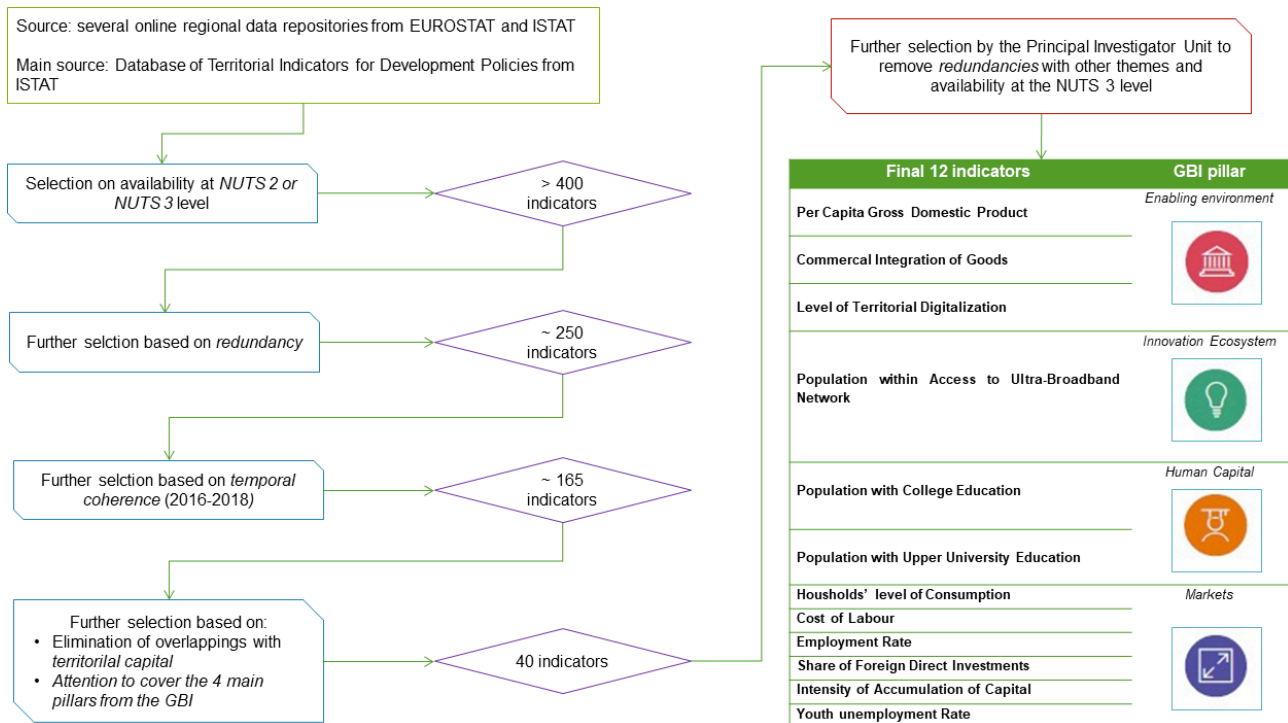
Figure 1. Indicators Selection Process workflow. Source: authors' elaboration.

identified for the *territorial capital* dimension. In doing so, a more restrictive interpretation of the four thematic axes theoretically framing the Global Competitive Index (Markets, Enabling Environment, Innovation Ecosystem, Human Capital) was used as a guideline. This led to a strong skimming, with the identification of 40 indicators that were passed to the scientific supervisory board of the PRIN 2015. Here, after further comparison with the indicators developed by the other Local Research Units the list of the indicators of the *competitiveness/productivity* theme was reduced to 12 indicators (fig. 1).

4. Indicators in Italy

4.1 Some preliminary considerations on Italian development in the last decades

As already discussed elsewhere in the methodological part, the STeMA model adopted in the PRIN 2015 was tailored to develop territorial analysis using the NUTS 3 level as the minimum geographical unit – which in Italy corresponds to the administrative lattice of the Provinces – and the distribution of the several collected indicators is examined through quartiles. Thus, each indicator, groups Provinces into four classes, corre-

sponding to a condition of high, medium-high, medium-low, or low intensity of the phenomenon captured to the given indicator. This choice finds justification with the strategic nature of the STeMA approach (application to very wide areas, i.e. up to the entire EU, and the combined use of hundreds of indicators). Notwithstanding, we are aware that the informative content may result inevitably impoverished if each indicator is discussed individually; however, the NUTS 3 level of analysis can be appropriately used to show some general, yet relevant, geographical differentials through the distribution patterns of few indicators from the 12 previously selected, both at regional and national scales. Therefore, we aim here at presenting and discussing the distribution of the following final indicators: income per capita, population with access to broadband, employment rate (15-64 years), and youth unemployment (15-24 years).

We first summarize the morphology shaped by the development processes in our country, so to shed light on the whole environment hosting the diversification processes, as it is measured – as far as we are concerned – through this small subset of relevant indicators.

In accordance with the geographical shape of the Italian peninsula (which favours divergence rather than convergence), and with the historical and cultural fragmentation of institutions in our country, social-econom-

ic development in Italy roots onto deep fault lines since the unification of the country; however, for an accurate and exhaustive description of their historical transformations (from 1861 to 2011) see the work from Daniele and Malanima (2011, 2017). In brief, the geographical diversifications of development became particularly relevant in the republican period due to the modernization of industrial processes, which begun in the post-war period. Initially, the interpretation was dual, and as such the famous model from Vera Lutz distinguished the *developed North* from the *lagging-behind South* (1958, 1962); consequently, territorial redistribution policies – as *Cassa del Mezzogiorno* – where crafted and tailored to address this geo-dichotomy.

