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1. INTRODUCTION

This thesis is based on the study of the functional Urban Areas of Ancona and Tolentino, aimed at identifying the development trajectories of this territory through the use of some theories and models (Allocation and Growth theories) of Regional Economics and data provided by the “Istituto Nazionale di Statistica” (the Italian National Institute of Statistics, ISTAT)

Regional economics is the branch of the economy which includes the space dimension into the study of the market functioning in order to interpret the formation of: prices, demand, production and development level and income distribution in a certain area. According to this discipline, the space is a relational and diversified factor since it is based on social and economic relationships grounding on a given territory and it further allows us to devise an uneven distribution of activities and factors, always in that territory considered.

ISTAT is an Italian public research authority which is in charge to carry out censuses on population and sectors (Agriculture, Industry and Services), sample surveys on families (consumption, leisure time, health etc..) and economic surveys (national accounts, foreign trade, companies, employment etc..).

Having accurately defined the theoretical and empirical sources which allow us to perform this analysis, we can start with a general overview thereof.

At first, it will be described the object of analysis: the functional Urban Areas of Ancona and Tolentino, giving a general overview about their territory composition. Subsequently, it will be analyzed the population showing the demographic dynamics over a given range of time.

The following chapter will describe how the different elements of a Local Labour Systems are distributed across space.

Furthermore, the fifth chapter will deal with the study of human capital, that includes the population education level and the share of immigrants.

Afterwards, the attention will shift on the economic aspects concerning the system. Indeed, the sixth chapter will describe the economic sectors leading the local development and the division of the employees within these activities. Starting from the analysis of the workers who reside where they are employed ending up with those who live and work not in the actual area.

In conclusion, some final considerations will be provided.

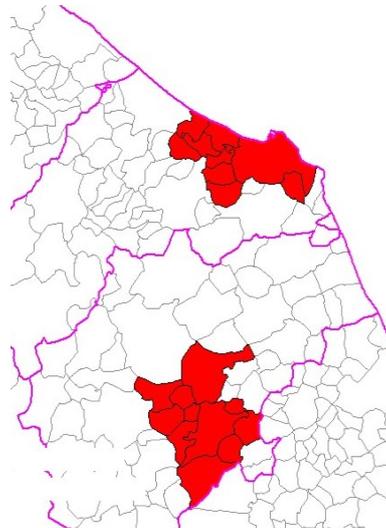
2. OBJECT OF ANALYSIS

The main goal of SLL is the construction of a grid on the territory determined by the movements of population for work reasons (commuters) and it represents a geographical area in which those flows are most concentrate.

- Ancona is a SLL placed along the coast of Adriatic Sea. It is the Marche capital and the main economic center of the region. It includes, besides itself, eight municipalities, which are:
 - Agugliano
 - Camerano
 - Camerata Picena
 - Chiaravalle
 - Falconara Marittima
 - Montemarciano
 - Monte San Vito
 - Polverigi

On the other side we have Tolentino, which is located in the central countryside of the Marche region. It includes ten municipalities:

- Belforte del Chienti
- Sant'Angelo in Pontano
- Caldarola
- Camporotondo di Fiastrone
- Cessapalombo
- Gualdo
- Ripe San Ginesio
- San Ginesio
- Serrapetrona
- Sarnano



Graph 1: Ancona and Tolentino's municipalities

Nowadays, Ancona¹ counts approximately 100993 inhabitants, on a surface of 125 km², while Tolentino² counts approximately 19442 inhabitants, on a surface of 94,86 km². Just comparing these values we can assess that they are quite different cities.

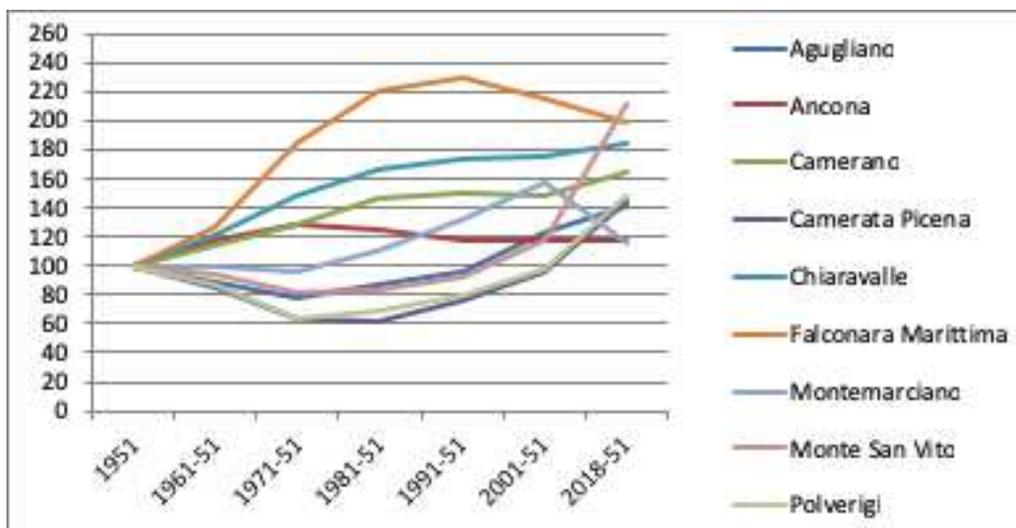
¹ <https://www.comune.ancona.gov.it>

² <https://www.comune.tolentino.mc.it>

3. POPULATION VARIATIONS

Data concerning the population of the SLL at hand (period 1951-2018). We started with a base of 100 for the year 1951 in order to identify in a better way the development trajectories of each municipality.

Graph 2: Population variations of Ancona calculated through the index numbers



Data provided by ISTAT database

As we can see in this graph, the scenario of the trends is quite various. The first evidence is that, Chiaravalle, Camerano and, in particular, Falconara have had a remarkable evolution.

