



The Evolution of Public Investments in Liguria in the Territorial Public Accounts (CPT)

Ilham Ksebi

Nucleo di Verifica e Controllo - NUVEC

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Abstract

This report documents the dynamics of public investment in Liguria in the period 2001-2018. The empirical evidence produced by the analysis of the flows of capital expenditure of investments in the territorial public accounts system shows that the expenditures for investments in recent years in Liguria have significantly dropped compared to the historical trends and neighboring regions penalizing some specific economic sectors such as transportations, health, and education. Whereas, some essential economic sectors have been always suffering from scarcity in investment expenditures such as tourism, training, and labour. I close the report by providing evidence on the necessity to boost investments dynamic to favor the processes of development in certain sectors in the region, which are most important or the most struggling to take off.

Keywords: Public investment; Economic sectors; Local development

1. Introduction

The report aims to provide an overview of public investments in the Liguria region through the analysis of public databases deriving from the Territorial Public Accounts (CPT), which displays the consolidated accounts of revenues and expenses in open data format current and

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capital account receipts of the entities of the Enlarged Public Sector (SPA) for the years 2000-2018. In particular, the degree of regional and sectoral detail in the database enables analyzes of all revenues and expenditures of local and regional public authorities. In addition, investments can be broken down by targeted sectors and categories. The database is developed starting from the balance sheets of each entity or from public sources of a similar nature. Then each institution is considered as a source of final expenditure by eliminating the flows to other units belonging to the same reference group. Time-series analysis is used in this report and it begins with analyzing investments from the perspective of government entities that made the investment, whether local, regional or national, in addition to detailed information about the company that made the investment through the use of economic indicators such as growth rates and the slope of regressions for real and per capita values. After that, the same methodology was used to analyze investments by focusing on the concerned economic sector, in other words, it focuses on the intended purpose of the money spent on investments. The path of investments in Liguria has been compared to its neighboring regions. Main findings can be summarized as follows: First, investments in Liguria are declining at an annual growth rate of -2.42% and it records the highest negative growth rate in investments - 35.98% compared to neighboring regions during the study period outlined in this report. Second, investments by local administrations and national public institutions account for 68% of investments in Liguria, while investment by central and local administrations have decreased by -60% since 2001. Finally, investments in Liguria are declining in all economic sectors, especially in transportation, health and education (-0.42, -1.76, -1.78) annual growth rates respectively, in addition to very low rates of investments in other important sectors such as tourism, and training and employment (1.8%, 22%) of total investments. The rest of this paper is organized as follows: Section 2 describes the data; section 3 conducts the time series analysis; section 4 justifies the importance of increasing investments; section 5 summarizes.

2. The time series

Figure 1 tabulates the time path of investment expenditures in thousands of euros in Liguria (on the left) and investments per capita in euros in Liguria and its neighbor regions (on the right).

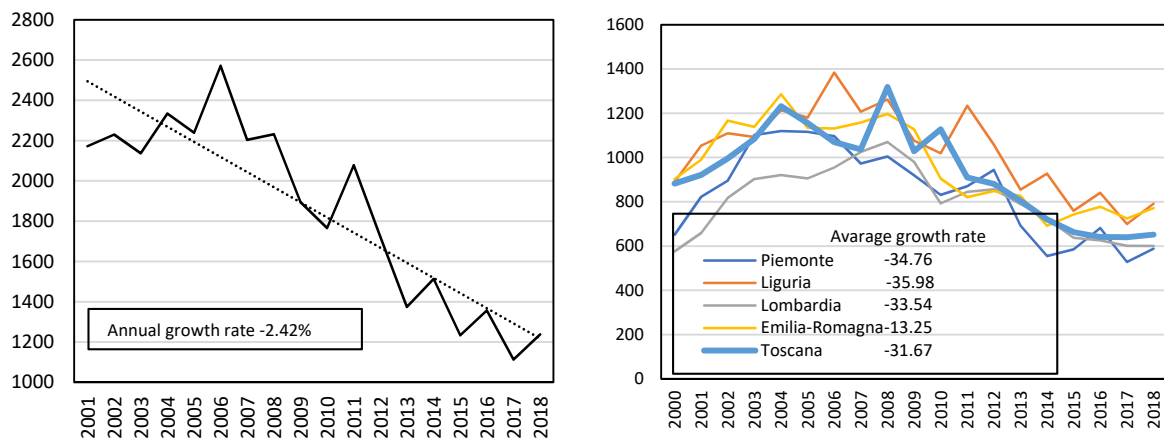


Figure 1. Evolution of public investments

During the period covered by this study, annual investments in Liguria recorded a continuous decline since 2001 either in real values (-2.42 annual growth rate) or in per capita values (-35.98% growth rate). The highest annual investment growth rate was recorded in 2011 (+17.7%) while the lowest rate was in 2013 (-20.24%). Besides, investments recorded a rebound in the last decade between 2003 and 2007 when the Italian economy was in an expansionary gap. The recession that affected the Italian economy was accompanied by a sharp drop in investment spending, starting in 2009. In addition to investments in neighboring regions that recorded negative growth rates in annual investments. However, the decline in investment rate in Liguria appears to be the largest compared to Piedmont, Lombardy, Emilia Romagna, and Tuscany as shown in Figure 1. Also, Figure 02 shows the annual path of total expenditures and total revenues in the territorial accounts on the left axis, while the annual path is placed for

total investments on the right axis in the Liguria region. As Figure 2 indicates, there is a contradiction between the two tracks of total annual expenditures and revenues on the one hand, and the path of investments in Liguria on the other hand. Specifically, the trend line for total annual expenditures and revenues shows a clear tendency to increase over time. On the contrary, the time trend of investment expenditures is continuously decreasing at an average value that exceed 26 thousand euros per year.

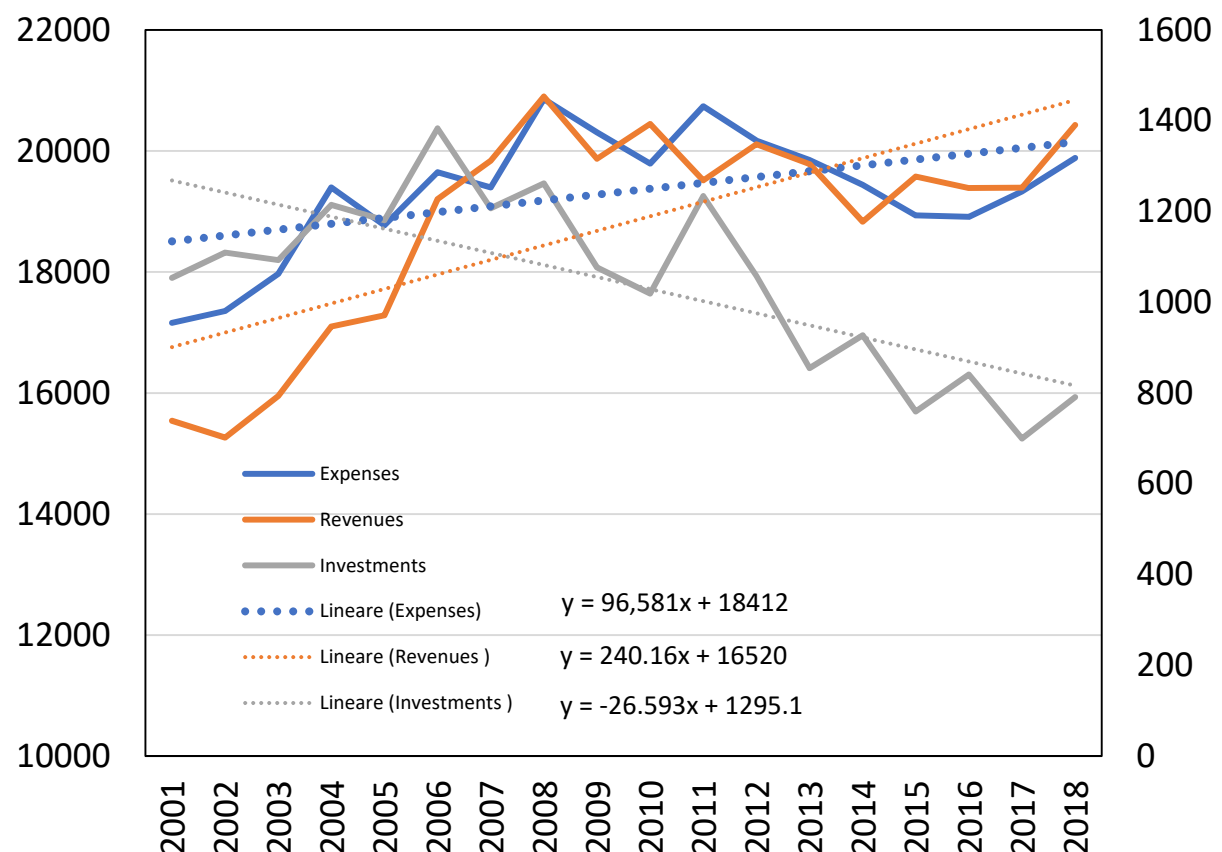


Figure 2: The trend of per expenses, revenues, and investments of the enlarged public system in Liguria

The following section includes a descriptive statistic on two different directions: 1) the funder's perspective-government level; 2) the investment purpose perspective.

3.1 Investments' Rates and the Funder Government's Level

Territorial Public Accounts carries data of expenditures and revenues of the Enlarged Public Sector - EPS. EPS represents all Public Administration-PA entities such as central, regional, and local administrations, in addition to national and local companies and agencies. The possibility for detecting expenditures and revenues of the Enlarged Public Sector - EPS and its detailed entities is one important feature of the CPT. Table 1 carries some information related to investments organized by EPS entities in Liguria between 2001 and 2018 such as, annual averages, contributions and growth rates.

	Average (in millions)	Contribution rate	Avg. growth rate	Growth rate
Central administrations	208890	11.25%	-2.68%	-60.08%
Local administrations	627130	33.79%	-4.69%	-60.67%
Regional administrations	98197	5.29%	2.03%	-38.62%
Local public enterprises	289178	15.58%	9.83%	9.14%
National public enterprises	632644	34.09%	-0.38%	-36.25%

Table 1: Investments in Liguria by government level

According to table 1, that annual investments by local administrations and national public companies are responsible, on average, for more than 68% of annual investments in Liguria.