Later, since the first signs in the Sixties (Muscarà 1967) to the late Seventies, the interpretation became tripartite (Bagnasco 1977; Fuà, Zacchia 1983). This reading highlights that since the mid-Sixties the growth capacity of the Fordist urban-industrial regions (Turin and Milan, the two strong points of the so-called Italian Industrial Triangle) started declining, and was replaced by strong industrial growth in the NEC regions (North-Eastern and Central Italy). Hence, Italy acquired a clear geographical tripartite nature: (i) the North-West mainly hinging on those large companies that characterized the earlier industrialization, and now showing the signs of a premature deindustrialization, coupled in major urban areas with visible processes of *tertiarization* and orientation to post-productive specializations. (ii) The North-East and Centre that, on the other hand, were rapidly industrializing, mostly fuelled by an export-oriented production model based on mono-specialized local systems of SMEs (i.e. often referred in literature as Marshallian industrial districts), widely found in Emilia-Romagna, Tuscany, Veneto and Marche; (iii) and finally the South, with diversified regional trends, but which, as an aggregate, did not show signs of entrepreneurial vitality, and that was exhausting the redistribution policies from which it had previously benefited.

This is the period of the *Small is beautiful*, in which it was believed that the traditional model of large industries, based on internal economies of scale, and concentrated in few large urban-industrial regions, could be replaced by a different functional and geographical model, based on flexibility and on small dimensions. In reality, this phase of specialization of our country's industry will only last two decades, acquiring critical mass in the 1960s and beginning to decline at the end of the 1980s. In fact, the model started its decline with the end of the Cold War and the so-called globalization. Globalization integrates markets, and produces processes of industrial de-specialization affecting the Global North and con-

sequently also Italian manufacturing. The opening of internal markets implied that every regional economy no longer referred primarily to its own national market, rather to external markets; while the rapid development of new production spaces – characterized by low factor costs – diverted investments differently, mainly towards East Asia. It followed a difficult process of de-specialization/re-specialization that diversifies economic trends of the different geographical aggregates. In the North-West the metropolitan region of Milan reacted better than Turin, and in general Lombardy was more resilient than Piedmont and Liguria.

In the North-East and Centre de-industrialization had a greater impact on Tuscany. Whereas, Emilia-Romagna remained strongly competitive due to its strong manufacturing vocation (in particular along the *Via Emilia)*. Veneto, on the other hand, positively accelerated its industrialization process so that it became the most specialized Italian region in the secondary sector at the turn of the century. Economic development was stronger on the Adriatic corridor than on the Tyrrhenian one: Marche also profitably managed their own re-specialization process, while Abruzzo did not show significant signs of productive vitality. The rest of South Italy saw the emergence of some manufacturing specializations leading high-tech industries in the urban belt of few major cities (Naples, Catania, Bari), and of mono-productive local manufacturing systems in some small towns. However, these were never systemic processes, and were never capable of closing the development gap. Later on, the NEC model lost momentum resulting in a substantial re-concentration of development in the North, along the horizontal axis of the Po river (Piedmont-Lombardy-Veneto, implemented by Emilia-Romagna) which catalysed most of the competitiveness, innovation, entrepreneurial creativity, and consequently of the country's GDP.

Along with these processes of regional de-specialization/re-specialization, there is a marked evolution in spatial planning paradigm and in particular in the relationship between urban and non-urban areas. The phase of industrial modernization, from the post-war period to the 1960s, resulted in a considerable urbanization; in other words, an outflow from rural areas and the abandonment of mountain areas. The crisis of the great Fordist industry halted the migratory flow from the South and diverted it to the regions of Central and North-East Italy, where the industrial labour markets were growing within the *campagna urbanizzata* (literally "urbanized countryside") (i.e. the smaller centres). Conversely, in the major cities of those regions the crisis stimulated a de-industrialization process which was experienced painfully in urban labour

markets. The crisis of the industrial districts that started in the nineties however changed the situation again. While district labour markets were suffering, major centres started developing tertiary markets, and economic vitality was diverted towards larger cities again.

These processes exacerbate the North-South divide, thus characterizing the real and historical rooted dichotomy of Italian development. The Nineties saw the emergence of regionalist political formations (more precisely secessionist) in the North, which reached the national government and required that redistribution policies, instead of addressing solely the *Mezzogiorno* (i.e. the southern Regions), had to be shared among all Regions. Furthermore, a set of national laws (the so called "Bassanini Acts", 1997-1999 and the Constitutional Reform 2001) transferred most of the functions of the central State to the Regions, in particular regarding: health, public transport, labour markets, and (only for some competencies) also education. Central and northern Regions have usually used this reform well and, starting from the possession of good quality structures, have provided themselves with effective services. Southern Regions (also due to the much lower allocation of social fixed capital and the sterility of their labour markets) were not able to keep the pace. Thus, both for individual wealth and for the provision of services, the distance

between the northern and southern parts of the country in the last twenty years has increased considerably.