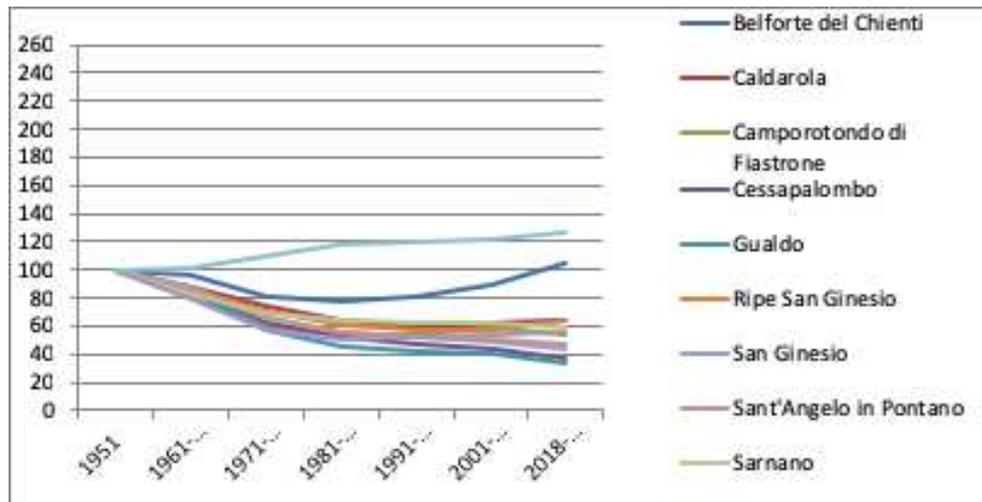
The populations increased because these 3 municipalities are closer to Ancona than the others, it means that the number of commuters has increased, so that economic activities have increased.

On the other side, Polverigi, Camerata Picena, Monte San Vito and Agugliano recorded a decrease from 51 until 81, but after they have experienced a positive trend which is still going on nowadays.

In addition, we can underline 3 particular cases:

- Falconara which has known an incredible growth from 1951 to 1991 but after it has experienced a slump which is still going on.
- After a decreasing period, Monte San Vito has recorded a surge in the growth of population from 2001.
- Ancona has witnessed a constant trend over time.

Graph 3: Population variations of Tolentino calculated through the index numbers



Data provided by ISTAT database

We can see that Tolentino's SLL experienced a different trend.

Indeed, the population grew just in Tolentino and Belforte del Chienti while the other municipalities showed a demographic decline during the whole period studied. To conclude, we can say that Ancona had a quite better accessibility until 1970 but after, due to the high living costs (houses, service etc..) and the earthquake of 1972, a part of the population decided to move to the neighboring municipalities, in particular Falconara, Chiaravalle and Camerano.

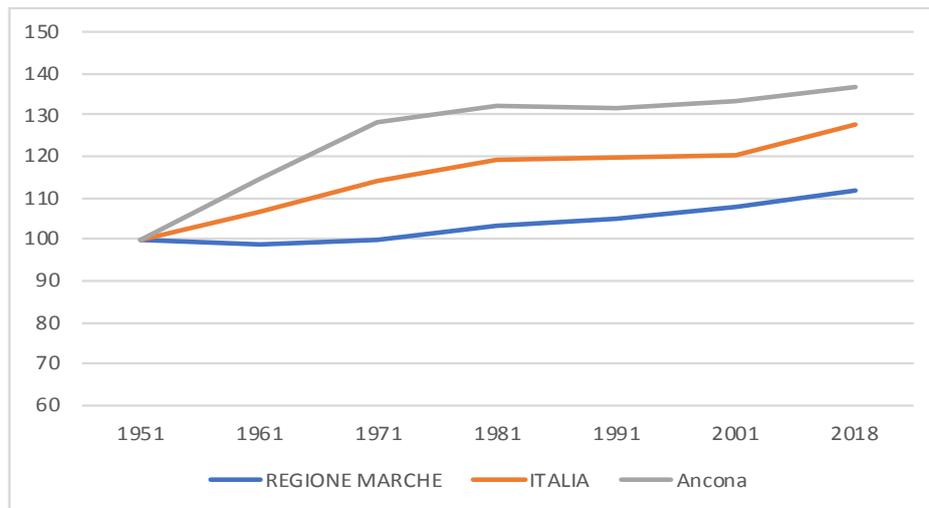
Of course, living in the core urban you have a lower transportation costs, due to the presence of both high order (university) and low order (bakery) services, according to Christaller but, despite this, people has decided to pay more for the transports and they have had anyway a major benefit than living downtown.

The situation of Tolentino is the opposite, in fact the inflow of population in the municipality of Tolentino has been always positive because the population gets more benefits to stay there than living in the surrounding municipalities where there is a significant lack of services and job opportunities. That's why these municipalities have a really narrowed share of population compared to the whole SLL.

The economist William Alonso had predicted these two trends with the Urban Location Theory (extending the Von Thunen model to an urban area) developed by himself. He assumed the existence of an isotropic space (same features along whatever direction) and only one center which is the most attractive for residential and productive activities, in our case Ancona and Tolentino. The theory itself is focused on a trade-off between cost living and households' budget constraints that drives families themselves on a choice depending on which location might create more benefits.

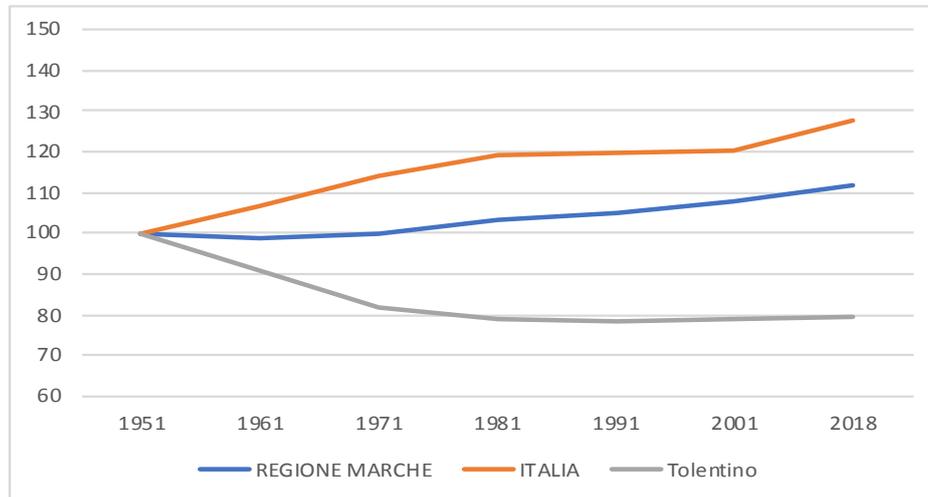
Thanks to the index of the data, we can also compare our results with those relating to the Marche and Italy. It is an important comparison because it permits us to give a further assessment to the structural differences between Ancona and Tolentino's SLL.