Investment's growth rate

- ANNUAL INVESTMENTS IN LIGURE HAVE RECORDED A CONTINUOUS DECLINE SINCE 2001 WHETHER IN REAL VALUES (-2.42 ANNUAL GROWTH RATE) OR IN PER CAPITA VALUES (-35.98% GROWTH RATE).
- INVESTMENTS IN THE REGIONS THAT NEIGHBOURING LIGURIA ALSO REGISTERED NEGATIVE GROWTH RATES IN ANNUAL INVESTMENTS; HOWEVER, THE DECLINE IN INVESTMENT RATES IN LIGURIA APPEARS TO BE THE LARGEST COMPARED TO PIEDMONT, LOMBARDY, EMILIA ROMAGNA, AND TUSCANY AS SHOWN IN TABLE A.

	ANNUAL GROWTH RATE	TOTAL GROWTH RATE
PIEDMONT	-1.64	-34.76
LIGURIA	-1.9	-35.98
LOMBARDIA	-1.69	-33.54
EMILIA ROMAGNA	-0.35	-13.25
TOSCANA	-1.37	-31.67

TABLE A: INVESTMENT'S GROWTH RATE

Moreover, the growth rate of investment by central and local administrations in the ligurian region appears to be the steepest compared to other government entities, registering a negative growth rate of 60% since 2001.

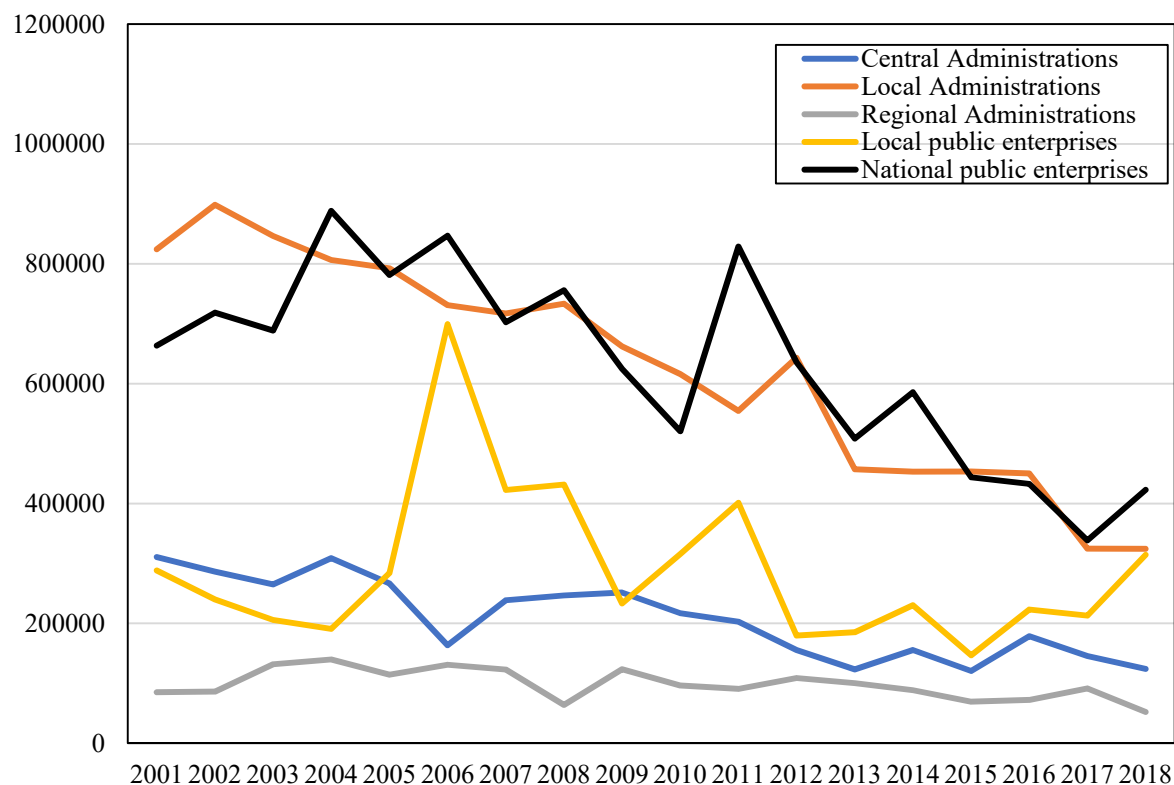


Figure 3: Investments by government level

In this context, we find in Table 2, which includes the growth rates of investment in the neighboring regions of Liguria, that the growth rates of investments by local administrations are the most deteriorating, followed by Tuscany - 53.82%, while the growth rates of investments made by central administrations are in a state of a similar decline in growth in all Listed regions (see Table 2).

Growth rate Region	Central administrations	Local administrations	Regional administrations	Local public entreprises	National public entreprises
Piedmont	-64.30%	-8.15%	-56.55%	-93.09%	-7.36%

Investments by Government Level

- THE DATA SHOW THAT ANNUAL INVESTMENTS BY LOCAL ADMINISTRATIONS AND NATIONAL PUBLIC COMPANIES ARE RESPONSIBLE, ON AVERAGE, FOR MORE THAN 68% OF ANNUAL INVESTMENTS IN LIGURIA.
- THE GROWTH RATE OF INVESTMENT BY CENTRAL AND LOCAL ADMINISTRATIONS IN THE LIGURIAN REGION APPEARS TO BE THE STEEPEST COMPARED TO OTHER GOVERNMENT ENTITIES, REGISTERING A NEGATIVE GROWTH RATE OF 60% SINCE 2001.
- THE RATE OF DECREASE IN INVESTMENTS BY LOCAL ADMINISTRATIONS IN LIGURIA APPEARS TO BE THE WORST COMPARED TO NEIGHBORING REGIONS, FOLLOWED BY TUSCANY - 53.82%.

Lombardia	-43.66%	10.17%	-38.03%	0.08%	-16.05%
Emilia-Romagna	-52.21%	-28.38%	-66.52%	-82.49%	-6.95%
Tuscany	-51.86%	-53.82%	-49.95%	-93.62%	2.37%

Table 2: Investments in Liguria and its neighbor regions by government level

3.2 The Territorial Investments by Economic Sector

This section investigate investments flows by purpose. Figure 4 document the accumulation of investments by economic sectors since 2001. Economics sectors in the figure bellow ranges from the one with the highest share of investments” Transport” to the one with the lowest share of investments expenditures” agriculture”. Whereas, figure 5 shows the timeline trajectory for

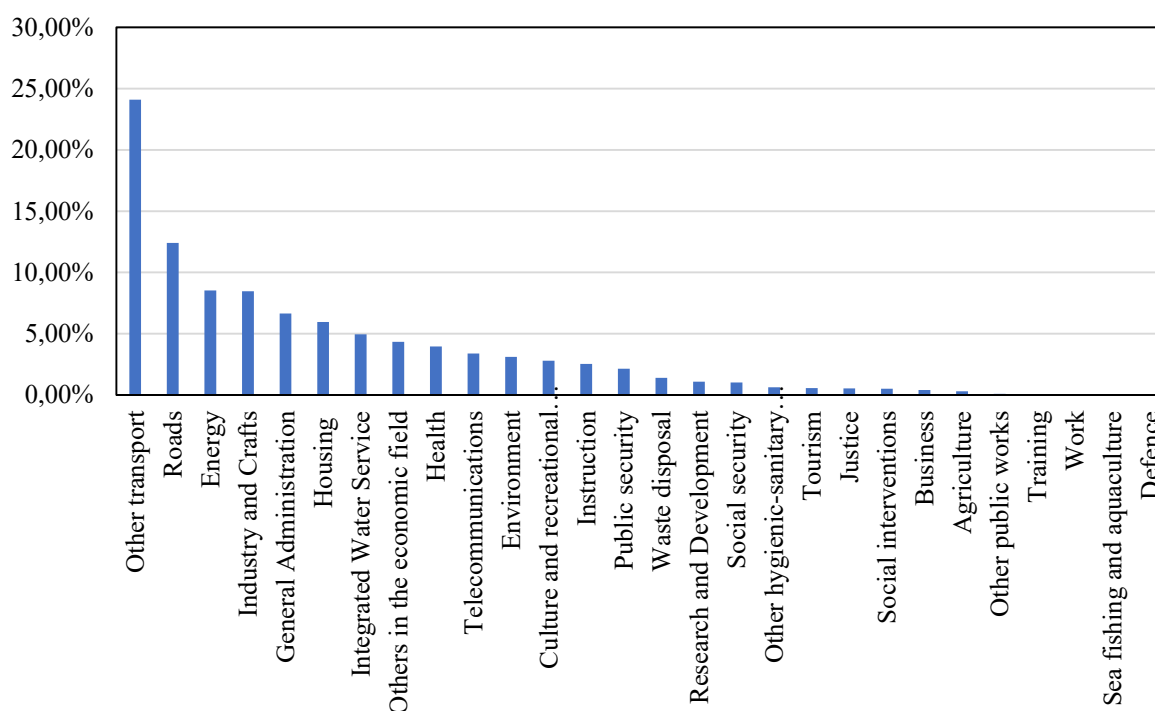


Figure 4: Investments by economic sector in Liguria

investments by economic sector since 2001. The slope of the trendlines of the aforementioned components indicates a sharp decline in the level of investments allocated to various economic sectors. In fact, even the investment sector in roads and other means of transportation which occupies the largest share of investments, the slope of their trendlines indicates a sharp decline in their rates.