4.2 Provincial distribution of indicators

In this paragraph, we want to problematize the provincial distribution of the selected indicators in the light of the geographical dichotomy described above. When using as a term of comparison the national value of GDP per capita in 2017, the GDP per capita of central Regions (i.e. Tuscany, Umbria, Marche and Lazio) is slightly higher than the national average, in the North is around 120% of the national average; while in the South is only around 65%. Furthermore, GDP per capita in the most populous regions in the North and in the South compared to national average, respectively Lombardy and Sicily, sees the former accounting for more than twofold compared to the latter (128% vs 60%) of national per capita GDP in 2013 (EUROSTAT 2015, https://ec.europa.eu/eurostat/news/themes-in-the-spotlight/regional-gdp). The provincial distribution of GDP per capita in 2017 illustrated in fig. 2A confirms such trend. The entire North (with the exception of four Provinces in the North-West: Imperia, Asti, Verbania and Pavia) sets in the first two quartiles (i.e. above the median), while the entire Trentino-Alto Adige, the entire Veneto (with the excep-
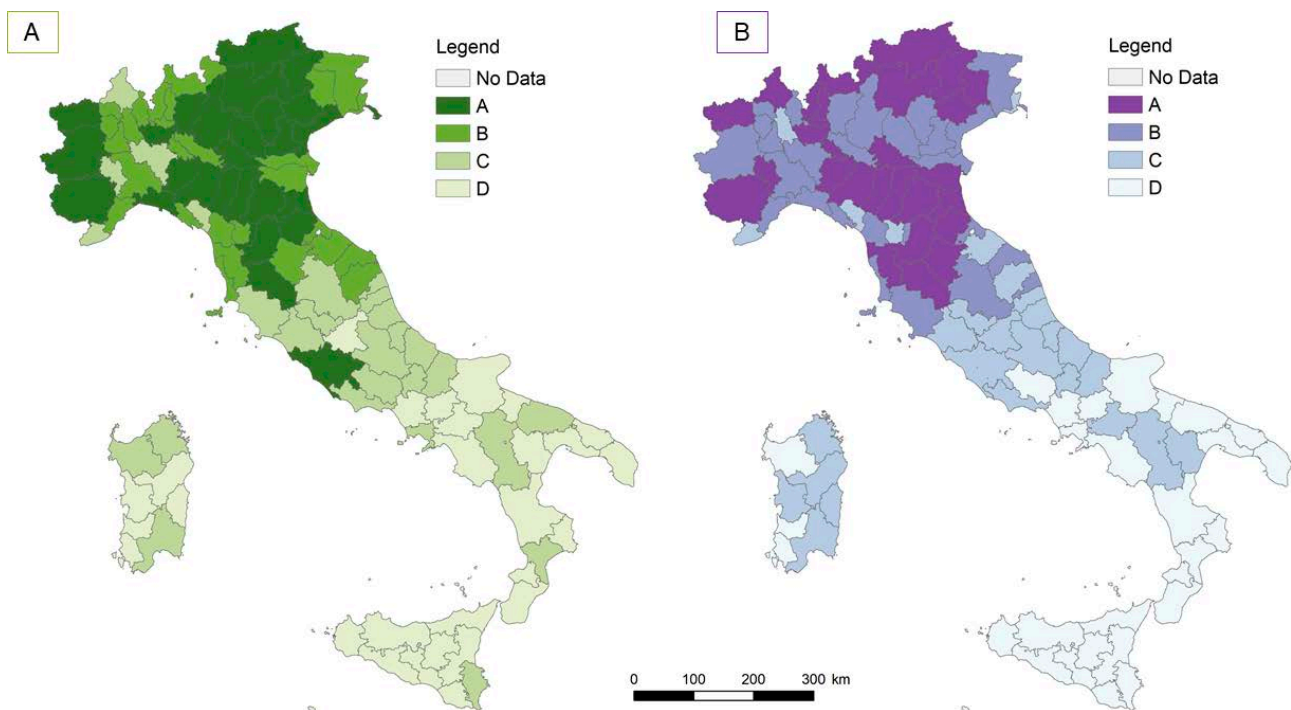

Figure 2. A. GDP per capita; B. Employment rate within population aged 15-64 (NUTS3 2016). Source: authors' elaboration.

tion of Rovigo) and the entire Emilia-Romagna (with the exception of Ferrara, which is also contiguous to Rovigo) belong to the first quartile. Geographical coherences are clearly distinguished in the three westernmost provinces of the country (Aosta, Turin, and Cuneo, all in the first quartile) and in eastern Lombardy, sided by Veneto and by the 2 Autonomous Provinces. Below the Apennines, a (slight) wealth surplus – if compared to the regional trend – favours the three Tuscan provinces of Florence, Prato and Siena, while the figure of the Province of Rome is understandably peculiar due to its role of Capitol city. The Provinces of the other central Regions, including Abruzzo-Molise, are mainly located in the third quartile, those in the South and in the Islands, with few exceptions, are in the last one. The distribution of GDP per capita at the provincial level is the indicator that maps with more precision the geography of the development differentials described in the previous paragraph. Indeed, it highlights the privileged condition of the entire northern axis, the intermediate condition of the central part of the peninsula, and finally the suffering condition of the South (which although being diversified, this indicator well captures its general pattern).