Graph 4: Comparison of Ancona's SLL population trend with the regional and national one



Data provided by ISTAT database

Graph 5: Comparison of Tolentino's SLL population trend with the regional and national one



Data provided by ISTAT database

According to the graphs above, it emerges that:

- The population of the Ancona's SLL recorded a far higher level of growth as compared with the national and regional ones.
- On the contrary, Tolentino' SLL population recorded a remarkable decrease.

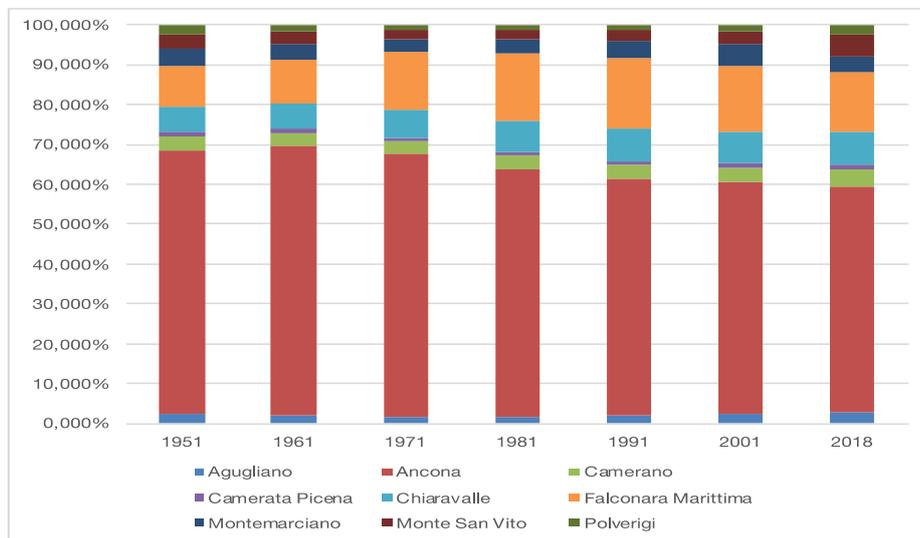
We can therefore say that the two SLLs examined achieved two utterly different trends in comparison to the national and regional ones due to a wide range of reasons which will be showed in the following chapters.

4. SPATIAL ORGANIZATION

As we have already notice from the introduction, one of the main aims of regional economics³ is to understand how human and physical factors are arranged in space, its spatial organization. To perform this analysis we are going to use this formula: Municipality/SLL. This particular formula allows us the possibility to understand how the population is scattered in the entire Local Labor systems of Ancona and Tolentino.

4.1 URBAN DISPERSION

Graph 6: Urban dispersion of Ancona's SLL



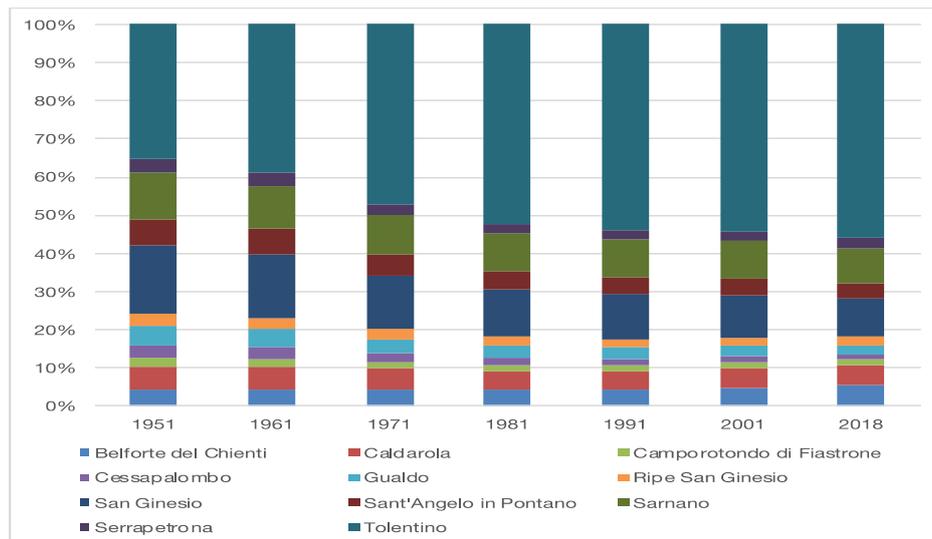
Our elaboration on data provided by ISTAT database

³ Cfr. "Economia Regionale", 2004, R. Capello

As we can see from the bars graph, there's a huge concentration of people in Ancona this distribution is justified by a strong supply of services, possibility of growth for the people and better working conditions, because it is regional capital and the most populated city in the Marche region. Nevertheless, Ancona has registered a constant negative trend over the last sixty years allowing a notable increase of commuting flows due to cheaper lifestyle of the surrounding municipalities.

Another noteworthy result is that as there is great difference between Ancona and Falconara and Chiaravalle, there is also a great difference between those last and the other municipalities which present a significant shortage of prime services and facilities.

Graph 7: Urban dispersion of Tolentino's SLL



Our elaboration on data provided by ISTAT database

As for Tolentino's SLL, we can easily presume that the municipality of Tolentino itself has the most significant impact on the whole Local Labor System. It has experienced a positive but not constant trend because the graph shows an all-time high during 2018.

Keeping an eye on the other municipalities, we can notice that, besides the core urban area, a significant part of the SLL's population has spread only within two municipalities: San Ginesio and Sarnano. The percentages of those municipalities are quite similar, in fact they have experienced a negative trend until 2001 and then an upsurge over the last ten years.

