Demographic dynamics in the Alpine arch: trends and future developments with special focus on Italy.

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1 Introduction

The European Commission (2005) has clearly stated that Europe is currently being affected by demographic changes of unprecedented seriousness and proportions. The issue is becoming a political priority in a growing number of member states. The causes of these changes must be sought in the progressive lengthening of the average life span, which is the fruit of major advancements in the field of medicine and better quality of life that European citizens benefit from, as well as in the low fertility rate, which no longer guarantees generational change.

The purpose of this work is to analyse the demographic development of the Nineties (from 1990 to 2000) within the borders of the Convention on the protection of the Alps (Alpine Convention). This is a vast area, of over 190,000 km^2, which includes 5,954 municipalities of eight different countries, inhabited by some 14 million persons, of which over half are in Italy and Austria (Tab. 1).

The "Alpine Convention" is an international agreement, whose purpose is to safeguard the natural ecosystem of the Alps and promote sustainable development, protecting the economic and cultural interests of the resident populations in the signatory countries. The agreement, which was signed in 1991, includes the objective of simultaneously favouring a balanced economic development and an even distribution of the population in the Alpine territory, as well as equal opportunities for the resident population in terms of social, cultural and economic development.

Tab. 1: *Population in the Alpine Convention area.*

Country	**Area[km²]**	**Municipalities**	**Inhabitants**
1	2	3	4
Austria	54,620	1,148	3,255,201
France	40,804	1,749	2,453,605
Germany	11,072	285	1,473,881
Italy	51,184	1,756	4,210,256
Liechtenstein	160	11	34,600
Monaco	2	1	32,020
Slovenia	7,864	60	661,135
Switzerland	24,862	944	1,827,754
Alps	190,567	5,954	13,948,452

Source (4): Austria: Statistik Austria, Volkszählung 2001; Germany: Bayerisches Landesamt für Statistik und Datenverarbeitung 2004; Italy: National Statistical Institute of Italy 2004 ; Liechtenstein: Amt für Volkswirtschaft 2004; Slovenia: Statistical Office of the Republic of Slovenia 2004; Switzerland: Swiss Federal Statistical Office 2004: Monaco: Gouvernement de Monaco: Recensement général de la population 2000; France: INSEE: Recensement de la population 1999.

[1] The author of the text and of the analysis of the data is Giovanna Zanolla; Thomas Streifeneder collaborated to the elaboration of the maps and of fig. 3 and Flavio V. Ruffini supervised the whole work.

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The Alpine arch possesses elements that are analogous to Europe, such as ageing of the population, the migration of young people from peripheral to more central areas, where more qualified jobs are available, and peri-urbanisation - or urban sprawl. The Alpine area displays some distinctive traits however, such as an higher demographic growth, a lower unemployment rate and the presence of areas, such as Liechtenstein, Upper Bavaria (Oberbayern) in Germany and the Autonomous Province of Bolzano-Bozen in Italy, which have some of the highest per-capita GDPs in Europe (Eurostat, 2006). The demographic change in the Alpine arch is worth analysing because of the diversities that it incorporates, the area's peculiarities and the greater instability of the age structure related to migration flows, similar to that of rural areas (Amcoff and Westholm, 2007).

The study will focus on Italian Alpine regions. The reason for this is that although all of the European countries have witnessed an increase in the average age at which people marry, a delay in maternity and the persistence of a difference between the roles played by men and women inside and outside the family and the difficulty of women in reconciling family, children and work (Menniti, 2005), Italy presents one of the most critical demographic cases not only in Europe, but also in the entire economically advanced world (Calza Bini, Turco, 2005). In fact, Italy has one of the lowest birth rates in the world (Kertzer et al., 2006). Young Italians prolong cohabitation with their parents more than young people in other countries, after they have finished their studies. Causes can be found in the rigidity of the labour market (which penalizes young people in the Mediterranean countries), in the precarious nature of their jobs and the high cost of lodging, as well as in the family-oriented welfare system, which translates into the absence of policies that favour separation and independence from the family of origin (Esping-Andersen, 1990).

2 Objectives and methods

The objective of this comparative analysis is to outline the demographic framework of the Alpine arch in general and of the individual regions, in the 90s. In particular, the growth rate and degree of population ageing in the Alpine regions will be compared with national data in the relevant countries, in order to understand to what extent the trend diverges from national averages and whether the regions reflect the differences present at national level. Additionally, an analysis will be made to determine whether there are similar models of development in the Alpine area and in extra-Alpine areas, and whether it is possible to identify regions of demographic growth and reduction.

Demographic development will also be correlated to economic prosperity (measured in terms of per-capita GDP). Although the importance of economic elements in determining demographic trends is now taken for granted, there remain doubts as to the opposite question – namely, as to the actual ability of demographic factors to influence economic growth and, if so, in what direction. There are two opposing groups in the debate on the influence of the demographic curve on economic development: "populationists" and neo-Malthusian ecologists. The former emphasize the potential of development inherent in demographic growth (which enlarges the market, ensures greater future strength and constitutes an incentive for technical progress). The latter see the increase in population as the primary hindrance to investment and economic development (demographic growth reduces the per-capita income and pushes investments towards purposes that are not immediately productive, such as social and health care) (Morettini, 2005). In the 90s a research strand was started, called "New Demography"[3], which correlates the age structure of the population with the labour market and the economy of a country (children, young people and the elderly are net consumers of resources, while the adults produce and save).

The basic assumption of this paper is therefore that in the Alpine arch, there are patterns of demographic and economic development that are different between regions, as well as between municipali-

[3] The works of Bloom & Freeman (1988), Kelley & Schmidt (1995), Bloom & Williamson (1998), Bloom & Canning (1999) can be related to this school of thought.

ties of the same region (which can also be traced to the size of the region). We expect that – within a rather limited territory - some regions will show a positive demographic balance, marked economic prosperity and a certain generational change, while other more peripheral regions will suffer from both geographic and economic marginalization. The latter are expected to be characterised by a stagnant or decreasing population, by the emigration of young people to more dynamic areas and by the permanence of the elderly, which is made difficult by the closure of many businesses and services.

Official data acquired from the national statistics offices of the eight Alpine countries were utilised for this study. Following a process of harmonisation, necessary to make a scientifically correct comparison of the data at national and international level, the Geographic Information System (GIS) permitted the cartographic representation of the indicators in order to view an overall, yet detailed picture of demographic development in the Alpine area.