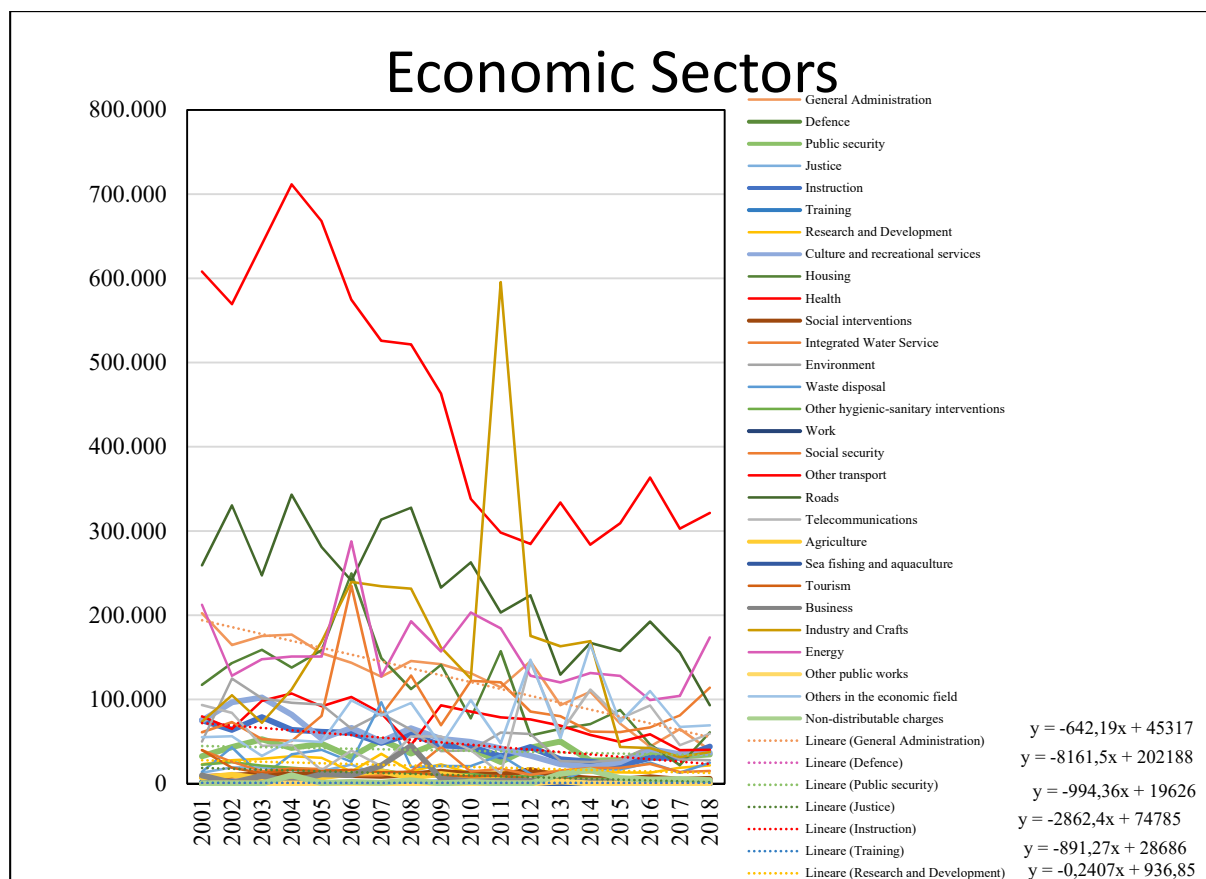


Figure 5: Time series for investments by economic sector

Sector	Average	Average growth rate	Growth rate
Agriculture	5744.35	-6.96%	-94.18%
Tourism	10908.06	-10.48%	-94.11%
Training	934.57	0.83%	-89.80%
General Administration	124654.27	-6.28%	-80.35%
Other hygienic-sanitary interventions	11965.43	-6.15%	-75.24%
Business	7513.01	73.20%	-70.20%
Justice	10179.22	4.72%	-67.57%
Roads	231120.60	-2.43%	-64.06%
Social security	18892.57	7.24%	-62.20%

Culture and recreational services	52682.24	-0.91%	-51.18%
Health	73412.75	0.37%	-49.82%
Industry and Crafts	154443.84	19.03%	-48.97%
Housing	111712.29	10.11%	-48.12%
Other transports	450993.40	-2.85%	-47.14%
Environment	58738.51	4.69%	-44.49%
Instruction	47592.63	-0.40%	-41.60%
Telecommunications	60988.36	67.28%	-36.52%
Social interventions	9233.50	3.14%	-27.50%
Energy	156973.00	4.99%	-18.30%
Research and Development	20219.20	8.54%	-5.98%
Public security	39216.48	5.94%	6.52%
Others in the economic field	77674.43	25.69%	25.71%
Waste disposal	26044.47	60.20%	74.90%
Integrated Water Service	90174.60	16.00%	86.76%
Work	117.21	99.57%	139.63%

Table 3: Investments in Liguria by economic sector

Table 3 describes some features of investment spending by economic sectors such as average, average growth rate, and growth rate. Investments are arranged in table 3 according to growth rates, in ascending order. It is evident that most investments in Liguria suffer from severe negative growth rates between 2001 and 2018. In the next section, I investigate investments in Liguria with a focus on the most relevant economic sectors in an attempt to understand in depth the trend of investment expenditures.

3.2.1 Transportation

CPT systematize transportation into two sections: Roads and other transport. On the one hand, investments in roads include investments for the construction of roads and highways; the installation of public lighting; the construction of road transport systems and infrastructure (bridges, tunnels, parking garages and lots, bus stations, etc.); the granting of licenses and the approval of tolls. On the other hand, investment for other transport includes expenditure in capital account for the construction and operation of infrastructure for rail, maritime, air, lake and river transport, including ports, airports, stations and inter-ports; the granting of licenses and the approval of tolls. Figure 6 illustrate the time series for expenditure for investments in roads (on the left) and in other transport (on the right) in capital account in Liguria between 2001 and 2008.

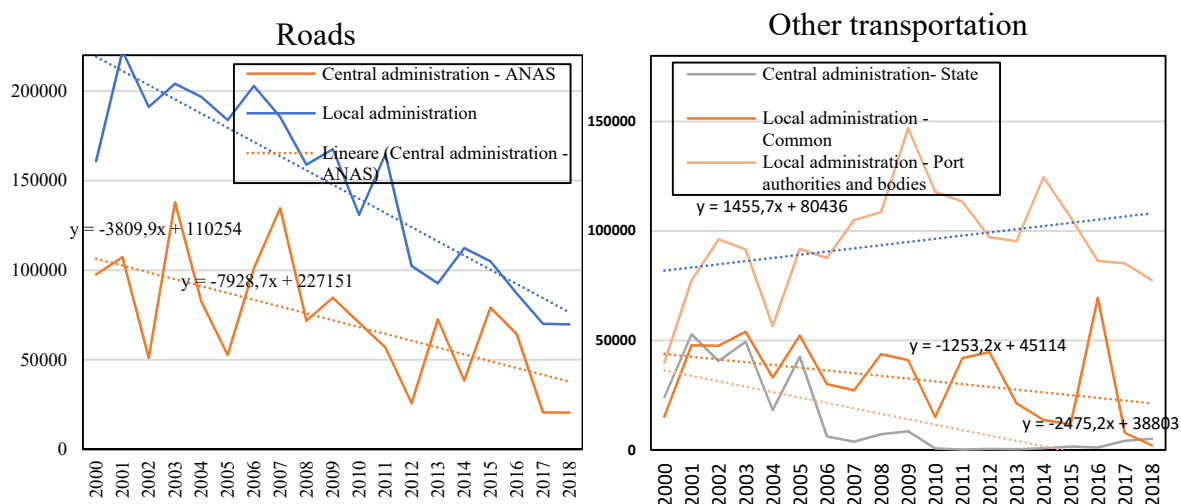


Figure 6: Investments in transportation

The panels in figure 7 describe some of the features of the data that can be summarized as follows: Investments in roads recorded a decline in previous years at a rate of over 11 million annually and a -0.42% annual growth rate. Moreover, investments in transportation are deteriorating in Liguria mainly due to the gradual decrease in investment spending by local administrations.

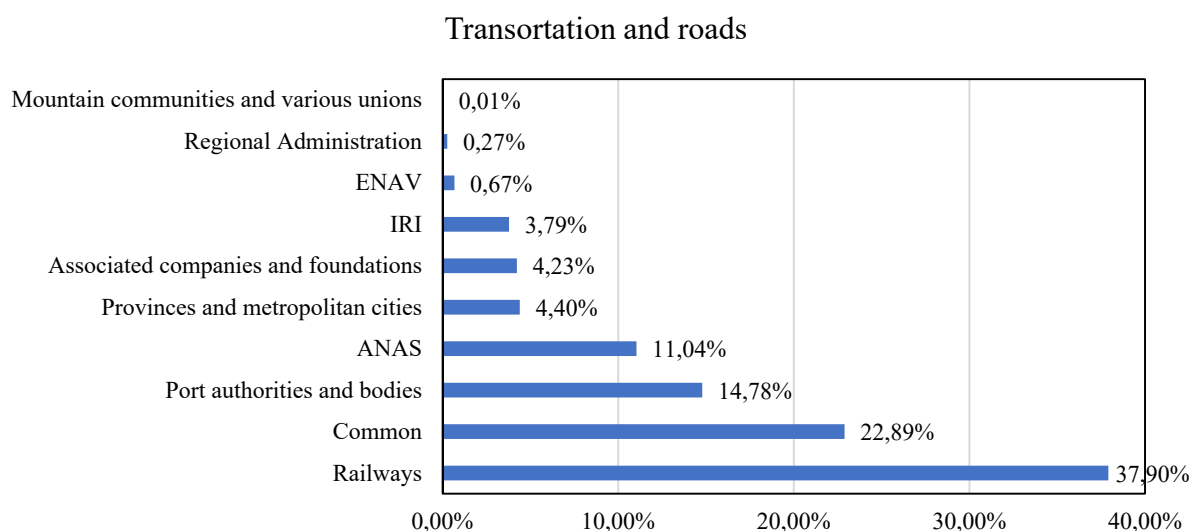


Figure 7: Investments in transportations and roads by entity

Figure 7 displays the most important bodies that are active in investing in Liguria in roads and transportations, however, it indicates that ANAS, ports, provinces, and railways are responsible for more than 85% of the investment in transportations in Liguria.

3.2.2 Energy

Energy section includes information about expenditures for intervention that concerns the use of energy resources such as oil and gas, nuclear fuel, electric and other energy; expenditure on the preparation of energy plans, grants for initiatives in energy savings and the development of renewables.