Ancona and Tolentino have a great impact in their respective SLL due to the fact that they present a monocentric structure, meaning that more than half of the SLL's population live in their urban area. It is nonetheless clear that these two cities have had different trends:

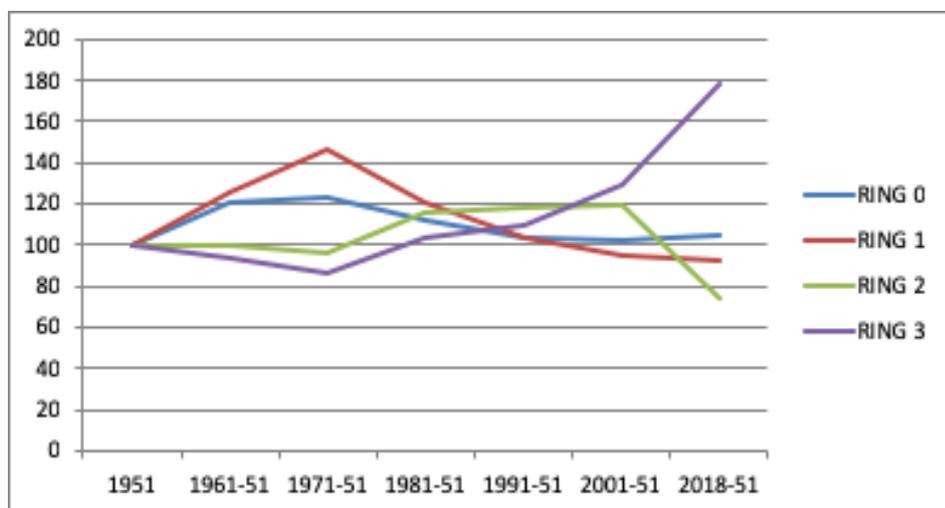
- Ancona have experienced a negative trend (decrease of 10%) during the examined period because of the agglomeration diseconomies. It means that from 1951 until 2018 the great concentration of population in the urban area of Ancona has made the prices of houses and services higher and also it has increased other negative factors such as the congestion arising from the traffic. That's why people has decided to live in the neighboring areas and therefore becoming commuters.

- Tolentino, on the contrary, has registered a growing trend (almost 20%) meaning that people decided to live in the urban area rather than in the other municipalities. Nowadays both of the percentage of Ancona and Tolentino are around 60%.

4.2 POPULATION TRENDS FOR RINGS

A ring⁴ is a specific territorial space that surrounds the core municipality. The Closer is the ring to the core municipality, the lower is the extent of the ring and viceversa.

Graph 8: Ancona's trend for rings



Data provided by ISTAT database

⁴ Cfr. "Re-defining the Boundaries of Major Italian Cities", 2010, A.G. Calafati and P. Veneri

The ring structure of Ancona is:

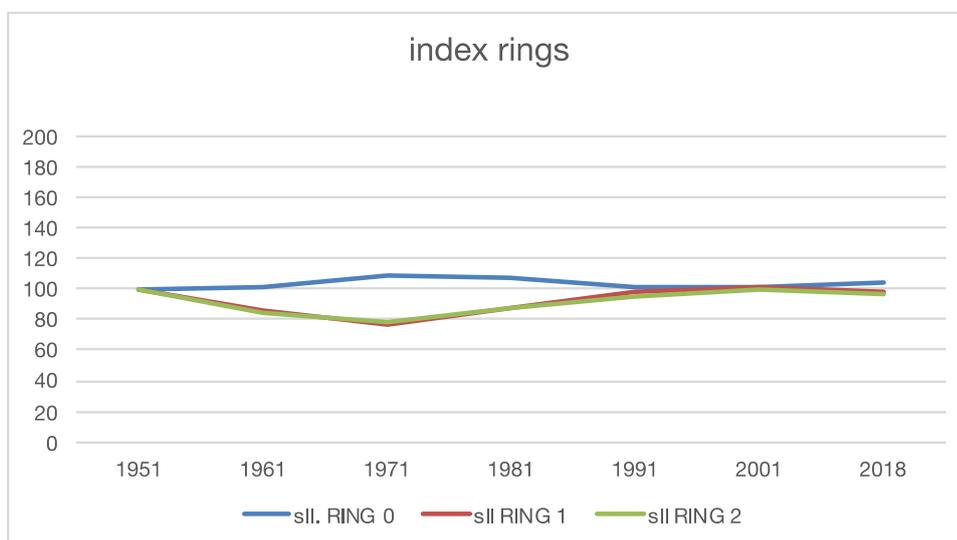
- Ring zero: Core municipality of Ancona
- First ring: Agugliano, Camerano, Camerata Picena, Falconara Marittima e Polverigi
- Second ring: Chiaravalle e Montemarciano
- Third ring: Monte San Vito

As we can see in this graph above, the ring 0, which represent the core municipality, and the ring 1 recorded a more substantial population growth especially in the period 1951-1971 but after a decrease of trend occurred, the ring 1, particularly, has experienced a slump higher than Ancona's one.

On the other side, the ring 2 has recorded a significant rise from 1971 until 2001 and then it has experienced a collapse which is still going on.

We can assess that just the ring 3 has known a remarkable constant expansion trend after 1971, in particular he has reached the zenith of his expansion over the past 10 years. This trend is possible because the ring 3 includes only one municipality which is Monte San Vito.

Graph 9: Tolentino's trend for rings



Data provided by ISTAT database

The ring structure of Tolentino is:

- Ring zero: Core municipality of Tolentino
- First ring: Belforte del Chienti, Camporotondo di Fiastrone, San Ginesio, Serrapetrona
- Second ring: Caldarola, Cessapalombo, Gualdo, Ripe San Ginesio, Sant'Angelo in Pontano, Sarnano

Now we can see that the situation is fairly different compared to the previous one.

The ring 0 registered a boost from 1961 until 1971, after, as we can notice, the trend became negative until 1991 and then constant to the present year.

On the contrary the rings 1 and 2 have followed, substantially, a concomitant trend, starting with a decrease until 1971, then a significant growth until 1991 and finally a constant trend as Tolentino's one.