3 Demographic developments in the Alpine arch

3.1 The Alps and Europe

During the course of the 90s, the population of countries in the Alpine arch showed an overall growth of 3.2%, which goes up to 7.8% if only the area of the Alpine Convention is taken into consideration (Tab. 2). The demographic increase in the regions, however, was not homogeneous: in general, the increase was greater in the Alpine regions of the countries that recorded a higher demographic growth at national level, such as Liechtenstein (13.2%), Switzerland (13.1%) and France (9.2%). In the Italian and Slovenian Alpine regions, instead, the population grew more slowly (5.7 and 1.2% respectively) as it also did at national level. A striking piece of information was the demographic growth recorded in German Alpine regions, of 15.7%, while growth at national level was only 1.5%.

Tab. 2: **Population growth: comparison between Europe and Alps (1994-2004).**

Country	Population change [%] at national level	Population change [%] in the regions of Alpine Convention
Austria	2.7	4.8
France	4.9	9.2
Germany	1.5	15.7
Italy	1.8	5.7
Liechtenstein	13.1	13.2
Monaco	6.8	6.8
Slovenia	0.4	1.2
Switzerland	5.7	13.1
EU-15	3.2	-
Alpine Convention Area	-	7.8

National and European data refer to 1994 and 2004 and the source is Eurostat http://epp.eurostat.ec.europa.eu.

Source: Alpine Convention data: due to data availability the reference year varies between 1987 and 2005. Monaco: Recensement Général de la Population 2000 & 1990; Austria: Statistik Austria 2005 & Volkszählung 1991, France: INSEE: Recensement de la population 1999 & INSEE: Recensement de la population 1990; Germany: Bayerisches Landesamt für Statistik und Datenverarbeitung 2004 & Volkszählung 1987; Italy: ISTAT 2004 & 1991; Liechtenstein: Amt für Volkswirtschaft, Vaduz 2000 & 1990; Slovenia: Statistical Office of the Republic of Slovenia, Regional Statistics 2004 &1991; Switzerland: Swiss Federal Statistical Office, Demography and Migration Section 2004 & 1990.

Within the Alpine regions of the same states, municipalities that have experienced a demographic decrease and municipalities whose population has increased also co-exist. As can be seen from Fig. 1, the demographic decline was particularly marked in Austria's eastern Styria (Steiermark) – where a decline in the manufacturing sector caused the loss of jobs, in the southern part of Lower Austria

(Niederösterreich), in the Swiss Cantons of Uri and Bern and in the northern Ticino. The population grew, by contrast, in the Central Alpine regions such as the Upper Bavaria (Oberbayern) in Germany (where the increase was 10.5%, the Alpine area's largest increase, probably related to the decentrelisation of many Munich-based businesses to the surrounding rural areas), Salzburg, Tyrol and Vorarlberg in Austria and Liechtenstein. The French regions recorded the most heterogeneous situation, in which the change in population at municipal level in the 90s has the highest variance (this holds true also if the effect of the 'number of population' is eliminated, which would cause villages with just a few inhabitants to record greater percentage increases or decreases with variations of just a few units).

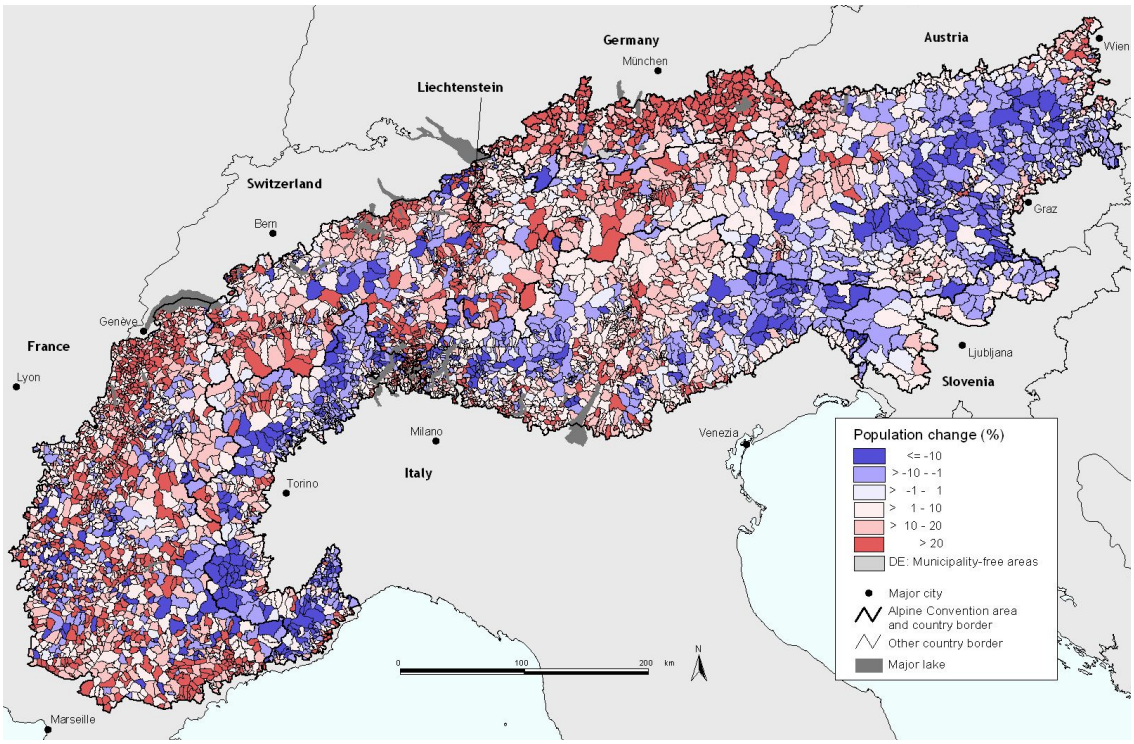

Fig. 1: *The population trend in Alpine municipalities between 1990 and 2001.*

Source: Due to data availability the reference year varies between 1987 and 2001: Monaco: 1990/2000; Austria: 1991/2001, France: 1990/1999; Germany: 1987/2000; Italy: 1990/2000; Liechtenstein: 1990/2000; Slovenia: 1991/2000; Switzerland: 1990/2000). Source: Monaco (Gouvernement de Monaco: Recensement général de la population); Austria (Statistik Austria, Volkszählung); France (INSEE: Recensement de la population); Germany (Bayerisches Landesamt für Statistik: Bayerische Gemeinde- und Kreisstatistik Strukturdaten aus der Volkszählung 1987, Bevölkerungsstatistik 2000); Italy (ISTAT, Censimento generale della popolazione); Liechtenstein (Amt für Volkswirtschaft: Volkszählung); Slovenia (Statistical Office of the Republic of Slovenia: Population Census); Switzerland (Bundesamt für Statistik: Volkszählung). This map includes data licensed from European National Mapping Agencies, @EuroGeographics. Croatia and Bosnia & Herzegovina country boundaries, water, DCW, 1999; cities, ArcWorld Supplement, 1999.