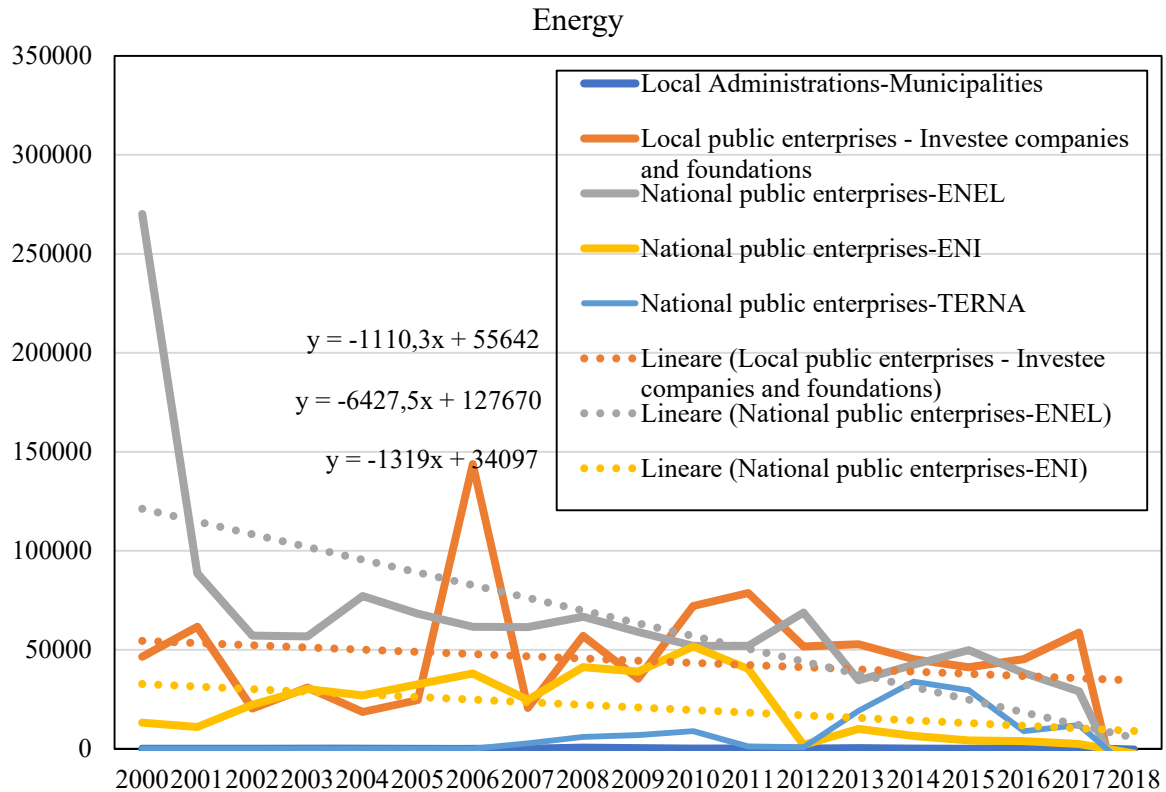


Figure 8: Investments in energy

Investing in energy is mainly made by local and national public institutions, as shown in figure 8. However, the investment in energy is almost stable, it does not suffer like other economic sectors.

3.2.3 Industry and artisans

This includes investments in craft industries, associations of artisans and loans to craft enterprises; investments in craft enterprise zones; the administration of activities and services connected with manufacturing industry; the conservation, development and rational exploitation of mineral resources; subsidies, loans and other incentives in support of industrial and craft enterprises.

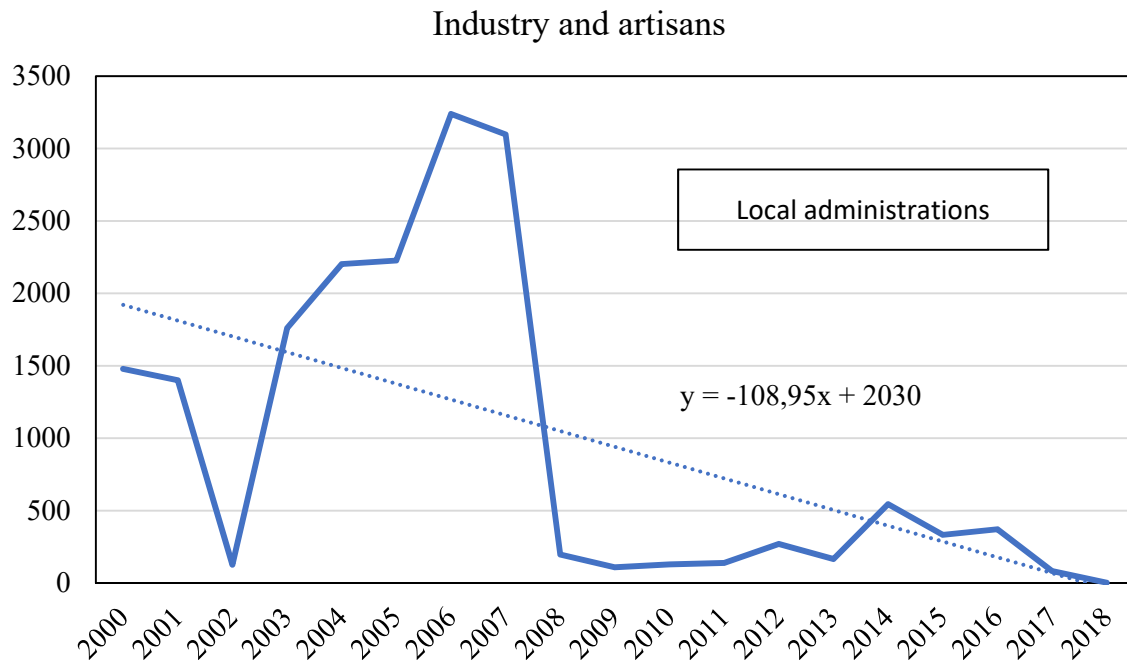


Figure 9: Investments in industry and artisans

Industry and artisans appear to enjoy a big boom of investments between 2011 and 2012 after the burst of the Great Recession. However, after the 2012 investments in this sector has dropped rapidly (cf. figure 9).

3.2.4 Residential building and urban development

This includes investments in the construction of housing and public works; activities associated with zoning, urban transformation and the implementation of urban plans; costs in respect of loans obtained to acquire land and execute primary urban development works; design of map systems. With exception to 2006 and 2011, investments in residential building and urban development in real terms are decreasing since 2001. Local administrations and public companies are responsible for the major part of investments in housing. However, figure 10 shows that investments in housing series oscillating around a decreasing trend. Investments by local public companies were over 40 million in 2003 and decreased to vanish in 2017.

Similarly, investments made by local administrations in Liguria, that was above 60 million per year has dropped to reach less than 20 million.

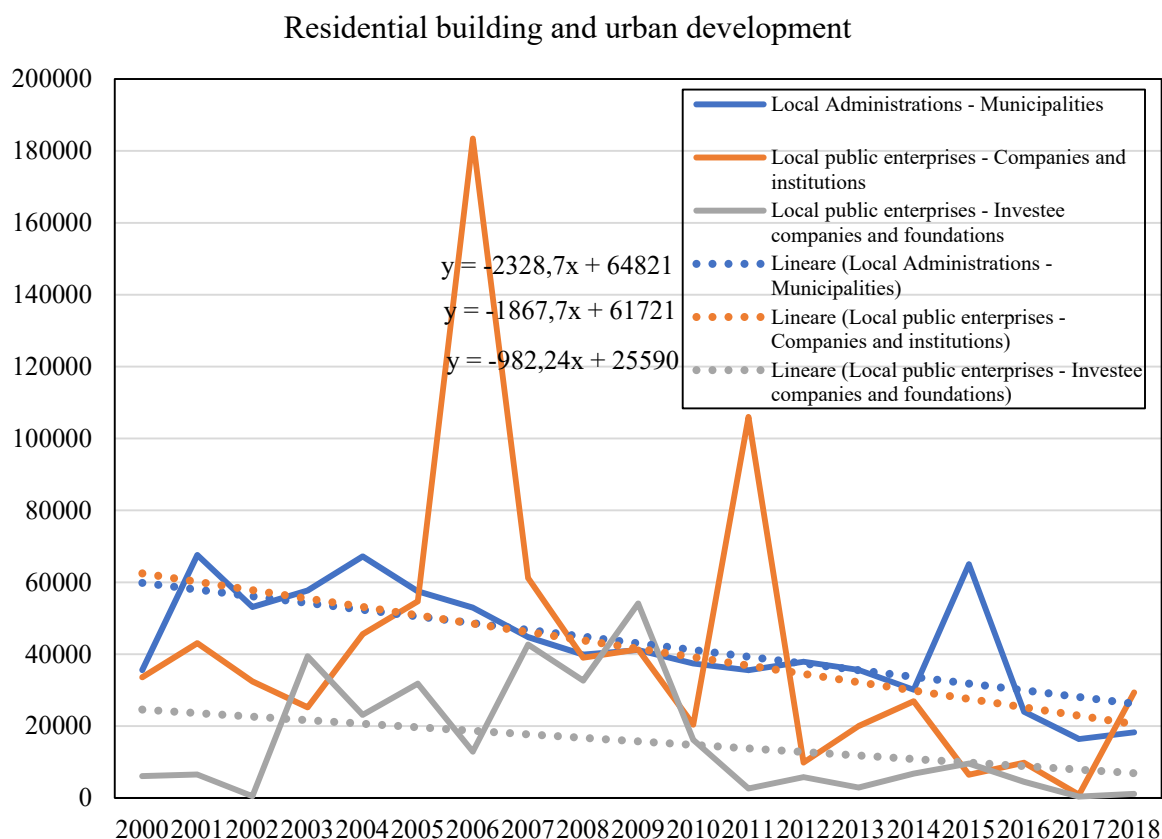


Figure 10: Investments in residential building and urban development

3.2.5 Health

This section represents investments in the structures of the health sector generally; the operation of social/health centers and livestock disease institutes; the formulation of government healthcare policy; the preparation and application of regulations governing medical and paramedical staff and for hospitals, clinics and medical studios. The health sector is particularly important in Liguria. However, investments in health are mainly made by regional administration, and over 97% of investments are made by ASL, hospitals and IRCCS. However, investments in this sector has been decreasing since 2001. Indeed, the trend of

investments in health series has been decreasing by 1 million euros each year over the study period as shown by figure 11.