This could be the result of the great period of evolution in the industrial sector, during the 70s and 80, which was able to provide more job opportunities within the core urban area of Tolentino.

It's also important to point out that the municipalities which surround Tolentino are quite smaller than Ancona's one, besides few exceptions.

For instance, an inhabitant of Falconara or Chiaravalle shall have a higher supply of services than any municipality of Tolentino so he could be willing to be a commuter instead of moving to the core urban area.

5. HUMAN CAPITAL

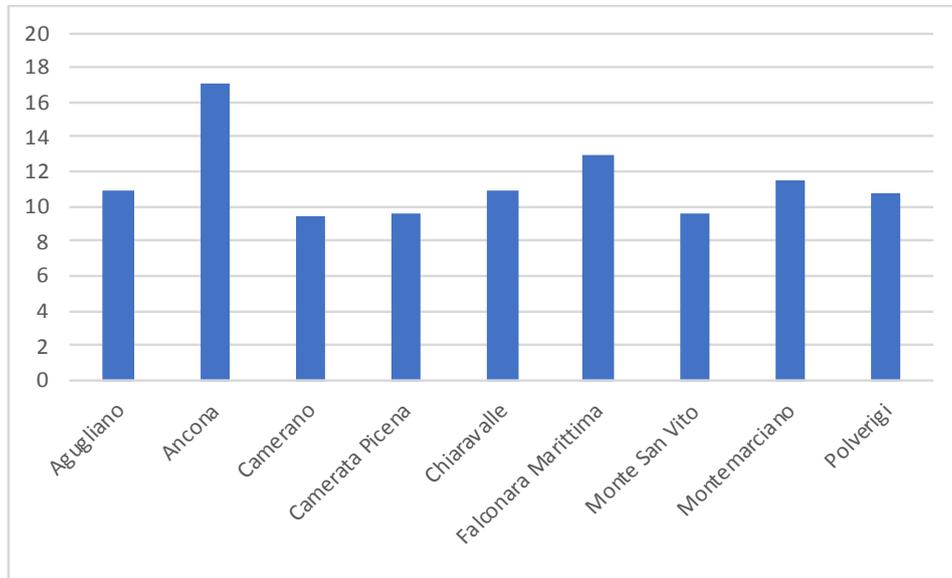
The human capital, in simple terms, is considered as a mix of knowledge, skills and all the other individuals' competencies they assist the creation of personal, economic and social wellbeing. It is directly connected with the level of development of a particular territory.

5.1 EDUCATION UNIVERSITY

In this section we are going to analyze the level of academic education of Ancona and Tolentino in 2011 by considering the percentage of graduated residents for each municipality. Before starting the analysis, it is relevant to say that we have not considered the percentage of people who detain a diploma because nowadays almost everyone has one, not as in the past. Because, as History teaches us, many families were forced to send their children to work, nevertheless their tender age, in order to face the tough living conditions of that time, especially in the aftermath of the World War II⁵.

⁵ Cfr. "Perché l'Europa ha cambiato il mondo", 2015, V. Zamagni

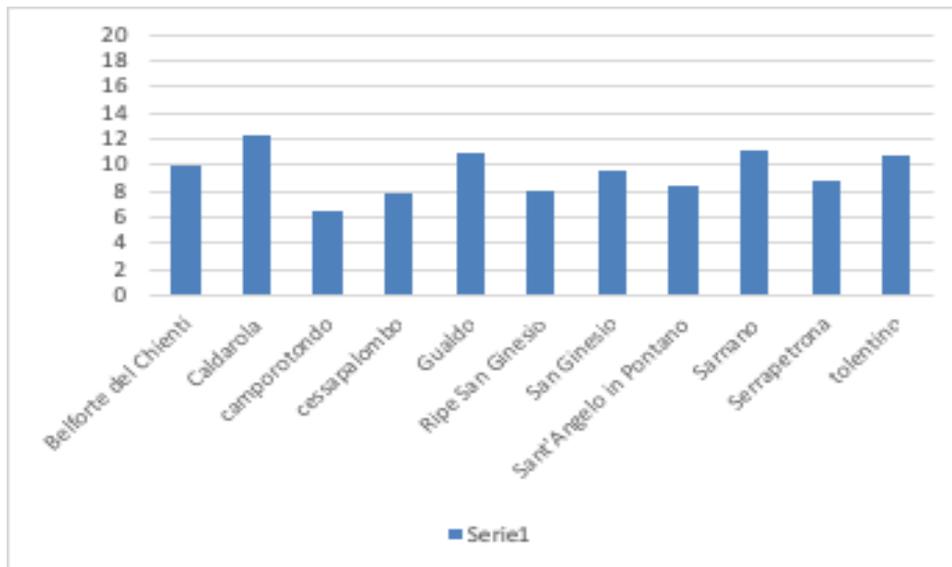
Table 9: percentages of graduated residents of Ancona's SLL in 2011



Data provided by ISTAT database

Looking at the graph we can state that Ancona (17%) has the highest number of graduated residents as it has the highest population and the Università Politecnica delle Marche has his headquarters in Ancona itself. Falconara Marittima presents the second highest percentage right before Montemarciano; this is, we can say, the top three of Ancona's SLL. This significant presence of graduates is due to a major presence of services in those areas. Just three municipalities (Camerano, Monte San Vito and Camerata Picena) have their own values under the threshold of 10 %, because they are manufacturing-oriented municipalities, Monte San Vito in particular, that we are going to describe in the next chapter.