For what concerns the development of Italian Alps in the 90ies, experts claim that here there are "mountains without inhabitants and inhabitants without mountains" (Varotto, 2004). The prognosis of further concentration of settlement and production activities in the already densely populated areas came true. Particularly in the planes of the long and broad valleys and at the southern downward slopes where the large valleys meet the planes (Val di Susa, Valle d'Aosta, area of the large lakes in Lombardia, Val d'Adige) this trend was confirmed. These areas ("inhabitants without mountains") recorded a demographical increase between 5 and 10 % in the last ten years. In contrast, there exist areas with strong tendencies of depopulation and abandonment. These areas ("mountains without

inhabitants") were already sparsely populated before. Thus the low population densities have to be traced back to former emigration processes. Unfortunately this situation is still spiraling downward. During the last decade the Alps of Liguria and Piedmont, the province of Belluno (Veneto) and the Carnia zone (Friuli-Venezia Giulia) had to face a population decline of around 5-10%.

An exception is given by the situation in the Autonomous Province of Bolzano due to its political and strategic spatial planning objective to promote a decentralized land use management to achieve vital stable rural areas as a whole. A focus was put on the preservation of historical spatial structures and landscape shapes. The spatial development program supported a decentralized settlement and guaranteed sufficient infrastructural facilities (e.g. every farm is connected to the traffic, electric, canalization and telecommunications net). Moreover, particular attention was paid to mountain agriculture and tourism. These two sectors represent the moving spirit for the environmental and social quality and for supporting the local economy. Hence, local production plants were built ("decentrelization of the economy") for offering the local people a wider range of income-possibilities. Due to alternative non-farming job opportunities, farm managers could restructure their agricultural activities towards part time farming. Additionally, other important aspects as the socio-cultural background, the deep relatedness of the local people with their territory as well and the large juridical possibilities due to the Autonomy status have a relevant impact on the extraordinary status.

3.2 Demographic development in Alpine municipalities

The demographic increase of 7.8% (Tab. 2) conceals an extremely heterogeneous situation, related to the size of the municipality as well as to the area. The variation in the number of inhabitants during the 90s can be summarised as follows:

- almost 26% of Alpine municipalities recorded a demographic drop of more than 1%;
- 7% of the population can be defined as "stagnant", namely, it did not show any variations above 1%, either in the negative or positive sense;
- 58% of municipalities experienced demographic growth ranging from 1 to 25%;
- the remaining 10% witnessed increases in excess of 25%.

In 2000 there were 4,547 Alpine municipalities with less than 2,500 inhabitants (over three-quarters of the municipalities) and almost one third had less than 500 inhabitants. Less than one third of the Alpine population lives in the smaller communities, while one fifth resides in municipalities with a population between 2,500 and 5,000 inhabitants and over half in towns with over 5,000 inhabitants. The demographic decrease was recorded mostly in the smaller communities[4], with populations of no more than 500 inhabitants and in the larger cities with over 25,000 inhabitants (Tab. 3).

[4] Of these, the smallest towns recorded the greatest changes in populations, for the statistical reason mentioned in the previous note. Monestier-d'Ambel, in the French Province of Isère, for example, went from 65 inhabitants in 1990 to 20 in 2000, thereby recording a demographic decrease of 69%; Aucelon, vice versa, in the French Province of Drôme went from just 18 inhabitants in 1990 to 41 del 2000, recording a growth of 128%.

Tab. 3: *Overview of municipality types and the population structure.*

Population classes	Number of municipalities	Share on total number of municipalities [%]	Number of inhabitants	Share on total population [%]	Share of municipalities with decreasing inhabitants during the 90s on relative municipalities of population class [%]
1	*2*	*3*	*4*	*5*	*7*
< 500	1,876	31.5	445,588	3.2	36.5
500 – < 1,000	1,099	18.5	797,585	5.7	28.2
1,000 – < 2,500	1,572	26.4	2,551,301	18.2	26.5
2,500 – < 5,000	816	13.7	2,810,900	20.1	20.5
5,000 – < 10,000	367	6.2	2,476,149	17.7	18.6
10,000 – < 25,000	175	2.9	2,522,397	18.0	23.6
25,000 – < 50,000	35	0.6	1,166,367	8.3	38.2
≥ 50,000	14	0.2	1,228,738	8.8	35.7
Total Alps	5,954	100.0	13,989,025	100.0	28.7

Source (4):Austria: Statistik Austria 2005; Germany: Bayerisches Landesamt für Statistik und Datenverarbeitung 2004; Italy: ISTAT 2004; Liechtenstein: Amt für Volkswirtschaft 2000; Slovenia: Statistical Office of the Republic of Slovenia 2004; Switzerland: Swiss Federal Statistical Office, Demography and Migration Section 2004; Monaco: Gouvernement de Monaco: Recensement général de la population 2000; France: INSEE: Recensement de la population 1999. Without counting the ten German municipality-free areas.

Source (6): Due to data availability the reference year varies between 1987 and 2005. Monaco: Recensement Général de la Population 2000 & 1990; Austria: Statistik Austria 2005 & Volkszählung 1991, France: INSEE: Recensement de la population 1999 & INSEE: Recensement de la population 1990; Germany: Bayerisches Landesamt für Statistik und Datenverarbeitung 2004 & Volkszählung 1987; Italy: ISTAT 2004 & 1991; Liechtenstein: Amt für Volkswirtschaft, Vaduz 2000 & 1990; Slovenia: Statistical Office of the Republic of Slovenia, Regional Statistics 2004 &1991; Switzerland: Swiss Federal Statistical Office, Demography and Migration Section 2004 & 1990.