	Share of health investments
ASL, hospitals and IRCCS	97.42%
CRI	1.92%

Table 4. Investments in health by entity

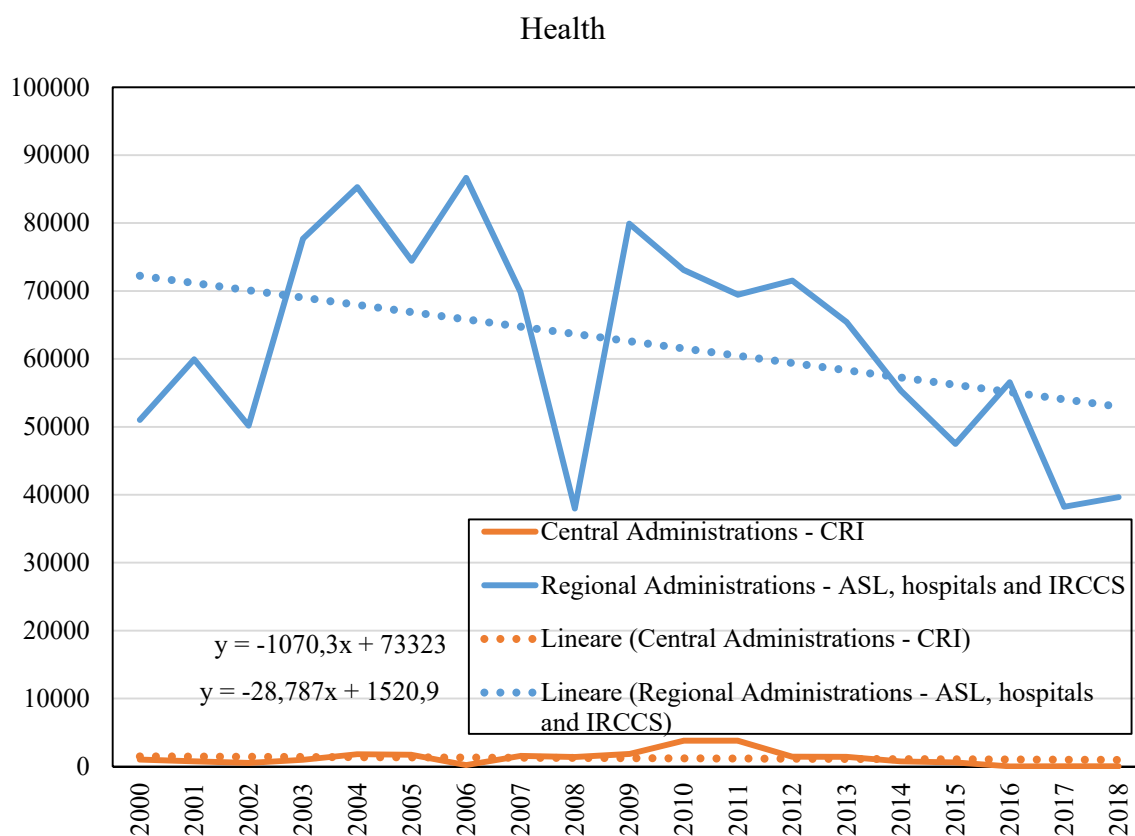


Figure 11: Investments in health

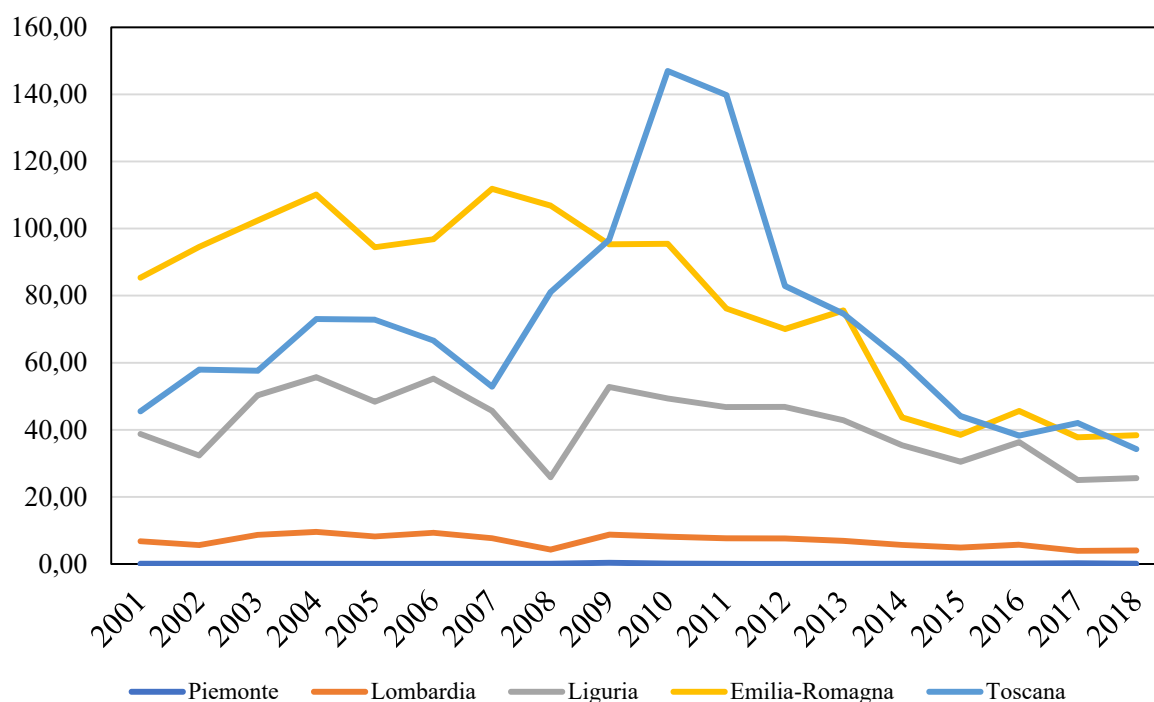


Figure 12: Investments in health in Liguria and neighboring regions (per capita)

Nevertheless, figure 12 compares investments per capita in Liguria to neighboring regions and it suggest that the investments per person in Liguria mediate the level of investments in among neighboring regions, as it is lower than those in Tuscany and Amelia Romana, but higher than in Lombardy and Piemonte.

3.2.6 Integrated Water Service

Includes investments dedicated to the water supply through aqueducts and reservoirs; supervision and regulation of the supply of drinking water (including monitoring of the quality and quantity of water supplies, and water rates). Investment for the water supply does not seem to struggle. Indeed, investments in the water system by the local municipalities has been slightly decreasing over time, Whereas, investments by local public companies has been steadily increasing over the past couple of decades (cf. figure 13).

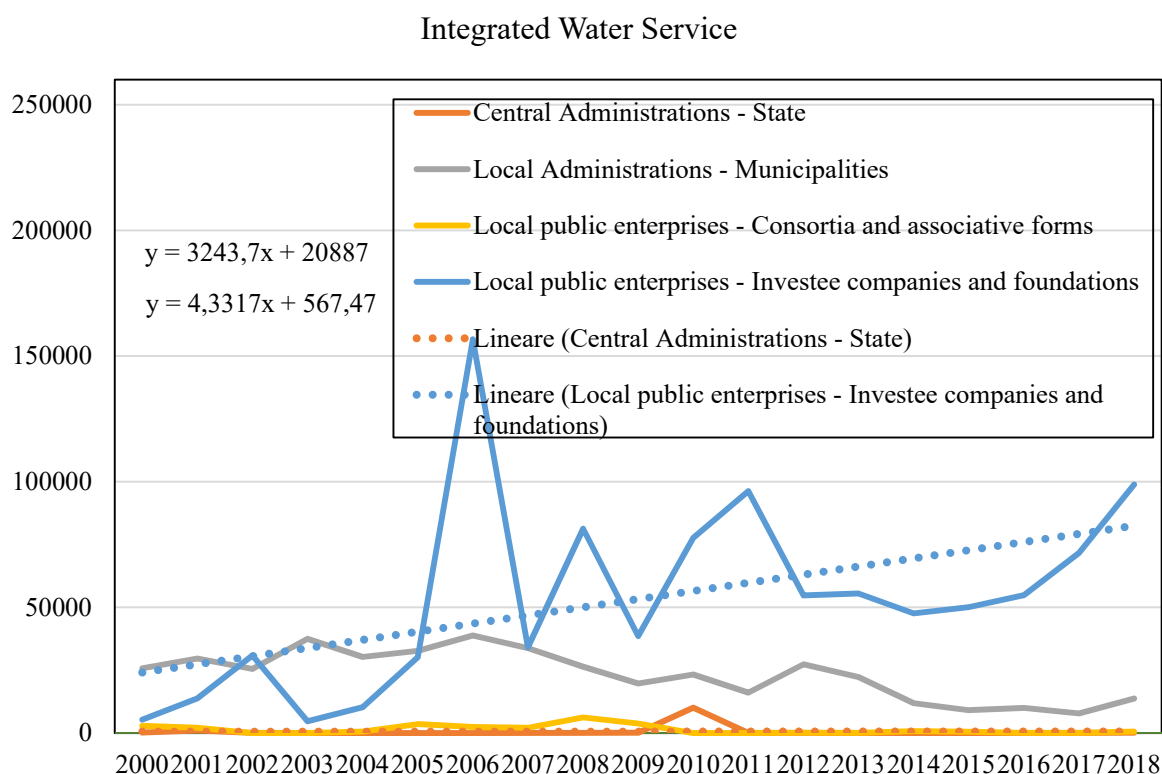


Figure 13: Investments in integrated water service

3.2.7 Education

This includes investments in building schools and universities, and further education services; Investments on provincial education offices; Various local authorities. Figure 13 shows the time series of entities investing in education since 2011 and can be described as follows: Investments in education were relatively high (more than 70 million per year at the beginning of the study period), and continued to decrease at the rate of 2 million euros per year. In fact, investments in education dropped to less than 25 million in 2015 before they began to recover again (more than 40 million annually in 2018).