Table 10: percentages of graduated residents of Tolentino's SLL in 2011



Data provided by ISTAT database

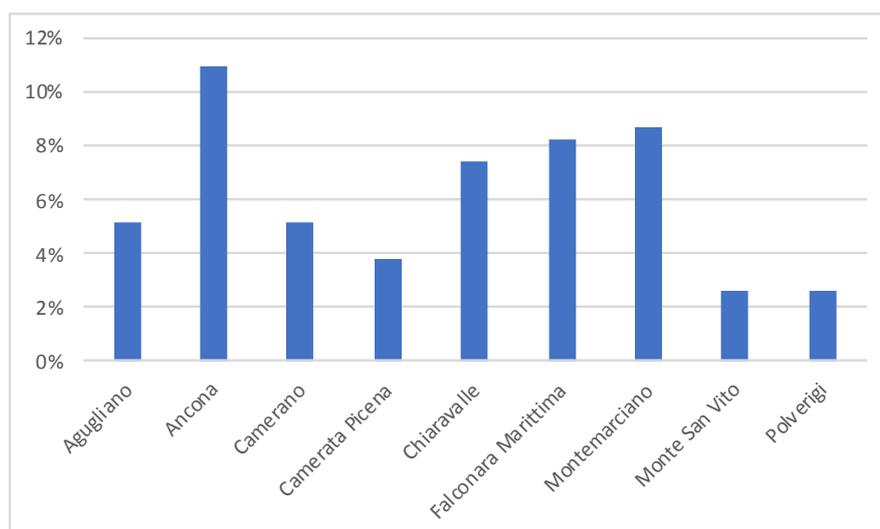
It is notable that Caldarola has the highest percentage of graduates (more than 12%) and not Tolentino itself. Indeed, it is not even the second power in this graph but the fourth meaning that the centroid, in this case Tolentino, doesn't have always the highest share of graduates residents as someone may can figure. After this, we can notice that all other municipalities have values below 10% with the lowest value (6%) which belongs to Camporotondo. Tolentino's case is not so different from Ancona's one; of course it shows lower percentages than Ancona's ones.

It has the highest number of manufacturing-oriented municipalities, but they have a peculiarity in common: the level of university education is not homogeneous in both these two SLLs.

5.2 IMMIGRATION

Immigration is the phenomenon by which people move to another country because of variable reasons such as economic, political ones. It depends also from other variables for example if a city offers a wide range of working opportunities or if that one allows a better social integration of foreigners and so on and so forth. We have analyzed the immigration's trends in 2018.

Graph 11: Immigrants' shares of Ancona SLL's in 2018



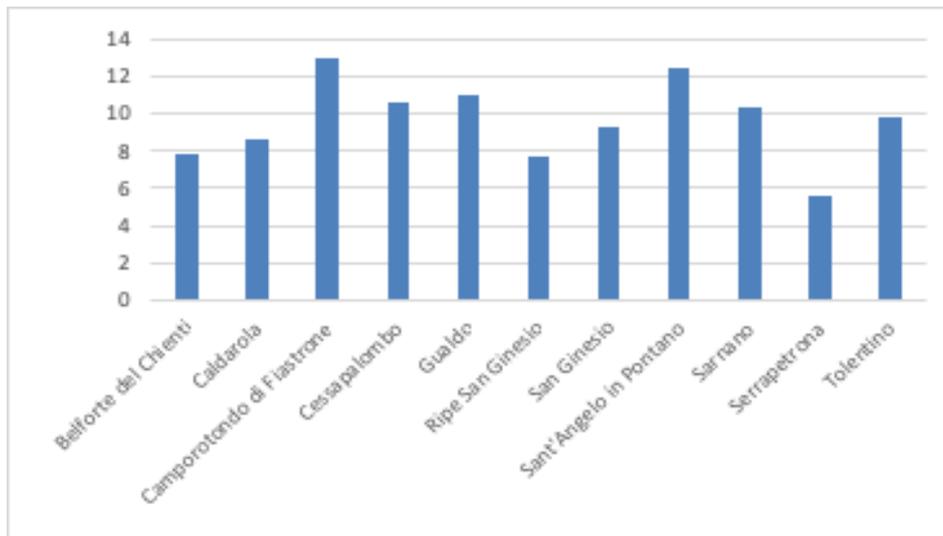
Data provided by ISTAT database

From the data we have gathered, we can see that Ancona has the highest share of immigrants, almost 14%. It is followed by Falconara Marittima, Montemarciano and Chiaravalle.

So, these four municipalities have quite higher shares than the others because they provide more services but also because they are located along the coastline, closer to Ancona, where is located one of the biggest port on the Adriatic Sea. On the contrary, the other municipalities are located in the less accessible countryside. The lowest value belongs to Monte San Vito, 2.58%.

Most of these migrants living in Ancona are represented by people who come from Eastern European countries in particular Romania, Albania and Ukraine. A significant part of foreigners is also composed by people coming from Far East Asian countries such as Bangladesh and China.

Graph 12: Immigrants' shares of Tolentino SLL's in 2018



Data provided by ISTAT database

It is clearly notable that Tolentino's SLL has highest value than Ancona, the highest doesn't belong to Tolentino but to Camporotondo di Fiastrone. The situation is totally different, in fact we can notice that only two municipalities have values lower than 8%, which are Serrapetrona (the lowest) and Ripe San Ginesio. We could explain this phenomenon in this way.

As we could see in the chapter below, Tolentino's SLL has manufacturing-oriented economy which implies modest or low wage. It means that Italian employees would move to other cities to find better salaries making that jobs positions vacant, then immigrants, who settle for a lower wage in general, will be hired.

6. ECONOMIC STRUCTURE

The economic structure of a region describes how many people are employed in the three sectors: Agriculture, Industry and Services. Nevertheless, before starting this analysis, it is pertinent to know the difference between the “Occupati”⁶ and the “Addetti”⁷.

The first group refers to people who are older than fifteen years and live and work in the same municipality, moreover, this category includes the signing of an employment contract in order to be considered as such. The second one, instead, is related to whom work within a legal-economic unit as an independent worker or employee (full-time, part-time etc.) even if temporarily absent (vacation, sickness, suspension from work etc.).