In the larger towns the demographic decrease was due primarily to peri-urbanisation or urban sprawl. Analogously to what takes place in cities in plains areas, the population of urban centres move to the surrounding suburban area, where housing is less expensive and the vicinity to the town allows them to commute. The growth in urban areas therefore depends upon the growth of settlements around the larger cities (as can be seen by comparing the fifth and sixth column of Table 4, the urban conglomeration grew more or declined less than the centre, for all of the most important Alpine cities). This phenomenon is even more evident in terms of jobs (Perlik, 1999).

Alpine cities therefore have the same models of development as cities in the plains (Perlik, 1999; Gaido, 1999) and their only elements of specificity are related to the proximity of the mountains (which makes them less accessible, more susceptible to natural risks and poses limits on the available surface area) and the smaller size of markets. Additionally, the processes of growth in the tertiary sector, sub-urbanisation and peri-urbanisation began later than in plains areas (Perlik, 1999).

The most important Alpine cities, which in the European context are not “small towns”, play an extremely important role for the economic and demographic development of the Alpine regions. Productive activities and services are concentrated in these cities (from public services such as schools, to offices and health services, commercial businesses, cultural and recreational activities). The same holds true for 71% of the jobs in the entire Alpine arch (Favry et al., 2004). Such towns feel the influence of the metropoleis situated at the feet of the Alps (such as Milan, Turin, Lyon, Munich and

Vienna) (Perlik & Debarbieux, 2001) with which they are well connected (Torricelli, 1996). Cultural isolation and diverging models of urban consumption are only distant memories in these areas, which unite the benefits of nature and a healthier environment with the availability of services equal to plains areas. Paradoxically, the risk related to the increase of connections with plains centres is that of letting these areas become peripheral, as they tend to lose economic functions that are absorbed in the orbit of the larger plains centres (Massarutto et al., 2004; Pfefferkorn et al., 2005).

Tab. 4: *Overview of the growth of the metropolises (municipalities > 50.000 inhabitants) and their agglomerations[5] in the Alpine Convention area.*

Municipalities	State	Inhabitants 2000	Inhabitants 1990	Change [%]	Agglomeration 2000	Agglomeration 1990	Change [%]
1	2	3	4	Δ 3, 4	6	7	Δ 6, 7
Trento	Italy	110,142	101,545	8.5	136,591	123,750	10.4
Rosenheim	Germany	60,108	56,340	6.7	145,345	120,508	20.6
Villach	Austria	57,829	54,640	5.8	78,544	74,034	6.1
Chambéry	France	57,592	55,603	3.6	131,547	119,208	10.4
Klagenfurt	Austria	91,723	89,415	2.6	117,003	111,949	4.5
Annecy	France	52,100	51,143	1.9	156,727	142,252	10.2
Grenoble	France	156,203	153,973	1.4	394,787	384,086	2.8
Kranj*	Slovenia	52,689	52,043	1.2	78,834	76,251	3.4
Kempten	Germany	61,576	61,906	-0.5	93,583	83,411	12.2
Bolzano/Bozen	Italy	97,236	98,158	-0.9	139,152	133,744	4.0
Salzburg (city)	Austria	142,662	143,978	-0.9	211,229	199,317	6.0
Innsbruck	Austria	115,498	118,112	-2.2	171,554	170,020	0.9
Luzern	Switzerland	57,023	59,370	-3.9	176,821	166,436	6.2
Maribor*	Slovenia	114,436	132,860	-13.9	127,931	134,742	-5.1

*After the achieved independency from former Yugoslavia in 1991 a major reform of municipalities/municipality-structure occurred in Slovenia. For this reason the year 1996 has been selected as the reference year for this study.

Source: Austria (Klagenfurt: Statistik Austria 2005 &1991;Innsbruck: Statistik Austria 2005 &1991; Salzburg: Statistics Austria, end 2002 & Statistik Austria 1991; Villach: Statistik Austria 2005 &1991); Germany (Bayerisches Landesamt für Statistik und Datenverarbeitung 2004 & 1990); Italy (ISTAT 2004 & 1991); Slovenia (Maribor: Statistical Office of the Republic of Slovenia, Regional Statistics 2001 &1996; Kranj: Statistical Office of the Republic of Slovenia, Regional Statistics 2004 &1996); France (INSEE: Recensement de la population 1990, 1999); Monaco (Gouvernement de Monaco: Recensement général de la population 2000 (incl. data of 1990); Liechtenstein (Amt für Volkswirtschaft: Volkszählung 1990, 2000); Switzerland (Swiss Federal Statistical Office, Demography and Migration Section 2000 & 1990).

3.3 Population ageing

The greater "remoteness" that marks small peripheral Alpine municipalities with no consolidated tourism industry is the cause of a trend of marginalization that paves the way for the migration of young people, who leave the place, and the closing down of business activities and services, with consequent negative repercussions on the quality of life in the region. In such areas, where the percentage of senior population is high, initiatives aimed at promoting the growth of micro-economies are often hampered by the lack of human resources. This is the so called "emptied mountain area"'

[5] In this work, on the basis of the data at disposal, agglomerations have been determined for all the major alpine cities with 50,000 inhabitants or more. Based on the centroids of the municipalities, all the municipalities within a radius of 10 km of the major cities have been assigned to the respective agglomeration. For every agglomeration the total population has been determined.

(Uncem-Censis, 2002), where the most noticeable, outperforming indicators are the ageing index, the addiction index, the average mortality rate and the deregistration rates.

This paper will focus on two indicators: the percentage of population over 64 years of age and the old-age index. When the former exceeds 15%, a given population can be considered "over-aged" **(**Bähr, 2004). On the other hand, the old-age index id a dynamic indicator that describes the demographic structure of a region (ASTAT, 2003) and corresponds to the ratio of the over-64 population to the under-15 population, multiplied by 100 (Gavrilov & Heuveline, 2003).

In the year 2000, while in Europe the percentage of the over-64 population was 15.7%[6]; in the area of the Alpine Convention it was slightly higher (17.0%). In all Alpine regions, with the exception of Austria and France, the percentage of senior citizens is higher than the national average (Tab. 5).