The geographic pattern resulting from the distribution of average individual wealth is reasonably con-

firmed by the employment rate for the range 15-64 years (fig. 2B), which shows a substantial linear correlation between the effectiveness of local labour markets and the gross product. As a matter of fact, can be clearly identified an imaginary line running on the southern borders of Tuscany, Umbria and Marche, thus delimiting a macro-region where all the provinces belonging to the first two quartiles can be found. Conversely, all the provinces located below this line are in the two lower quartiles. Fig. 3A maps the geographical distribution of unemployment rate, which reasonably echoes a very similar pattern of fig 2B. However, fig. 3A does not match and mirror perfectly the pattern of fig. 2B because it portraits *youth* unemployment rate (15-24 years), therefore it refers to a different labour market, which is closely related to schooling rates. Worth to note that the first quartile – hence showing places with the harshest occupational weakness – includes only provinces located below the imaginary line previously mentioned, with the only exceptions of Massa Carrara and Asti.

Besides, when analysing the intensity of ultra-broadband network (fig. 3B) at the provincial level (measured as the percentage of users served by that technology over the total number of internet users) we can clearly see that there is no appreciable correlation neither with
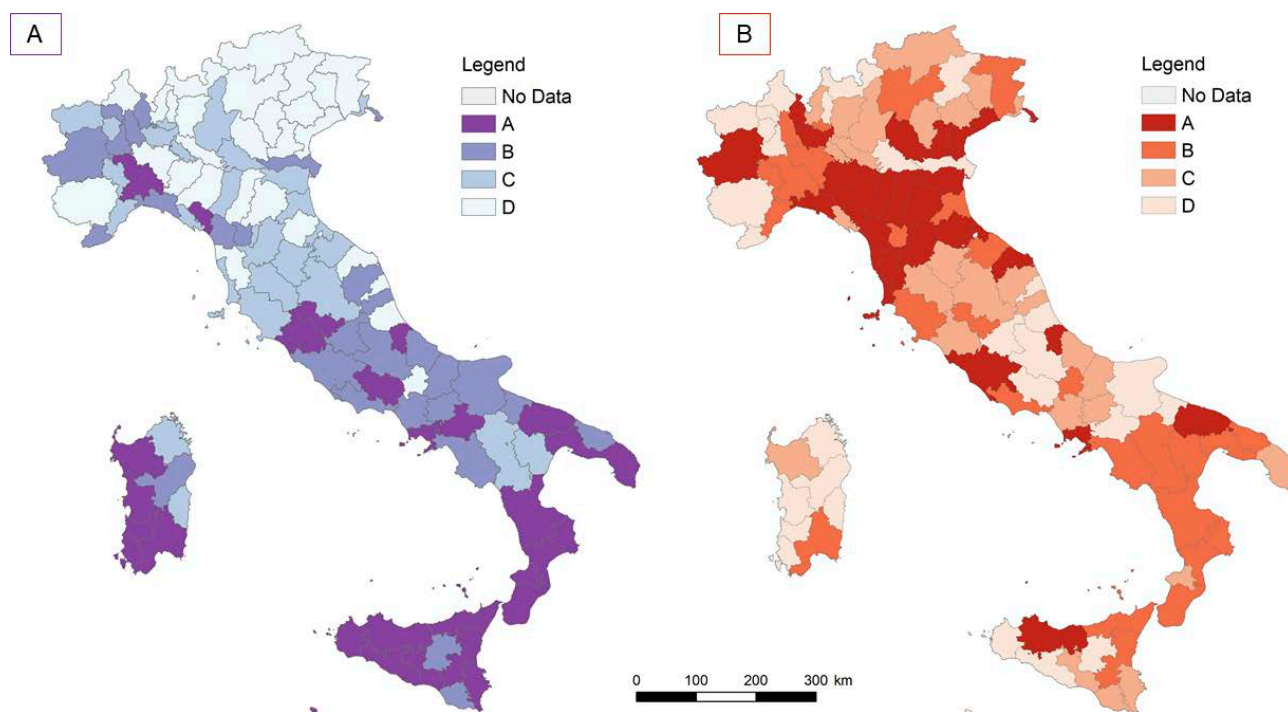
Figure 3. A. Youth unemployment rate within population aged 15-24; B. Ultra-broadband intensity (proportion of ultra-broadband connections over total internet connections) (NUTS 3 2016). Source: authors' elaboration.

the available income, nor with the (both general and specific) conditions of labour markets. Indeed, the most significant factor seems to be the rank of urban areas. In fact, the four largest metropolitan areas of the country (Rome, Milan, Naples, Turin) are all in the upper quartile, which also houses several other regional capitals (i.e. Genoa, Venice, Trieste, Bologna, Florence, Ancona, Pescara, Bari, and Palermo). This is a clear sign that ultra-broadband infrastructure has been realized according to political role and administrative complexity of provinces. Furthermore, all the other provinces belonging to the upper quartile are exclusively located in the Centre-North. Among them those of Emilia Romagna and Tuscany (and not of the main northern regions) prevail, thus indicating that the geographical pattern of this indicator also depends more on the specific investment from local administrations in digital infrastructures, rather than on the degree of market maturity. As further proof, the provinces located in the second quartile are fairly evenly distributed between North and South: a rather infrequent pattern in Italy.

5. Regional analysis

According to the PRIN 2015's methodology, the analysis of regional competitiveness of Tuscany and Emilia-Romagna regions has been synergistically coordinated, so to support the comparison of policies within these two regions, which share – since decades – a left-wing political government, a high reputation in managing structural funds, and a significant central positioning related to main roads and rail infrastructures connecting Central and southern Italy with northern Italy and Central Europe.