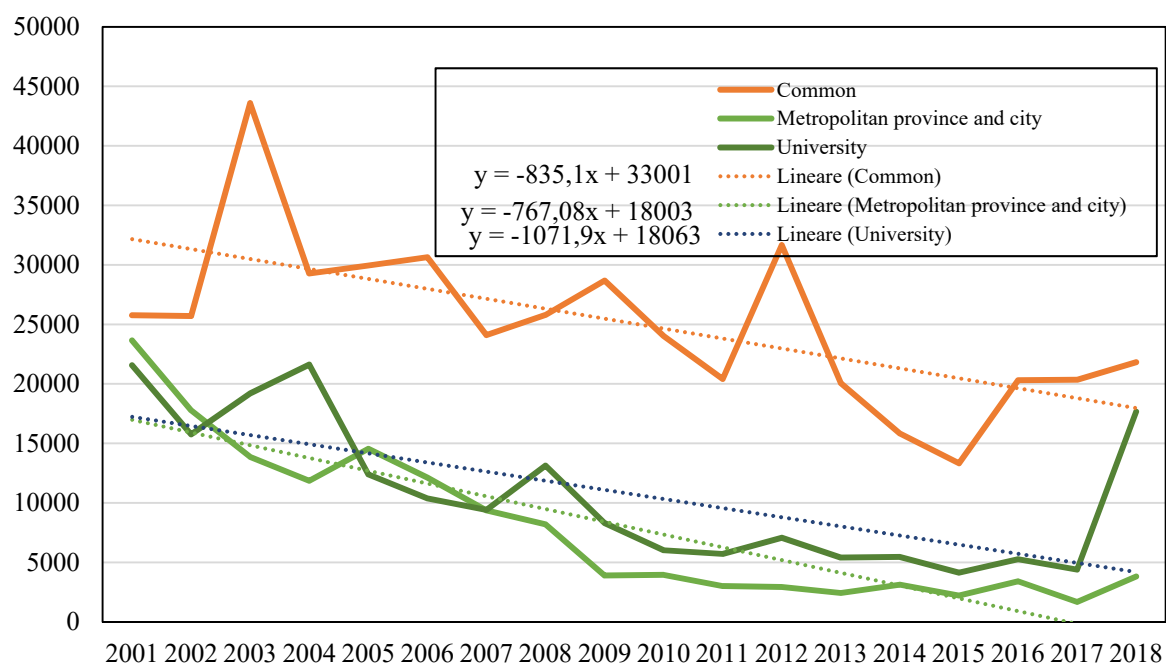


Figure 14: Investments in education

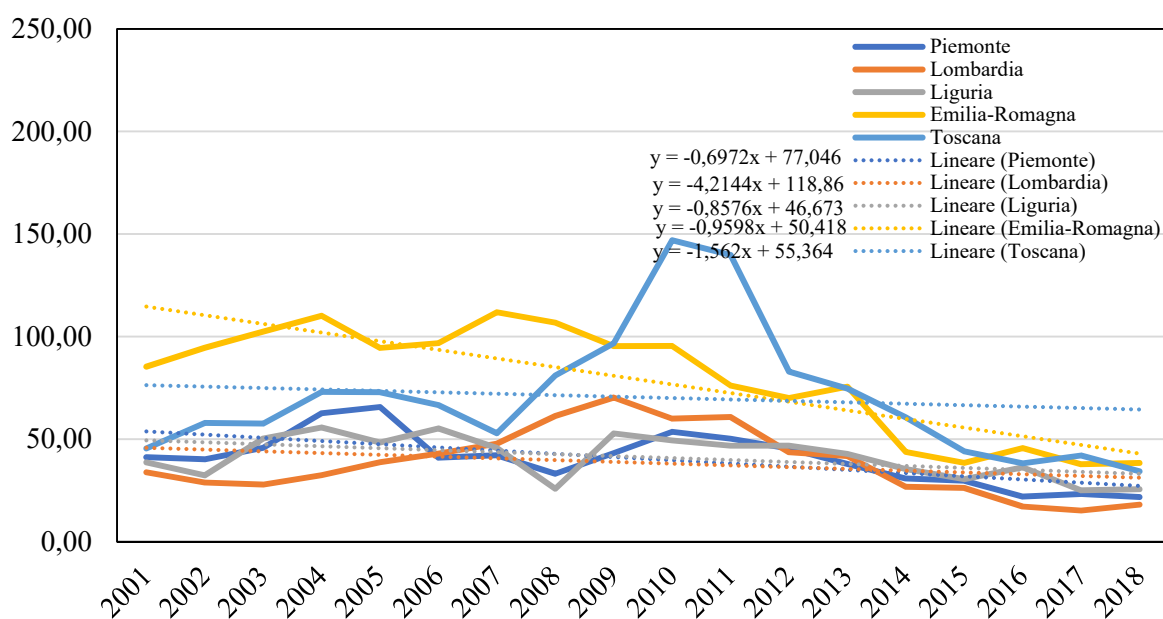


Figure 15: Investments in education in Liguria and neighboring regions

Figure 14 shows that local administrations are responsible for most investment in education in Liguria. While Figure 15 compares investments per capita in Liguria with neighboring regions

and indicates that the per capita share of investments in education in Lombardy and Piemonte is roughly equal to the per capita investment in Liguria, however, investments in Emilia-Romagna and Tuscany are better placed than the previously mentioned regions.

Investments by economic sectors

- INVESTMENTS IN A MAJOR ECONOMIC SECTORS IN LIGURIA ARE WITNESSING A DECLINE AT AN ANNUAL RATE AS FOLLOWS:
- **TRANSPORTATION (ROADS AND OTHER TRANSPORTS) – ANNUAL GROWTH RATE -0.42%**
 - ❑ ANAS, PORTS, PROVINCES, AND RAILWAYS ARE RESPONSIBLE FOR MORE THAN 85% OF INVESTMENT LIGURIA.
 - ❑ INVESTMENTS IN TRANSPORTATIONS IN LIGURIA ARE WORSENING AND THAT IS MAINLY DUE TO A GRADUAL DECREASE IN INVESTMENTS SPENDING BY LOCAL ADMINISTRATIONS.
- **HEALTH– ANNUAL GROWTH RATE -1.76%**
 - ❑ 97% OF INVESTMENTS ARE MADE BY ASL, HOSPITALS AND IRCCS.
 - ❑ INVESTMENTS IN HEALTH HAS BEEN DECREASING SINCE 2001.
 - ❑ THE TRENDLINE OF INVESTMENTS IN HEALTH HAS BEEN DECREASING BY 1 MILLION EUROS EACH YEAR.
- **EDUCATION (INSTRUCTION) – ANNUAL GROWTH RATE -1.78%**
 - ❑ LOCAL ADMINISTRATIONS ARE RESPONSIBLE FOR MOST INVESTMENT IN EDUCATION IN LIGURIA.
 - ❑ THE PER CAPITA SHARE OF INVESTMENTS IN EDUCATION IN LOMBARDY AND PIEDMONT IS ROUGHLY EQUAL TO THE PER CAPITA INVESTMENT IN LIGURIA, HOWEVER, INVESTMENTS IN EMILIA-ROMAGNA AND TUSCANY ARE IN A BETTER PLACED THAN PREVIOUSLY MENTIONED REGIONS.

3.3 Underrepresented economic sectors-UES

Underrepresented sectors are the sectors that in the past ten years have registered a share of less than 10% of total investments in Liguria and they are: Public security, waste disposal,

research and development, social security, other hygienic-sanitary interventions, tourism, justice, social interventions, agriculture, training, sea fishing and aquaculture.

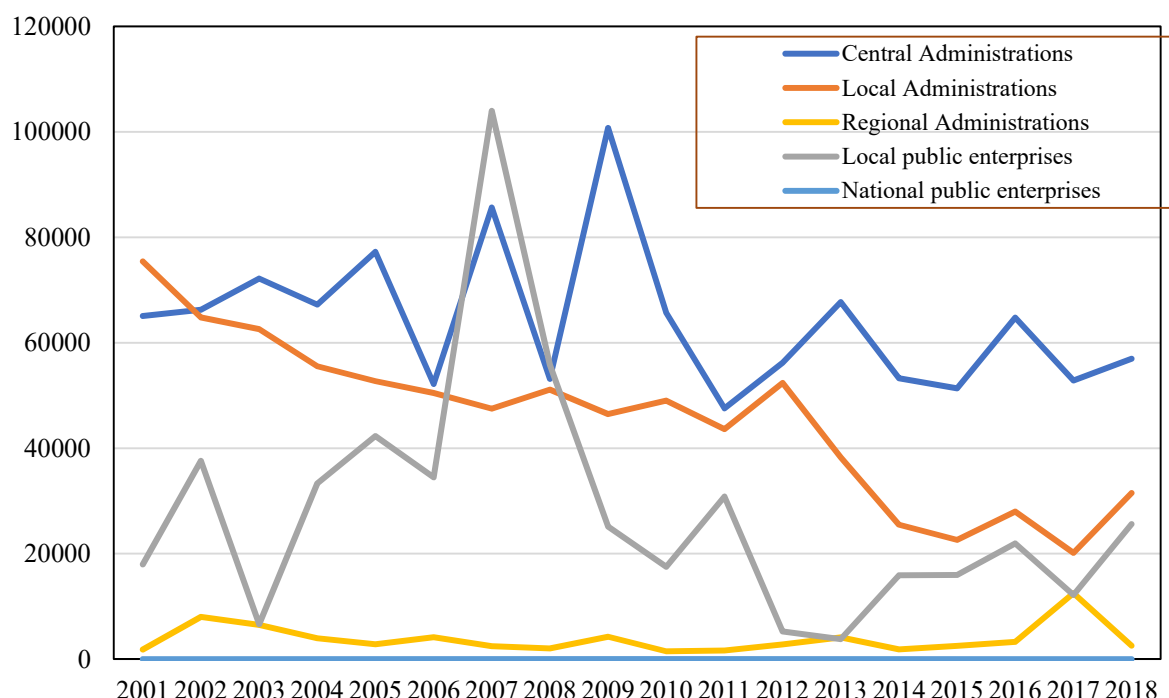


Figure 16: Underrepresented economic sectors

Investments in above mentioned sectors are financed by central administrations followed by local administrations and local public enterprises (cf. figure 16). However, some of the UES are very important and essential to the development of Liguria such as tourism, work, and training. Tourism sector includes investments on the construction of hotels infrastructure; operating and capital grants to industry enterprises and entities; grants for the construction, reconstruction, modernization and expansion of hotels and similar facilities, tourist villages,

Underrepresented economic sectors-UES

- INVESTMENTS IN PUBLIC SECURITY, WASTE DISPOSAL, RESEARCH AND DEVELOPMENT, SOCIAL SECURITY, OTHER HYGIENIC-SANITARY INTERVENTIONS, TOURISM, JUSTICE, SOCIAL INTERVENTIONS, BUSINESS, AGRICULTURE, OTHER PUBLIC WORKS, TRAINING, WORK, SEA FISHING AND AQUACULTURE REPRESENTS LESS THAN 10% IN INVESTMENTS IN LIGURIA.
- SOME OF THE UES ARE VERY IMPORTANT AND ESSENTIAL TO THE DEVELOPMENT OF LIGURIA SUCH AS TOURISM, TRAINING AND LABOUR.

youth hostels, campgrounds, etc.; grants for cultural, religious and artistic events; financing of public and private-sector parties for the implementation of projects for local promotion.