Tab. 5: *The share of over-aged people for the Alpine Convention area.*

	Persons over 64 on the total population [%]		**Municipalities in the Alpine Convention area**			
Country	National values	Alpine Convention	N°	Municipalities recording more than 15% of persons older than 64 years	Over-aged municipalities in relation with the number of municipalities in the Convention area of the country	Over-aged municipalities in relation with the total number of municipalities of the Convention area.
1	2	3	4	5	5/4	5/5tot
Austria	15.4	15.1	1,148	493	43	13.2
Switzerland	15.4	15.9	944	519	55	13.9
Germany	16.4	17.3	285	170	60	4.6
France	16.1	15.1	1,749	990	57	26.6
Liechtenstein	11.3		11	0	0	0
Italy	18.3	19.1	1,756	1,529	87	41.0
Monaco	22.4		1	1	100	0
Slovenia	14.0	14.0	60	26	43	0.7
Alpine Convention	17.0		5,954	3,728	63	100.0

Source: Austria (national value: Eurostat 2004; Alpine Convention: Statistik Austria 2001; France (national value: Eurostat 2004; Alpine Convention: INSEE 1999); Germany (national value: Eurostat 2004; Alpine Convention: Bayerisches Landesamt für Statistik und Datenverarbeitung, 2001); Italy (national value: Eurostat 2004; Alpine Convention: ISTAT 2001); Liechtenstein (Amt für Volkswirtschaft 2001); Monaco (Gouvernement de Monaco: Recensement général de la population 2000); Slovenia (national value: Eurostat 2004; Alp. Convention: Statistical Office Slovenia 2002); Switzerland (national value: Swiss Federal Statistical Office 2005; Alpine Convention: Swiss Federal Statistical Office 2000).

The percentage of over-64 population is not evenly distributed across countries and roughly reflects the differences recorded at national level. It is very low in Liechtenstein (11.3%) and Slovenia (14.0%) and very high in the Principality of Monaco (22.4%) and in the Italian Alps (19.1%). The Principality of Monaco is a special case, since it attracts senior and wealthy citizens on account of its privileged setting (tax scheme, climate, leisure facilities etc.).

According to the definition above, 63% of Alpine municipalities are considered to be "over-aged". Such percentage hits 87% in the Italian Alps, proving the precarious demographic situation of Italy that hosts 41% of the "over-aged" Alpine municipalities (Tab. 5).

[6] Such figure, which refers to the EU-15 average, is 16.3 for EU-25 (Eurostat, 2000).

The old-age index is particularly high in the southern part of the Alps, especially in Liguria, Friuli-Venezia Giulia and Piedmont. By contrast the old-age index of Trentino-AltoAdige (South Tyrol) tallies with the average values of the Alpine Convention's regions. The youngest regions are Liechtenstein, Rhône-Alpes in France and the Austrian Länder (federal regions) of Vorarlberg, Tyrol and Salzburg (Fig. 3).

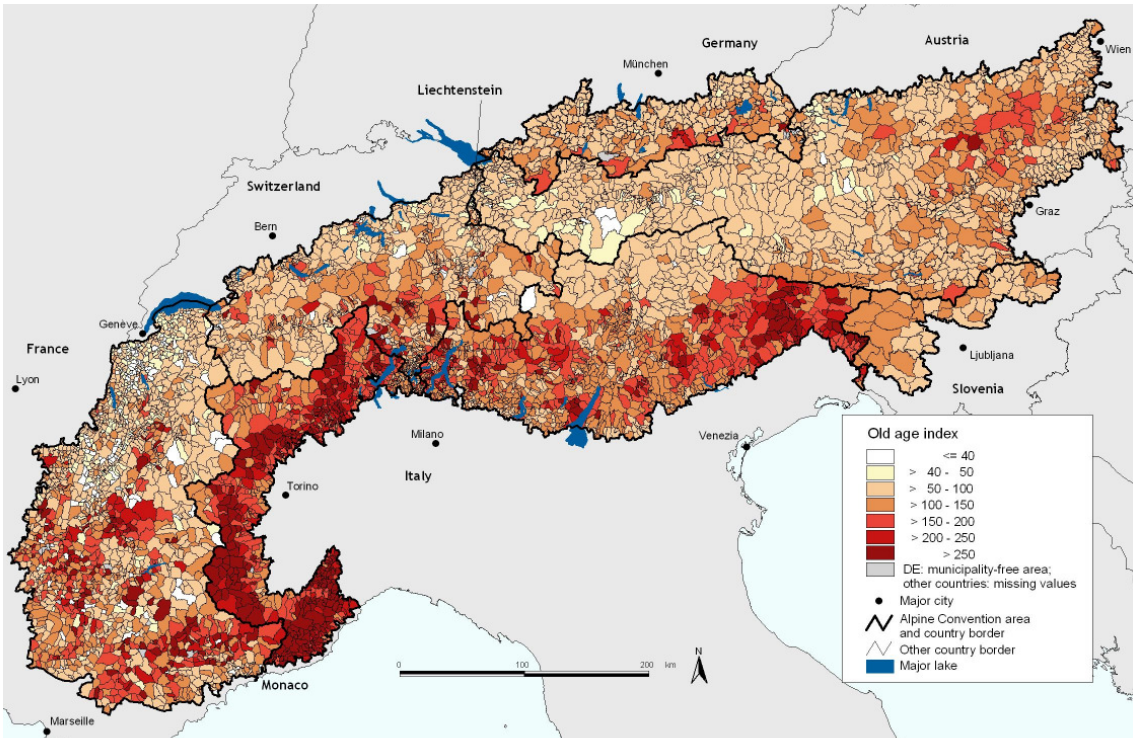

Fig. 2: *Old-age index in the Alpine Convention area.*

Source: Austria (Statistik Austria 2001); France (INSEE 1999); Germany (Bayerisches Landesamt für Statistik und Datenverarbeitung, 2001); Italy (ISTAT 2001); Liechtenstein (Amt für Volkswirtschaft 2001); Monaco (Gouvernement de Monaco: Recensement général de la population 2000); Slovenia (Statistical Office Slovenia 2002); Switzerland (Swiss Federal Statistical Office 2000). This map includes data licensed from European National Mapping Agencies, ©EuroGeographics. Croatia and Bosnia & Herzegovina country boundaries, water, DCW, 1999; cities, ArcWorld Supplement, 1999.

Not unlike the demographic reduction, population ageing is particularly evident in small municipalities with less than 500 inhabitants and urban settlements with more than 25,000 inhabitants: almost 60% of the former and approximately 70% of the latter (and almost 90% of municipalities with over 50,000 inhabitants) have and old-age index higher than 100 (tab. 6). The depopulation risk is remarkably high in 563 municipalities with less than 500 inhabitants that witnessed a population reduction all through the 90s and have an old-age index higher than 100.