6.1 EMPLOYEES (OCCUPATI) BY SECTOR

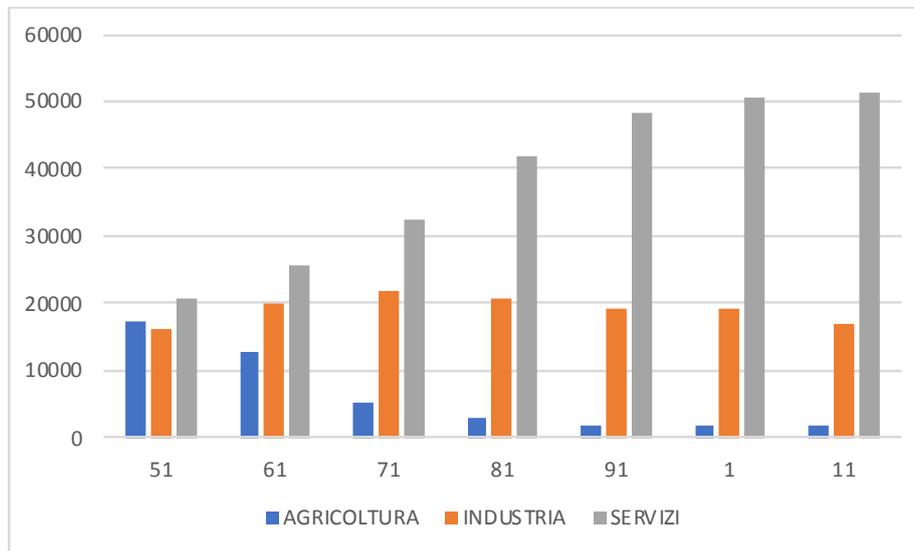
We are going to show the total amount of “Occupati” who work in the three main sectors of the Economy namely: Agriculture (primary sector), Industry (secondary sector) and Services (tertiary sector)⁸.

⁶ <https://www.istat.it/it/metodi-e-strumenti/glossario>

⁷ <https://www.istat.it/it/metodi-e-strumenti/glossario>

⁸ http://www.treccani.it/enciclopedia/settore_%28Dizionario-di-Economia-e-Finanza%29/

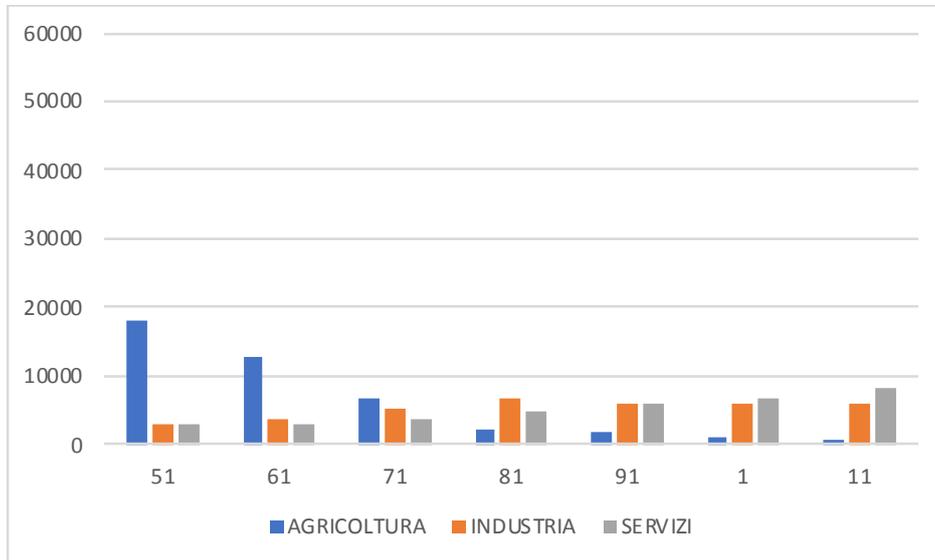
Graph 13: “Occupati” by sector in Ancona’s SLL from 1951 to 2011



Data provided by ISTAT database

Analysing the amount of employees in the various economic sectors, calculated on the total number of employees of the SLL, it emerges that the third sector in Ancona has always been the leading sector with a sturdy growth from 1961 until 1991. The industry, instead, has experienced a decrease starting from 1971 but without a strong falling trend. Finally, the primary sector has registered a robust negative trend began in 1971 because of the advent and development of the services.

Graph 14: “Occupati” by sector in Tolentino’s SLL from 1951 to 2011



Data provided by ISTAT database

The interesting data about Tolentino is that the agriculture included a higher number of employees compared to the two other sectors in 1951, 1961 and 1971 and then they plummeted in the following years. The industry was the predominant sector just in the eighties and then gave way to the rise of the third sector which has never experienced a surge as Ancona has done.

As we can presume from the graphs above, the trends of the two Local Labor System are quite different because, for instance, the third sector, as I said before, has always been the leading sector in Ancona while, in Tolentino, took hold in the SLL just from 2001.

This is because Tolentino has a manufacturing-oriented economy based which lean on a strong presence of industrial districts. On the other hand, the economy of Ancona is almost entirely focused on services.

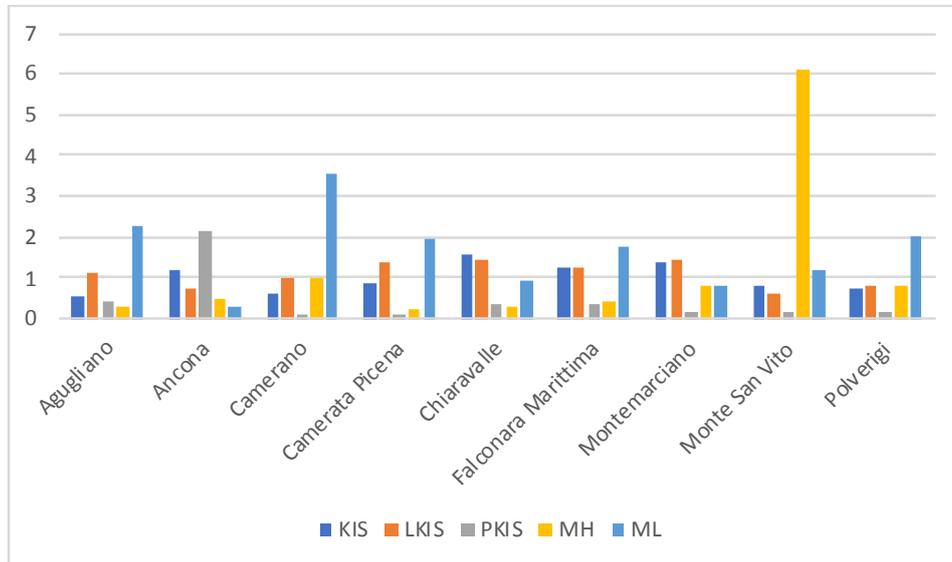
6.2 EMPLOYEES

The employees are divided according to the type of activities they perform. The classes are divided as follows:

1. Medium-high technology manufacturing (MH);
2. Medium-low technology manufacturing (ML);
3. Knowledge-intensive services (KIS);
4. Public knowledge-intensive services (PKIS);
5. Less knowledge-intensive services (LKIS);

Moreover, the graphs below are based a variable named Location Quotient and data belong to 2011. It indicates the ratio of the number of a specific class of the Employees in a given municipality on total number of the Employees in that municipality in that category and the total number of the Employees in Italy in that category on the total number of the Employees in Italy. When LQ is higher than one, it means that a municipality is specialized in a particular class.