Therefore, the following two paragraphs builds on the methodological approach set in this research and introduced for the analysis at national level. The focus into the two regions of specialisation of the Local Research Unit provided a further possibility to enhance the analysis, i.e. to combine analysis of the geospatial distributions of the selected territorial competitiveness indicators with a more thorough knowledge on the historical evolution of territorial policies, thus explaining distributional differentials.

5.1 Emilia-Romagna: evidences and territorial policies

Among the competitiveness and productivity indicators, the analysis of the per capita Gross Domestic Product (GDP), on 2016 data, shows that seven out of nine provinces of the Emilia-Romagna region, rank A and only two (Ferrara and Rimini) rank B (fig. 4A).
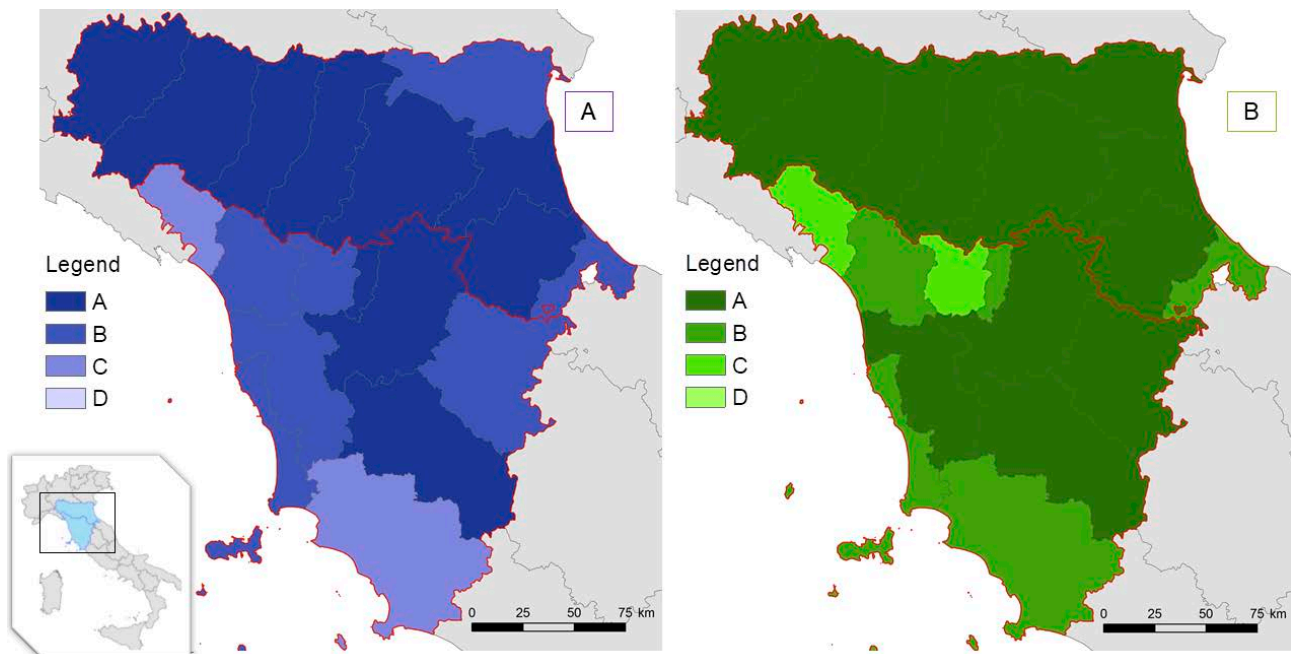
Figure 4. Tuscany and Emilia-Romagna A. GDP per capita; B. employment rate within population aged 15-64 (NUTS 3 2016). Source: authors' elaboration.
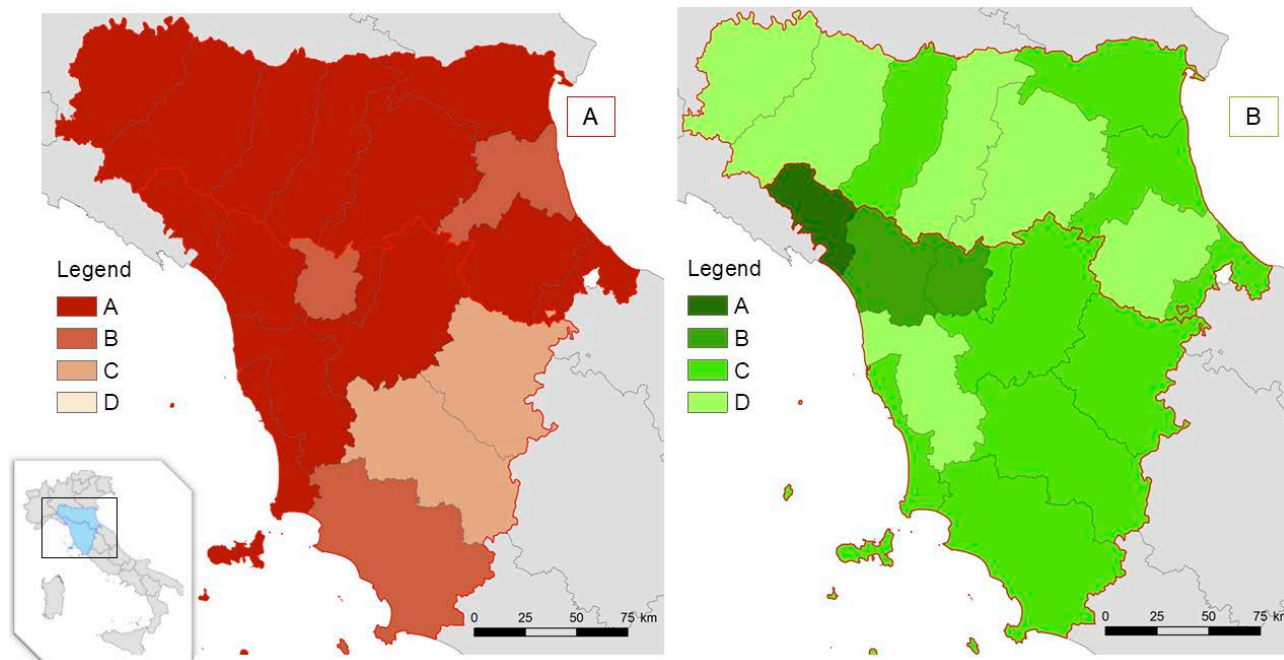
Figure 5. Tuscany and Emilia-Romagna A. Ultra-broadband intensity; B. youth unemployment rate within population aged 15-24 (NUTS 3 2016). Source: authors' elaboration.