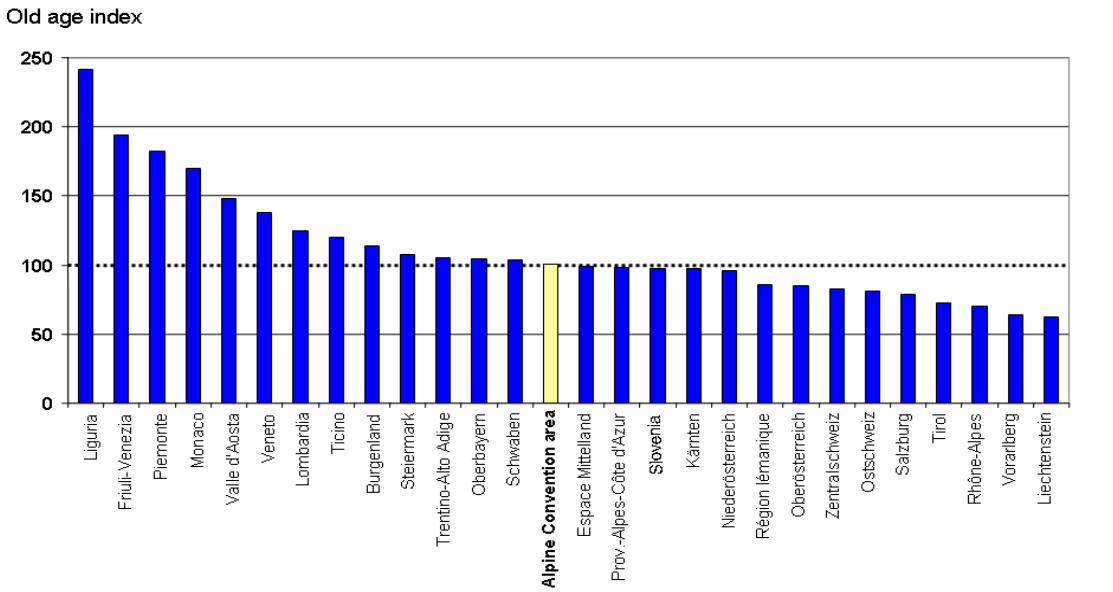

Fig. 3: *Old age index in Alpine Convention regions.*

Source: Austria (Statistik Austria 2001); France (INSEE 1999); Germany (Bayerisches Landesamt für Statistik und Datenverarbeitung, 2001); Italy (ISTAT 2001); Liechtenstein (Amt für Volkswirtschaft 2001); Monaco (Gouvernement de Monaco: Recensement général de la population 2000); Slovenia (Statistical Office Slovenia 2002); Switzerland (Swiss Federal Statistical Office 2000).

Tab. 6: *Old age index of the municipalities of Alpine Convention.*

Population	**Municipalities**	**Old-age index average**	**Municipalities with an old age index > 100**		**Municipalities with a population decrease between 1990 and 2000**	**Municipalities with an old age index > 100 and a population decrease between1990 and 2000**		
	Total		N°	[%]	N°	N°	[%]	[%]
	1	2	3	3/1	5	6	6/1	6/5
< 500	1,876	119.9	1,080	57,6	684	563	30	81,8
501-1,000	1,099	98.0	503	45,8	308	228	21	73,5
1,001-2,500	1,572	92.7	618	39,3	419	258	16	67,0
2,501-5,000	816	93.7	325	39,8	168	104	13	73,8
5,001-10,000	367	95.6	169	46,0	67	55	15	83,3
10,001-25,000	175	99.6	88	50,3	42	27	15	79,4
25,001-50,000	35	123.6	22	62,9	13	10	29	76,9
> 50,000	14	121.6	12	85,7	5	5	36	100,0
Total Alps	**5,954**	**100.3**	**2,817**	**47,3**	**1,707**	**1,250**	**21**	**76,1**

Source (2):Austria: Statistik Austria 2001; France: INSEE 1999; Germany: Bayerisches Landesamt für Statistik und Datenverarbeitung, 2001; Italy: ISTAT 2001; Liechtenstein: Amt für Volkswirtschaft 2001; Monaco: Recensement general de la population 2000; Slovenia: Statistical Office Slovenia 2002; Switzerland: Swiss Federal Statistical Office 2000. This map includes data licensed from European National Mapping Agencies, ©EuroGeographics. Croatia and Bosnia & Herzegovina country boundaries, water, DCW, 1999; cities, ArcWorld Supplement, 1999.

Source (5): Due to data availability the reference year varies between 1987 and 2005. Monaco: Recensement Général de la Population 2000 & 1990; Austria: Statistik Austria 2005 & Volkszählung 1991, France: INSEE: Recensement de la population 1999 & INSEE: Recensement de la population 1990; Germany: Bayerisches Landesamt für Statistik und Datenverarbeitung 2004 & Volkszählung 1987; Italy: ISTAT 2004 & 1991; Liechtenstein: Amt für Volkswirtschaft,

Vaduz 2000 & 1990; Slovenia: Statistical Office of the Republic of Slovenia, Regional Statistics 2004 &1991; Switzerland: Swiss Federal Statistical Office, Demography and Migration Section 2004 & 1990.

With reference to larger-sized urban settlements, 12 out of 14 cities have an old-age index higher than 100. Lucern is the city with the highest old-age index (188.98), followed by Bolzano-Bozen (158.44); the 'youngest' cities appear to be Chambéry in Rhône-Alpes (France) and Kranj in Slovenia (Tab. 7). High housing costs are likely to encourage young people to move from the centres to the suburban areas of mentioned cities[7]. Moreover, peripheral urban areas are perceived to offer a better quality of life, while providing the same job opportunities because of their proximity to the labour market of the urban centres. Indeed, this is a trend that can be noticed also in non Alpine regions.