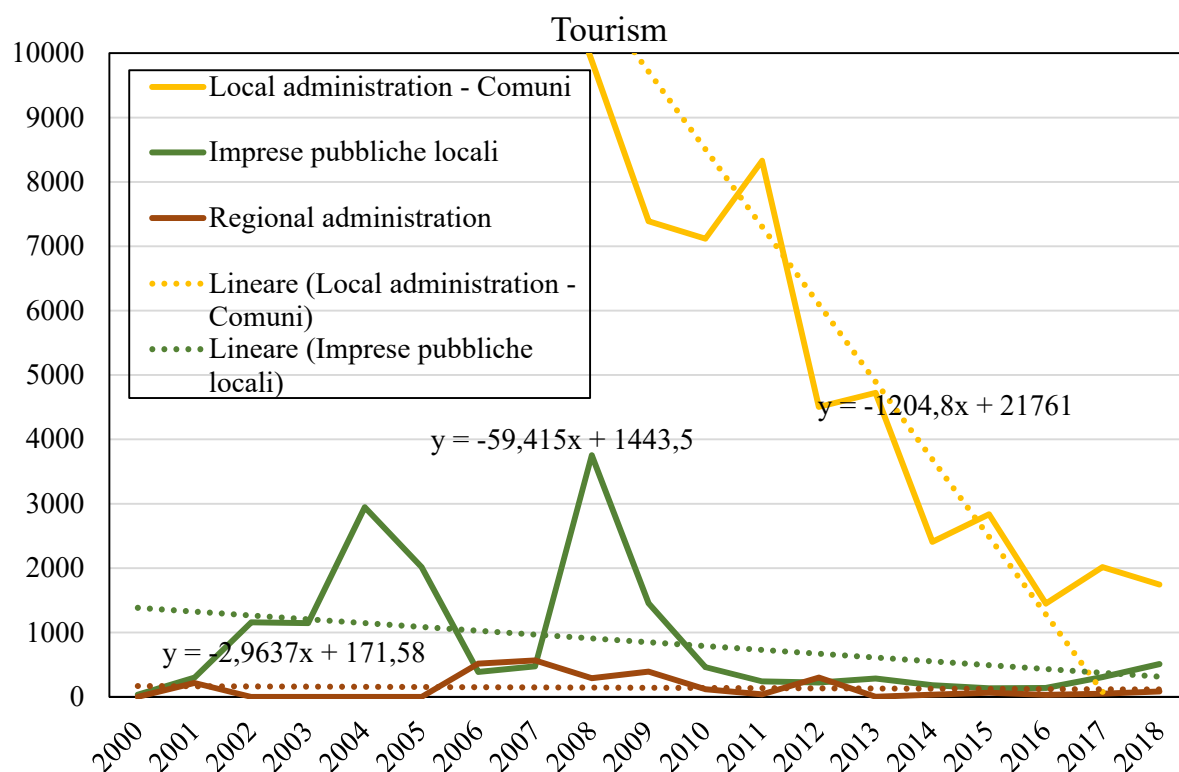


Figure 17: Investments in tourism in Liguria

Tourism is a particularly important sector in the Ligurian economy due to its climatic, geographic condition, and cultural heritage. However, data suggest that investments in this sector very low (see figure 17). Between 2004 and 2007 there was a sudden amount of investments in tourism made by local public agencies. However, after the crises of 2008, figure

Investments in tourism

- THE SHARE OF INVESTMENT IN THE TOURISM SECTOR EXCEEDED 1.8% OF TOTAL INVESTMENTS IN LIGURIA IN 2001.
- THE RATE OF INVESTMENT IN TOURISM IN LIGURIA CONTINUED TO DECREASE WITH AN ANNUAL AVERAGE OF -0.09%.
- INVESTMENTS IN TOURISM REACHED TO 0.18% OF TOTAL INVESTMENT IN LIGURIA IN 2018.
- INVESTMENTS IN TOURISM IN LIGURIA FOLLOW A SIMILAR PATH TO ITS NEIGHBORING REGIONS.

18 shows a sudden decrease in the trend of investments by local administration. However, the times series has been decreasing since 2001 to arrive at very low levels in 2018.

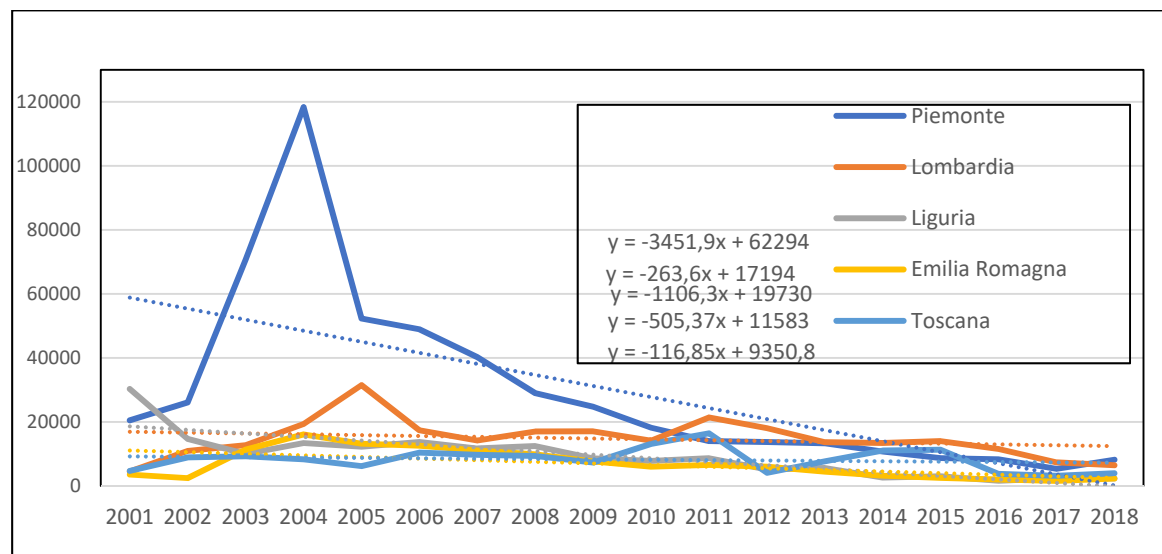


Figure 18: Investments in tourism in Liguria and neighbor regions

Investments in training includes investment in construction and operation of facilities related to vocational training and orientation, it also comprises spending in capital account on technical and educational support materials. While investments in labour sector includes intervention in support of labour and employment, cooperation and job placement that is not directed at a specific sector; expenditure for the formulation of general labour policy.

Labour and training are very important sectors considering the current unemployment rates and struggling in job creations. According to Berry (2008) young individuals in Italy are sharply stigmatized on the labour market and have great difficulty obtaining jobs, as attested by their very high level of unemployment, and especially long-term unemployment.

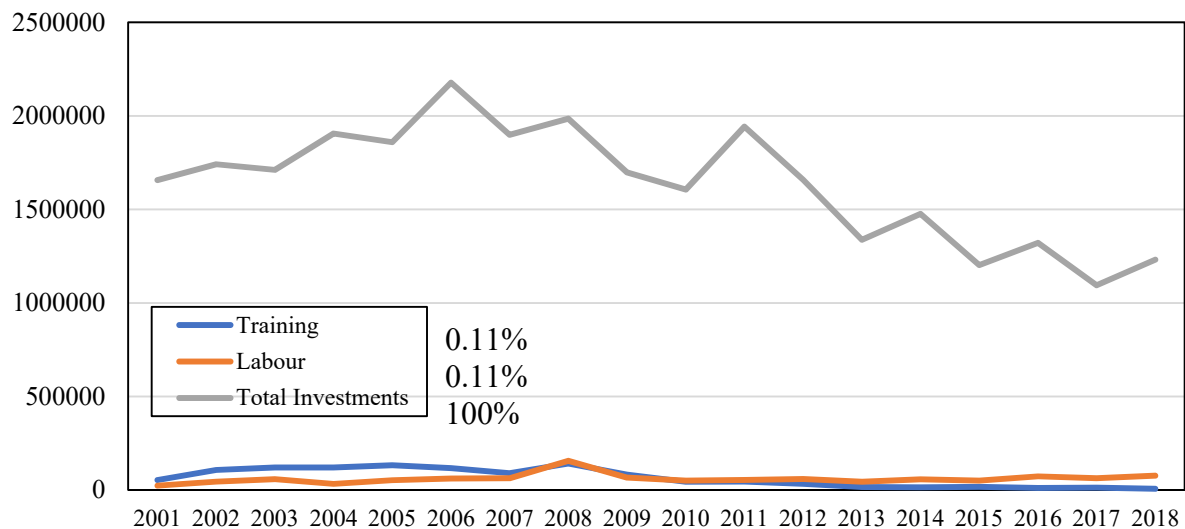


Figure 19: Investments in labour and training vs Total investments

According to the CPT, investments in training and labour together only accounted for 0.22% of the total investment in Liguria during the study period (cf. figure 19). However, for more accurate information on investments in training and labour a two distinct time series were constructed as follows: By dividing investments in training by the number of unemployed in the same period the series investments on training per unemployed was created. Moreover, by dividing investments in work by the number of employees in the same period the series investments in labour per employee was created. The data on employment/unemployment are extracted from the Italian National Institute of Statistics (ISTAT). As shown in Figure 20, we find that the expenditure on investment in training for each unemployed person in Liguria averages around 17,000 euros per year which is lower than in all neighboring regions with Piemonte as an exception (4,553 euros) (see Fig.20 - to the left). In addition, investments in training in the Ligurian trendline are decreasing at an average rate of approximately 200 euros per year for every unemployed person. Likewise, investments in labour per employed person put Liguria in the middle of its neighbor regions at an average of 176 euros per worker per year which is lower than Tuscany (331) and Piedmont (235) and higher than Lombardy (116) and Emilia Romana (27).

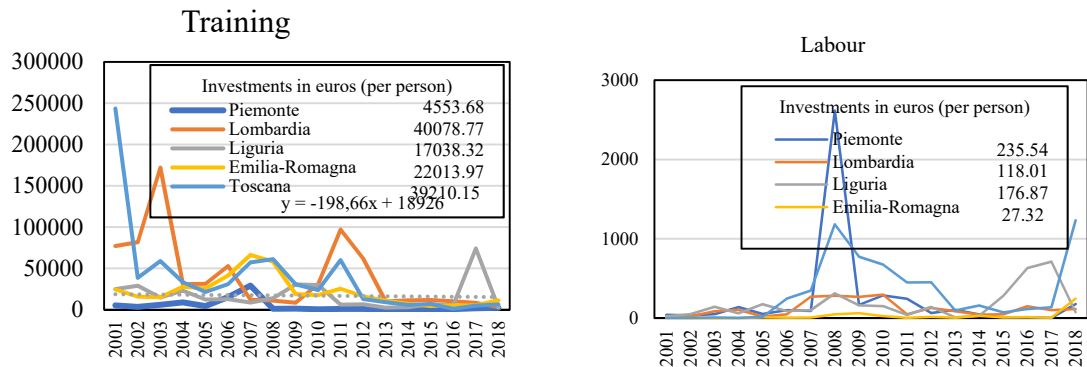


Figure 20: Investments in labour and training per unemployed/Employed person in Liguria and neighboring regions (source ISTAT)

Investments in training and labour

- INVESTMENTS IN TRAINING AND LABOUR TOGETHER ONLY ACCOUNTED FOR 0.22% OF THE TOTAL INVESTMENT IN LIGURIA DURING THE STUDY PERIOD.
- EXPENDITURE ON INVESTMENT IN TRAINING FOR EACH UNEMPLOYED PERSON IN LIGURIA AVERAGES AROUND 17,000 EUROS PER YEAR WHICH IS LOWER THAN IN ALL NEIGHBOURING REGIONS WITH PIEMONTE AS AN EXCEPTION (4,553 EUROS).
- INVESTMENTS IN TRAINING IN THE LIGURIAN TREND LINE ARE DECREASING AT AN AVERAGE RATE OF APPROXIMATELY 200 EUROS PER YEAR FOR EVERY UNEMPLOYED PERSON.
- INVESTMENTS IN EMPLOYMENT PER EMPLOYED PERSON PUT LIGURIA IN THE MIDDLE OF ITS NEIGHBOUR REGIONS AT AN AVERAGE OF 176 EUROS PER WORKER PER YEAR WHICH IS LOWER THAN TUSCANY (331) AND PIEDMONT (235) AND HIGHER THAN LOMBARDY (116) AND EMILIA ROMANA (27).IN LIGURIA FOLLOW A SIMILAR PATH AS HER NEIGHBOR REGIONS.