By recalling traditional economic geography approaches, this can be explained by an industrialization pattern that benefits of localisation advantages that create clear positive externalities of for firms localized close to logistic hubs and main connection infrastructures. In particular, Emilia-Romagna is benefitting by the direct connection through the Brennero highway and railroad to Bayern and, more in general, to the German industrial system, where a very strongly linked production network has been developed since decades. Moreover, the highest rank of most of the Emilia-Romagna provinces can be related to the seminal works of Bagnasco (1977) and Becattini (1987) inspired by Alfred Marshall's work on positive externalities of agglomeration, where this region is set in the "Third Italy", highlighting the strength and the resilience of the Emilia-Romagna production system widely based on SMEs and cooperativism. All these factors have been effective in attracting Foreign Direct Investments and strengthen import-export flows generally growing more than the national average (Barone et al. 2019). Distribution at provincial level of GDP and other competitiveness indicators are generally aligned to the "Internal Area" analysis held in those years too, despite this has been done at municipality level showing inequalities within provinces (Fig. 6).

Human capital and labour distribution at the provincial level are coherent to those related to economic

and innovation indicators. The rank A of all provinces (with the exception of Rimini which ranked B) for the occupation rate (fig 4B), and the rank ranging between C and D for the youth unemployment rate (fig. 5B) can be explained with the strong tradition of the professional education system of Emilia-Romagna, both in organization of professional and vocational training (delegated matter from the State), university system, and an efficient and effective use of European cohesion funds. In particular, Emilia-Romagna is widely recognized as a leader of the coordination of the regional negotiation of European Social Funds (ESF) within the system of the Conference of Regions and connecting to the the CIPE (the Italian Inter-Ministry Committee for the Economic Programming) deliberations and other relationship with the national cohesion funds authorities. In tab. 1, the data produced by ERVET as a further elaboration on data provisioned by ISTAT generally shows positive trends (Bianchi, Bianchi 2019) in territorial competitiveness.

In particular, as of 2010, a reform of the educational system has been implemented to refocus the regional educational and training infrastructures in a programme called "ER Education and Research Emilia-Romagna". This has renovated the regional education system as a response of global crisis, recent structural socio-economic-technological changes and public finance and ESF reforms in order to "guarantee everyone the right to
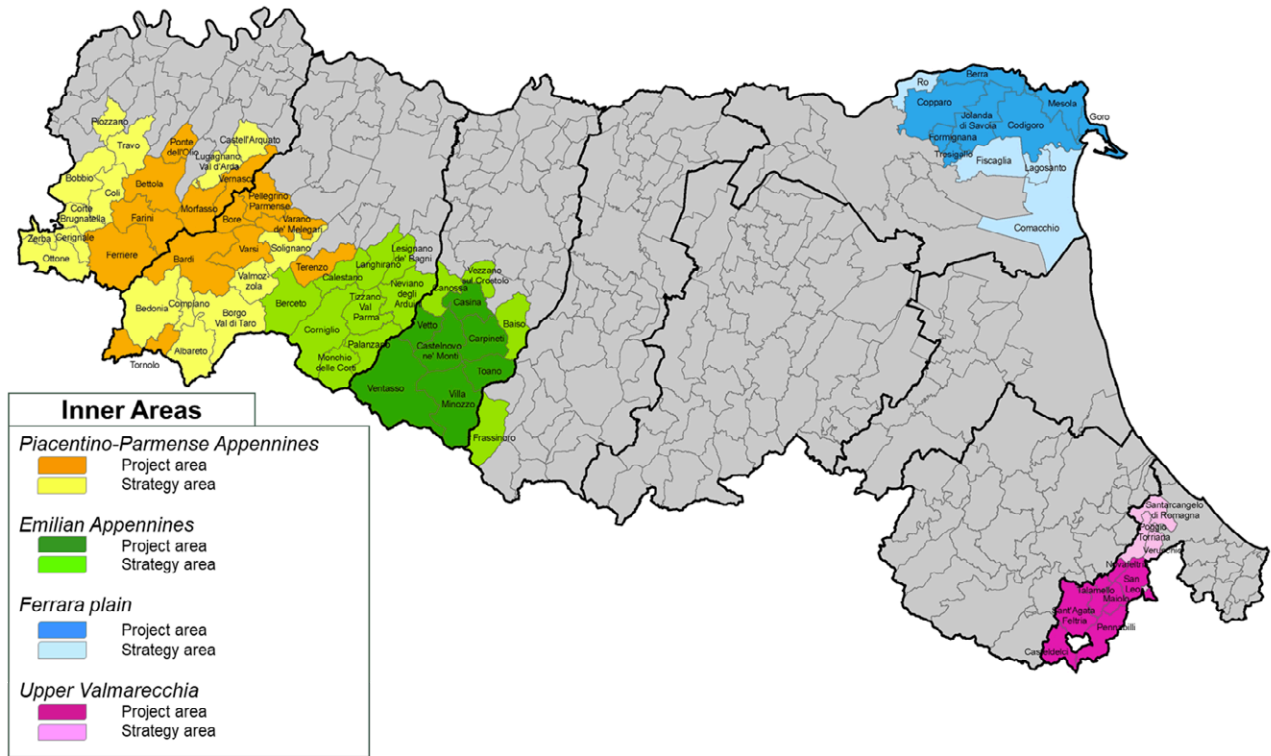
Figure 6. Internal Areas of Emilia-Romagna. Source: ERVET 2016.