Tab. 7: *Old-age index of the most populated municipalities.*

Municipalities	Region (NUTS 2)	Inhabitants (2004)	Old-age index
Luzern	Zentralschweiz	59,904	188.98
Bolzano/Bozen	Trentino-Alto Adige	97,236	158.44
Maribor	Slovenia	111,673	137.34
Kempten	Schwaben	61,576	135.07
Trento	Trentino-Alto Adige	110,142	130.83
Rosenheim	Oberbayern	60,108	121.65
Annecy	Rhône-Alpes	52,100	121.20
Salzburg	Salzburg	142,662	118.73
Innsbruck	Tirol	115,498	116.52
Klagenfurt	Kärtnen	91,723	108.98
Villach	Kärtnen	57,829	106.87
Grenoble	Rhône-Alpes	156,203	102.7
Kranj	Slovenia	52,689	91.98
Chambéry	Rhône-Alpes	57,592	91.95
Alpine Convention	**-**	**-**	**100.30**

Source: Austria (Inhabitants:Klagenfurt: Statistik Austria 2005, Innsbruck: Statistik Austria 2005, Salzburg: Statistics Austria, end 2002, Villach: Statistik Austria 2005; Old age index: Statistik Austria 2001 [owner: Eurac]); France (Inhabitants: INSEE: Recensement de la population de 1999; Old age index: INSEE 1999); Germany (Inhabitants: Bayerisches Landesamt für Statistik und Datenverarbeitung 2004; Old age index: Bayerisches Landesamt für Statistik und Datenverarbeitung, 2001); Italy (Inhabitants: ISTAT 2004; Old age index: ISTAT 2001); Slovenia (Inhabitants: Maribor: Statistical Office of the Republic of Slovenia, Regional Statistics 2001, Kranj: Statistical Office of the Republic of Slovenia, Regional Statistics 2004; Old age index: Statistical Office Slovenia 2002); Switzerland (Inhabitants: Swiss Federal Statistical Office, Demography and Migration Section 2000; Old age index: Swiss Federal Statistical Office 2000).

With regard to settlements with less than 500 inhabitants, in many of them there are not enough people to keep convenience stores, pharmacies, post offices and associations open. Also public transport services are cut to a minimum, since operation costs are too high for the local government's budget. As a result citizens have to rely on private cars, and for those who cannot drive (many senior citizens, for instance) the access to basic services can become rather difficult. The disappearance of basic services triggers a vicious cycle because the declining quality of life encourages residents to move to less peripheral areas, where access to services is better, while at the same time preventing the arrival of new dwellers.

[7] With 1,542 Euro a month required to rent a 100 sqm flat in a 'good neighbourhood', Bolzano is the fifth most expensive city to live in Italy, after leading cultural and economic centres like Venice (3,000€), Milan (2,167€), Rome (1,917€) and Verona (1,583€) (data source: Censis, 2003). In terms of housing costs Trento (1,125 €) places 15th in the ranking of Italy's 103 main cities.

4 Factors that vary together with demographic development

4.1 Economic development

There are a number of factors that may contribute to the stagnation of demographic growth and resulting population ageing. According to a Swiss survey (SAB, 2003) the reasons why young people leave mountain regions forever are first and foremost linked to the economy (lack of jobs that fit their skills and education, lower wages etc); society and relationships come second, the third reason being the poor availability of services, transport, cultural and recreational opportunities.

Traditionally, the economic growth of a given region is measured in terms of gross domestic product (GPD), which is by far the most common growth indicator. In the case in point, the analysis could not be confined to the municipalities of the Alpine Convention alone, since data are available at NUTS 3 level (province)[8]. Such administrative units include territories that do not belong to the Alpine Convention; it follows that GDP data take into account also the wealth produced in non-Alpine areas.

Tab. 8: *The ten regions with the highest GDP in the Alpine Convention area.*

NUTS level 3	Area within the Alpine Convention (%)	GDP for the whole NUTS level 3 area (mio. €)	NUTS level 3	Area within in the Alpine Convention (%)	GDP/capita for the whole NUTS level 3 area (€)
Torino (IT)	61	59,811	Liechtenstein	100	83,610
Brescia (IT)	59	31,474	Glarus (CH)	100	43,556
Bern (CH)	53	27,957	Nidwalden (CH)	100	41,941
Isère (FR)	67	27,812	Kempten (Allgäu), (DE)	100	38,580
Alpes-Maritimes (FR)	90	26,859	Rosenheim, Kreisfreie Stadt (DE)	100	35,533
Bergamo (IT)	70	26,380	Waadt (CH)	22	34,762
Waadt (CH)	22	22,543	Salzburg und Umgebung (AT)	78	33,798
Verona (IT)	29	22,202	Graz (AT)	57	33,085
Vicenza (IT)	54	21,895	Schwyz (CH)	100	31,622
Varese (IT)	38	21,097	Wiener Umland/Südteil (AT)	28	31,475

Source: France (Eurostat, 2000); Liechtenstein (Landesverwaltung Liechtenstein 2001, http://www.llv.li/pdf-llv-avw-statistik-fliz-07-2005-national_economy); Slovenia (Eurostat, 2002); Austria (Eurostat, 2003); Germany (Eurostat, 2003); Italy (Eurostat, 2003); Switzerland (BFS, Volkswirtschaftliche Gesamtrechnung und die Volkswirtschaft, 2003), Monaco (Central Intelligence Agency, 2006, https://www.cia.gov/cia/publications/factbook/index.html). For Switzerland national income has been used as proxy of GDP.

Table 8 shows that six out of the 10 provinces with the highest GDP are in Italy and are only partly included in the Alpine Convention (these are usually provinces of the highly industrialized regions of Lombardy and Veneto). When per-capita GDP is considered, with over 80,000 Euro per person Liechtenstein is Europe's richest region and one of the richest regions in the world as well. A high per-capita GDP is recorded also in the provinces of Rosenheim and Kempten in Germany's Upper Bavaria (Obernbayern), the tenth richest region in Europe in terms of per-capita GDP, and in the Swiss cantons of Glarus, Nidwalden and Waadt.

[8] For Switzerland GDP is not available at cantonal level. Therefore national income has been used as proxy of GDP.

In general, the per-capita GDP is higher in central areas and lower in easternmost (Slovenia and Austria's southern Burgenland) and westernmost regions (Fig. 4).