3. Why it is necessary to boost investments?

Italy's economy today suffers from structural and non-structural problems. Annual growth rates have often been below the EU average with Italy being hit particularly hard by the late-2000s recession. Massive government spending from the 1980s onwards has produced a severe rise in public debt. In recent years, Italy's GDP per capita growth slowly caught-up with the Eurozone average while its employment rate still lags. However, there is many evidences suggests that planned public spending would help in boosting the economic growth, create long

term jobs and thus lower unemployment. The research of Khan and Kumar (1997), Ramirez and Nazmi (2003), and Bukhari et al. (2007) showed positive impacts of public investment on economic growth and the research of Cruz and Teixeira (1999), Erden and Holcombe (2005), Gjini and Kukeli (2012) and Dreger and Reimers (2014) also found positive impacts of public investment on private investment. There is ample evidence of the impact of government spending on job creation. The studies of Finn (1998), Blanchard and Perotti (2002), and Holden and Sparrmany (2016) examined how government spending decisions in general affect job creation, that increased government spending leads to economic growth which in turn leads to an increase in employment and lower levels of unemployment. . The higher the government spending, the lower the unemployment rate, and the newer jobs are created (Ramey, 2012). In addition to the above, other studies (Kenyon, 1997; Cray, 2011; Leigh, Neil, 2011) have found that government spending on infrastructure is essential to job creation. Consequently, government spending in this sector is considered to be one of better strategies to grow employment. That said Afonso and Sousa (2012), and Bertolis and Hayes (2014) found that government expenditure does not contribute more towards economic growth. If government spending does not aim at economic growth – the relationship between job creation and government spending would eventually be negative (Mahmood, Khalid, 2013). Furthermore, the effect of government spending on job creation is more effective during sluggish economic conditions than when the economy is booming (Beard, Ford, Kim, Spiwak, 2011). Therefore, the outcome of government spending on job creation is subjected to the economic cycle.

Why it is necessary to boost investments?

- A POSITIVE IMPACT OF PUBLIC INVESTMENT ON ECONOMIC GROWTH WAS FOUND BY KHAN AND KUMAR (1997), RAMIREZ AND NAZMI (2003), AND BUKHARI ET AL. (2007).
- A POSITIVE IMPACT OF PUBLIC INVESTMENT ON PRIVATE INVESTMENT WAS FOUND BY CRUZ AND TEIXEIRA (1999), ERDEN AND HOLCOMBE (2005), GJINI AND KUKELI (2012) AND DREGER AND REIMERS (2014).
- INCREASED GOVERNMENT SPENDING LEADS TO ECONOMIC GROWTH WHICH IN TURN LEADS TO AN INCREASE IN EMPLOYMENT AND LOWER LEVELS OF UNEMPLOYMENT ACCORDING TO FINN (1998), BLANCHARD AND PEROTTI (2002), AND HOLDEN AND SPARRMANY (2016).
- THE HIGHER THE GOVERNMENT SPENDING, THE LOWER THE UNEMPLOYMENT RATE, AND THE NEWER JOBS ARE CREATED (RAMEY, 2012).
- GOVERNMENT SPENDING ON INFRASTRUCTURE IS ESSENTIAL TO JOB CREATION (KENYON, 1997; CRAY, 2011; LEIGH, NEIL, 2011).
- GOVERNMENT EXPENDITURE CONTRIBUTES TO ECONOMIC GROWTH ONLY IF GOVERNMENT SPENDING DOES AIM AT ECONOMIC GROWTH (AFONSO AND SOUSA, 2012 AND BERTOLIS AND HAYES, 2014).
- THE EFFECT OF GOVERNMENT SPENDING ON JOB CREATION IS MORE EFFECTIVE DURING SLUGGISH ECONOMIC CONDITIONS THAN WHEN THE ECONOMY IS BOOMING (BEARD, FORD, KIM, SPIWAK, 2011).

4 Summary

The Great Recession that has weighed on the European Union since 2007 has had dire consequences for the Italian economy (Mazzola, et al., 2018). In Liguria, unemployment rates have doubled compared to 15 years ago, according to ISTAT. Given the view that public investment plays a fundamental basis in economic recovery (cf. Khan and Kumar, 1997; Ramirez and Nazmi, 2003; Bukhari et al., 2007), this report examined public investment in Liguria using regional public accounts (2001-2018). The study began by showing the timeline of investment expenditures in Liguria in terms of real and per capita values. In addition, it compared total expenditures and revenues in the region with the expenditures of expanded general government investments. The report resumed revealing details of investments in

Liguria from the point of view of the funder government entity and the economic sector benefiting from these investments. The main findings can be summarized as follows: Investment in Liguria is declining at an annual growth rate of -2.42% and registering the highest negative growth rate in investments - 35.98% compared to neighboring regions during the study period described in this report. In addition, investments by local administrations and national public institutions account for 68% of investments in Liguria, while investment by central and local administrations has decreased by -60% since 2001. Moreover, investments in Liguria are declining in all economic sectors, Especially in transportation, health and education (-0.42, -1.76, -1.78) annual growth rates respectively, in addition to very low rates of investments in other important sectors such as tourism, training and employment (1.8%, 22%) of total investments. Finally, it is important to increase investments in infrastructure in order to create jobs, boost economic growth, encourage private investment, and thus reduce unemployment levels.

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Appendix

Variables and definitions

Public investments are the public capital account expenditure net of loans and advances and capital injections.

Investment's annual growth rate is the change in the value of investments over the period of a year.

Investment's average growth rate is a number that describes the rate at which investment would have grown over a chosen period.

ENTITIES INCLUDED IN GENERAL GOVERNMENT FOR THE REGIONAL PUBLIC ACCOUNTS

Central administrations include the following entities:

- State Municipal governments
- ISTAT (national statistics institute) Provinces and metropolitan cities
- ISAE (economic analysis institute) Mountain communities and other local authority unions
- ENEA (agency for new technologies, energy and environment)
- Universities
- CNR (national research council) Local health authorities, research hospitals and public hospitals
- INFN (nuclear physics institute)
- ACI (Italian automobile club)
- ICE (foreign trade institute)
- ENEL (electricity)
- AIMA-AGEA (agricultural aid agency)
- Former IRI (Institute for Industrial Redevelopment) agencies
- CRI (Italian Red Cross)
- ENI (energy)
- CONI (Italian Olympic Committee)
- Poste Italiane SpA (Italian Post Office)
- ANAS (State Road Agency)
- Ferrovie dello Stato SpA (State Railways)
- Social security institutions Azienda Monopoli di Stato (State monopolies)
- Cassa Depositi e Prestiti Ente Tabacchi Italiano (tobacco authority)
- Patrimonio dello Stato SpA (state assets)
- Sogin (nuclear infrastructure management)
- Sogesid (water infrastructure management)
- GRTN (electricity transmission grid operator)
- ENAV (National Air Navigation Authority)
- Infrastrutture SpA (infrastructure development)
- ENIT (state tourist board) SIMEST (Italian business abroad)
- Italia Lavoro (labour policy agency)
- Sviluppo Italia (business development agency)

Local administrations include the following entities:

- Provinces and metropolitan cities
- Municipal governments
- Mountain communities and other local authority unions
- Chambers of commerce
- Universities
- Entities subordinate to local governments
- Port authorities and entities

Regional administrations include the following entities:

- o Local health authorities, hospitals and research
- o Hospitals
- o Subordinate entities
 - Regional entities and institutes
 - Regional agencies
 - Regional tourist boards
 - Entities for right to higher education
 - Provincial and/or municipal entities and institutes
 - Provincial and/or municipal agencies
 - Sub-regional tourist boards
- o Mountain communities and other local authority unions
- o Port authorities and entities
- o Chambers of commerce
- o Consortia and associations controlled by general government entities
 - Consortia established by and/or controlled by regions
 - ATO (Optimal Service Areas)
 - Regional and inter-regional parks
 - Reclamation consortia
 - Consortia established by and/or controlled by provinces/municipalities
 - Provincial and/or municipal parks
- o Publicly owned enterprises and institutions
 - Regional public economic entities and enterprises
 - Regional consortium enterprises
 - Regional institutions
 - Regional personal services enterprises
 - Regional residential building enterprises
 - Special and municipal enterprises
 - Sub-regional public economic entities
 - Provincial and/or municipal consortium enterprises
 - Provincial and/or municipal institutions
 - Sub-regional residential building enterprises
 - Sub-regional personal services enterprises
- o Companies and foundations controlled by general government entities
 - Public service companies owned by regions
 - Foundations owned by regions
 - Other companies controlled by regions
 - Public service companies controlled by sub-regional entities
 - Foundations controlled by sub-regional entities
 - Other companies controlled by sub-regional entities

PUBLIC ENTERPRISES CONSIDERED TO BE NON-GENERALGOVERNMENT ENTITIES FOR THE REGIONAL PUBLIC ACCOUNTS

Local public enterprises include the following entities:

- Local authority consortia and associations
- Local enterprises and institutions
- Companies and foundations owned by local authorities

National public enterprises include the following entities:

- Azienda dei Monopoli di Stato (State monopolies)
- Ente Tabacchi Italiano (Tabacco authority until 2003, year of full privatisation)
- ENEL (Electricity)
- Poste Italiane SpA (Italian post offices)
- Ferrovie dello Stato SpA (State Railways)
- ENI (Energy)
- ACI (Italian automobile club)
- Former IRI agencies (Institute for Industrial Redevelopment) (Aeroporti di Roma, Alitalia,
- Finmeccanica, Fintecna, RAI)
- ENAV (since 2001, year in which it was transformed from government entity into joint-stock company)
- GRTN (National transmission grid operator)
- Infrastructure SpA (Infrastructure development)
- Italia Lavoro (Labour policy agency)
- SIMEST (Italian business abroad)
- SOGESID (Water infrastructure management)
- SOGIN (Nuclear infrastructures management)
- Sviluppo Italia (Business development agency)

Investments on training per unemployed is the value of investments in training divided by the number of unemployed individuals in the same period.

Investments in labour per employee is the value of investments in work divided by the number of employed individuals in the same period.



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