Table 1. Emilia-Romagna data regarding regional labour market conditions, youth skills and preparation, progress in advancing skill from youth population three years after the Emilia-Romagna Regional Labour Deal. Source: authors' elaboration from Bianchi, Bianchi 2019.

Monitoring results on jobs and unemployment	2014	2017	delta (2014-2017)
Regional labour market advancements			
Employees (thousands)	1911	1973	+62 (3.2%)
Participation rate, age 15-64 (%)	72.4	73.5	+1.1
Employment rate, age 15-64 (%)	66.3	68.6	+2.3
Unemployment rate, age 15 and above (%)	8.3	6.5	-1.8
Youth skill advancements for youth			
Upper secondary education rate, age 20-24 (%)	81.5	85.4	+3.9
School drop-out, age 18-24 (%)	13.2	9.9	-3.3
Tertiary education, age 30-34 (%)	25.1	29.9	+4.9
Progress in youth condition in the regional labour market			
Employment rate, age 18-29 (%)	42.5	47.5	+5.0
Unemployment rate, age 18-29 (%)	23.4	16.2	-7.1
NEET ratio on population, age 15-29, (%)	20.6	16.1	-4.5

acquire broad and innovative professional skills, to grow, work and unlock one's potential, intelligence, creativity and talent" (Bianchi 2014). Therefore, a more strongly and structured educational credits for professional education and vocational training has been set; a new level of post diploma applied education highly engaged with firms' needs has been created called Polytechnics' network; an higher education, research and international mobility has been financed combined with a large number of applied PhD programmes (an approach inspired by the *German Fachschule e Facakademie Model*) strengthening the firm-academia links. Moreover, cou-

pling firms' demand of skills, social inclusiveness principles and leaning needs of young generations in building their careers. All regional educational infrastructures (and possibly state-managed ones) have been restructured to face the new innovation in the regional economic ensuring strong common overall objectives, rules, plans, while working on complementary specialisations, the integration of educational institutions, collaboration with enterprise, and synergies between European, national and regional funds and non-financial instruments (Regione Emilia-Romagna 2014).

In addition, to face global crisis and the regional shock brought by the 2012 earthquake, "Il patto per il lavoro" (i.e. the Emilia-Romagna Regional Labour Deal) has been signed on the 20th July 2015 among the Region, local authorities, unions, business organisations, the third-sector forum, the universities and the Regional Education Office. This political and policy tool, based on the power of dialogue of coordination among stakeholders, guides actions of public and private investments in job and growth in order to maximize regional competitiveness, productivity, occupation rate as well as minimize distributional inequalities, unemployment among all groups of people.

### 5.2 Tuscany: evidences and territorial policies

In the case of Tuscany, the competitiveness and productivity indicators show higher variance, characterized by a more demarcated core (i.e. Florence) and the rest of the Region (the neighbouring provinces). In particular, the analysis of the 2016 per capita Gross Domestic Product (GDP) shows (see figure 4A) that three out of ten provinces (Florence, Prato, Siena) rank A (i.e. set in the first quartile of the national distribution), five rank B and two rank C (Grosseto and Massa-Carrara), remarking the importance of the North-South infrastructural connections (both rail and roads) and the effect of the weaker and more dispersed East-West ones. These results are coherent with those of IRPET within the works of the Italian programme dedicated to Internal Areas (fig. 7)

The pattern of the Human capital and labour distribution at provincial level, in Tuscany, are coherent to those related to economic indicators. The rank A can be found in the core provinces around Florence (fig. 4B) whilst in the southern-east (Livorno and Grosseto) and in the North occupation rate rank B or even less, i.e. C in Massa-Carrara and Pistoia, 2019). Data worsen in this area when analysing the youth unemployment rate with population aged 15-24 (fig. 5B) where in Massa-Carrara the quartile is A and in Lucca and Pistoia is C, showing

that these areas have to be considered thoroughly in a perspective of cohesion policies.