Graph 15: Location quotient of 5 “Addetti’s “classes in Ancona’s SLL in 2011



Data provided by ISTAT database

In general, we can see that only Ancona in the whole SLL has a specialization on Public knowledge-intensive services such as Education (UNIVPM) human healthcare (Torrette hospital) and entertainment (Teatro delle Muse) while in the other municipalities the location quotient is significantly low.

At the same time, Ancona presents the lowest values of MH and ML manufacturing meaning that it is an obsolete activity in the centroid. On average, the most represented class in the other municipalities is Medium-low manufacturing activity (manufacturing of food, furniture, leather, plastic etc..).

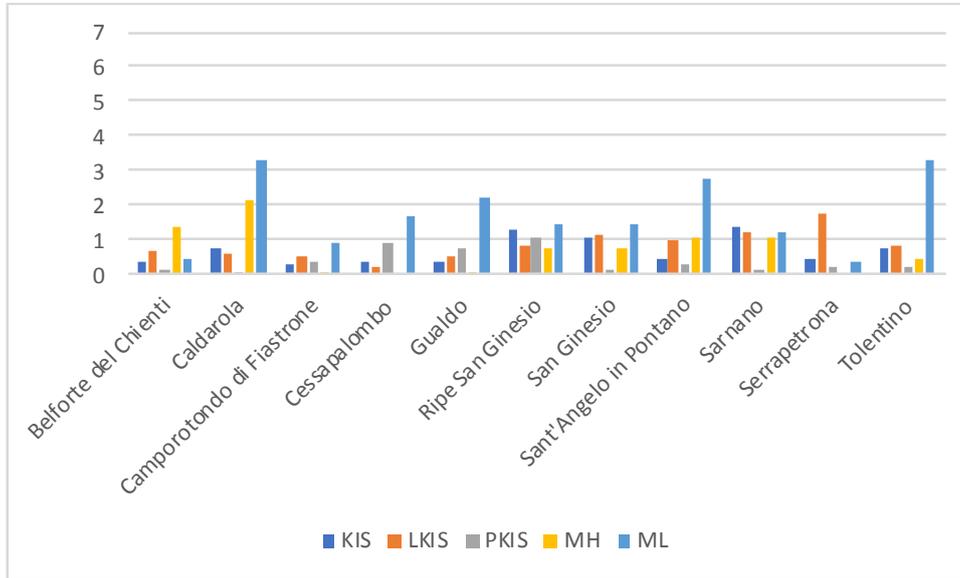
On the opposite, Agugliano, Camerata Picena, Camerano, Falconara, Monte San Vito and Polverigi present a specialization in this, especially Camerano with a LQ of 3.5 (high).

The second most represented is the Less knowledge-intensive services such as postal activity, warehousing, retail trade, administration offices, etc. Chiaravalle and Camerano have the highest values and just three municipalities are not specialized in that activity, including Ancona.

Less than half of the SLL is specialized on Knowledge-intensive services represented mostly by professional figures such as engineers, scientists, architects, lawyers etc. Montemarciano has the highest value, even more than Ancona.

Another noteworthy fact emerging from data is that only Monte San Vito is specialized on medium-high manufacturing (pharmaceutical and chemical products, computers etc..) and it shows a remarkable LQ value which is 6.

Graph 16: Location quotient of 5 “Addetti’s” classes in Tolentino’s SLL in 2011



Our elaborations on ISTAT database

The most represented class in Tolentino’s SLL is the medium-low manufacturing. Indeed, just two municipalities are not specialized in this activity (Belforte del Chienti and Serrapetrona) while Tolentino and Caldarola show the highest LQ values which are close to 3.

On the contrary, the graph shows the lowest values on PKIS activities and MH. The first activities are present in each municipality (except Caldarola) and Ripe San Ginesio has the highest value whilst the second activities are absent in four municipalities and it presents the highest value in Caldarola.

Knowledge-intensive and Low knowledge-intensive activities are the only two class present in all the municipalities described in the graph. The second shows, on average, clearly higher values than the first one and Sarnano is the only municipality which exhibit a specialization in both of these two classes. This is because Sarnano itself is a touristic city, mountain tourism.

To conclude we can say that Ancona and Tolentino's SLL show different distributions of employees because the first is mostly specialized, especially Ancona as a Municipality, on services' supply. On the contrary Tolentino has a manufacturing-oriented economy, in particular medium-low one.

7. CONCLUSION

By the way of conclusion, we can firmly state that Ancona and Tolentino have had different development trajectories over the past sixty years. Ancona's SLL, thanks to the advent and development of the third sector and the consequent growth of its human capital, has always been a step forward in Tolentino which, instead, staked everything on the manufacturing taking advantage of the strong presence of industrial districts, one of the most well-known is the footwear district.

Data we have gathered could forecast some future trajectories of these two Local Labor Systems. Having a manufacturing-oriented economy, Tolentino's economy is based on not very innovative sectors; for this reason, it should make the best use of its local resources, like typical products in order to be more competitive on an increasingly globalized scenario.

On the other side, Ancona presents a modern economic landscape but it still gets a great untapped potential. In fact, in our opinion, the core urban area of Ancona itself could be more exploited for the tourism, which is very low, and it could invest in something that could attract more young human capital who might allow that city to grow more in economic terms.

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