Figure 7 shows the distribution of Tuscan municipalities in five types: Poles (centroids of structured local labour markets), Belt (municipalities functionally interdependent with the poles) and three degrees of internal area. This distribution allows a more detailed analysis than that of the provincial level. It shows that the regional centrality is largely included in the Arno basin (in all three components of the Upper, the Middle and the Lower Valdarno), which receives a large part of the population and the regional gross product. The peripheral and ultra-peripheral inner areas are concentrated instead in the South in the Maremma and in the North in the Apennine mountain areas that exhaust the northern border of the region. Curiously this distribution seems to authorize two opposite readings: a large and quasi-homeostatic polycentrism, which is also part of the history of the region; and a hard geographical segmentation, with the centrality of the Valdarno crescent against the marginality of northern mountain areas, Mezzogiorno plain and finally the coastal strip, which compensates the productive de-specialization with tourism.

So there would be a great space for territorial policies toward peripheral areas, and surely this political will was not lacking in the last administrations, but the difficult transition of regional economy for the last three decades has made complicated to define priorities and find resources. The current Regional Development Program 2016-2020 clearly defines the regional strategy and correctly reads the problem of internal areas. It is nevertheless forced to admit that Tuscany reproduces within itself the elements of weakness of the national system (low qualification of human capital, low educational
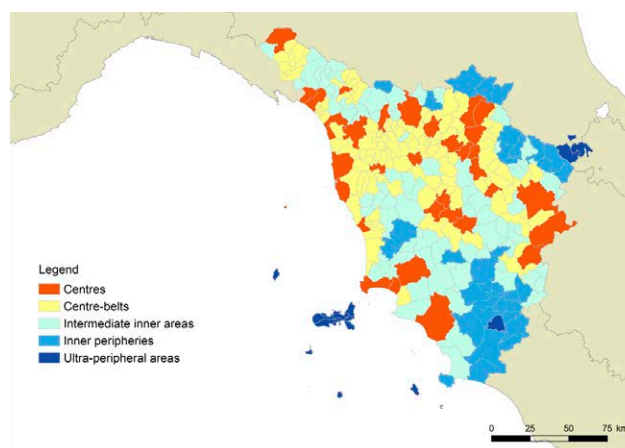
Figure 7. Internal Areas of Tuscany. Source: authors' elaboration from Iommi, Marinari 2017.

levels, low employment, modest R&D investments), and therefore distributes resources (6 billion 2016-2020 excluding health expenditure) on a range of 24 regional projects. Within these the resource allocation choices are clear (six projects in infrastructures, technologies, and education absorb 75% of the resources), but investments are pulverized and of low effectiveness, so the gap between internal areas and the regional central areas is still increasing.

6. Some concluding remarks

The comparative analysis of the territorial development trajectories of Tuscany and Emilia Romagna clearly shows their *path dependency*, and the very important role of connectivity, essentially with regard to the different integration of these regional spaces with continental markets.

It is necessary to recall here the profound diversity of the industrial development processes of the two regions, obscured by the narration of the Marshallian industrial districts established in the Seventies by Sebastiano Brusco for Emilia-Romagna (1975, 1982), and Giacomo Becattini for Tuscany (1979, 1987). Both Authors emphasized the role of mono-specialized territorial systems of SME (e.g. Carpi and Sassuolo in Emilia-Romagna; Prato and Santa Croce sull'Arno in Tuscany), which during the Seventies proved a considerable development and competitiveness potential; whereas the pre-existing large-scale enterprises located mainly in the urban areas encountered growing difficulties and often failed. But the next path shows a noticeable difference. It's easy to see that the productive system of Emilia-Romagna reacted positively to the crisis of larger companies of the Seventies, and to the subsequent dismantling of the Fordist forms of production, adopting a more flexible and reticular form. It maintained investments and competitiveness of its own specializations, located both in the belts of major urban areas (although downscaled), and in the network districts. On the contrary the crisis of the Tuscan large-scale industry caused an almost generalized disinvestment since the Seventies, followed less than twenty years later by a disinvestment and by a similar strong de-specialization in the network of its industrial districts.

These different paths are consistent with the different historical industrialization traditions of the two regions. It arrived earlier and more significantly along the *Via Emilia* axis; while it was more fragmented, rarefied, and disconnected in Tuscany, which can in fact be qualified as *industrial* only from the late Fifties. It is worth to highlight – without overly building upon geo-graphical determinism – the influence exerted by the location of the Apennine chain.

As a matter of fact, beside the different political choices (both long and short term) adopted by the two regional systems, the Apennine chain, oriented circa North-South and located across the border between the two regions, implied a different capability of integration (higher for Emilia-Romagna) with the important markets of the Po Plain area (i.e. North Italy), and with continental markets in general.

Thus is not surprising that the provinces of Emilia-Romagna are usually all located in the first quartile of national distribution of Income and Labour market ((respectively represented through GDP per capita and employment rate in fig. 4A and 4B), while Tuscan North-western and Southern provinces show weakness elements. Also in respect of the percentage of ultra-broadband coverage (fig. 5A), which is the most homogeneous indicator among the one considered, the southern provinces of Tuscany set in the second or third quartile.

In conclusion, the bi-regional analysis shows again the need to read the provincial distribution of territorial development processes in a complex way. These processes can be explained by the geospatial representation of selected indicators for the STeMA methodology and can be further used in future analysis of territorial impact assessment of policy analysis, despite we deem that the use has to be considered as first level decision support system, whilst a thorough regional background knowledge has to be considered in order to avoid risk of excessive determinism.

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