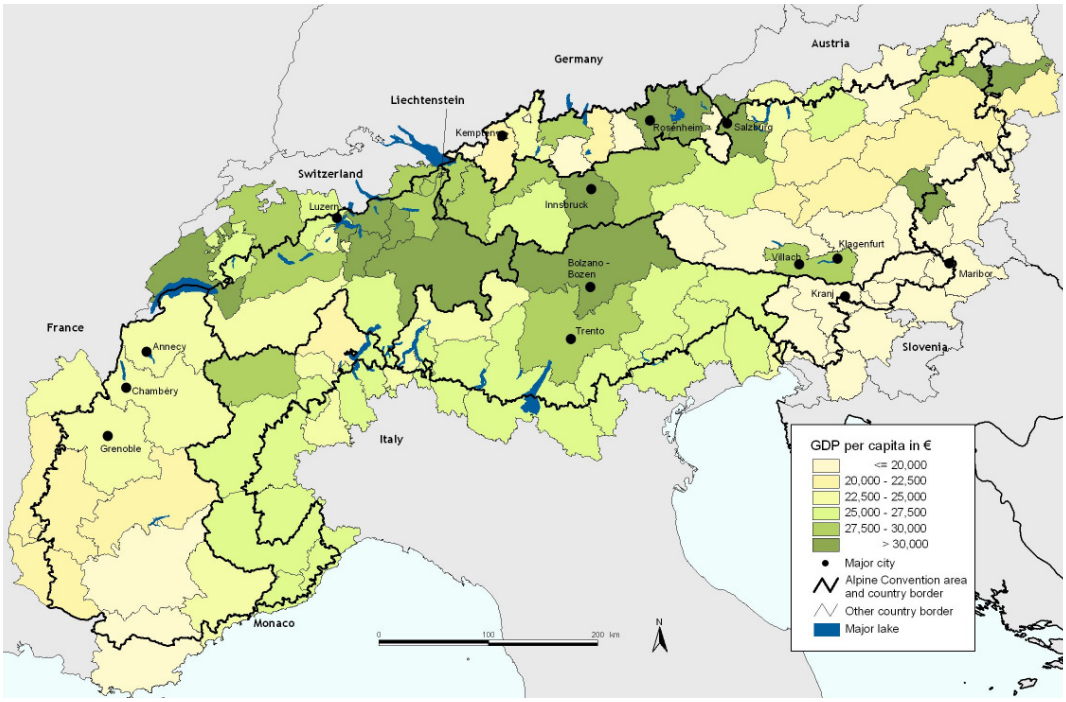

Fig. 4: *GDP per capita in the Alpine Convention area.*

Source: France (Eurostat, 2000); Liechtenstein (Landesverwaltung Liechtenstein 2001, http://www.llv.li/pdf-llv-avw-statistik-fliz-07-2005-national_economy); Slovenia (Eurostat, 2002); Austria (Eurostat, 2003); Germany (Eurostat, 2003); Italy (Eurostat, 2003); Switzerland (Swiss Federal Statistical Office, 2003), Monaco (Central Intelligence Agency, 2006, https://www.cia.gov/cia/publications/factbook/index.html). For Switzerland national income has been used as proxy of GDP. Data licensed from European National Mapping Agencies, ©EuroGeographics. Croatia and Bosnia & Herzegovina country boundaries, water, DCW, 1999; cities, ArcWorld Supplement, 1999).

Also Figure 5, concerning the unemployment rate, confirms that the job situation is more critical in eastern and westernmost alpine regions, whereas central areas experience more favourable conditions. The unemployment rate ranges from 1.2% in the Swiss canton of Uri to 14.2% in Slovenia's Podravska, a province whose industry suffered a major crisis in the 90s when market economy replaced centrally planned economy. Unemployment is high not only in some Slovenian provinces, but also in some eastern Austrian and French provinces. The high unemployment rate in Austria's Burgenland is due to the traditional migration of workers from this region to Vienna, where the job market offers more chances. Such flow of workers contributes to increasing the unemployment statistics of this area at Austria's eastern border. As for the French regions, unemployment is primarily due to the decline of traditional industry.

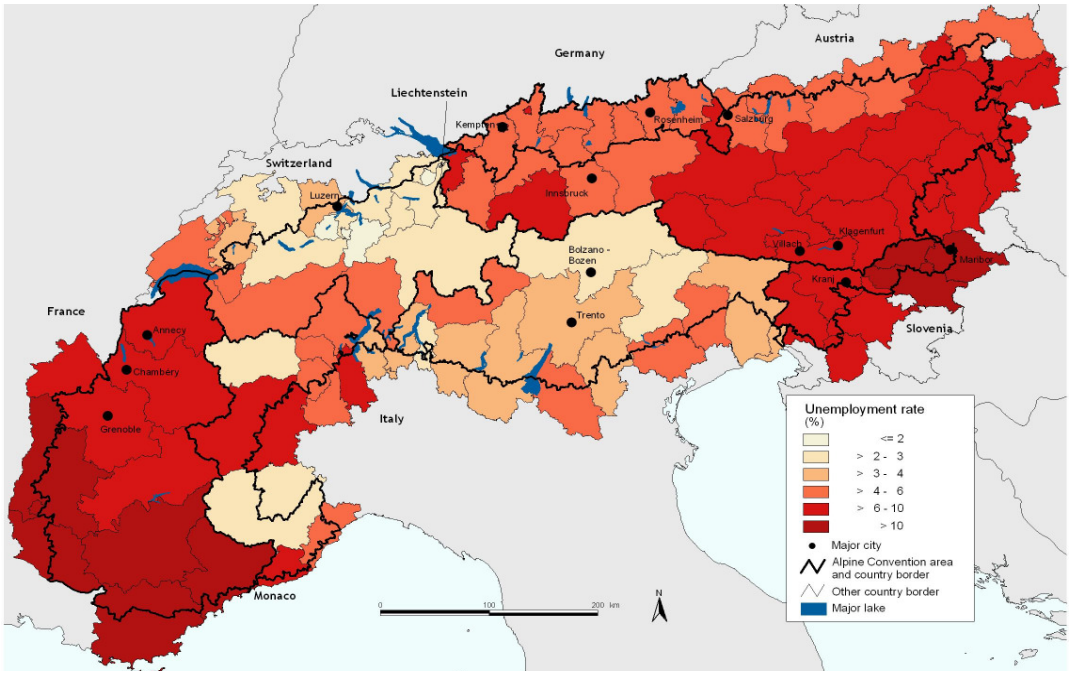

Fig. 5: *The pattern of the share of unemployment in the Alpine Convention area on NUTS level 3.*

Source: Austria (AMS Österreich ,Arbeitsmarktforschung und Berufsinformation, 2005); France (INSEE, 2004); Germany (Bundesagentur für Arbeit, 2004); Italy (ISTAT, 2004), Liechtenstein (Amt für Volkswirtschaft, 2005); Slovenia (Statistical Office of the Republic of Slovenia, 2004); Switzerland (Swiss Federal Statistical Office, 2005). Data licensed from European National Mapping Agencies, ©EuroGeographics. Croatia and Bosnia & Herzegovina country boundaries, water, DCW, 1999; cities, ArcWorld Supplement, 1999).

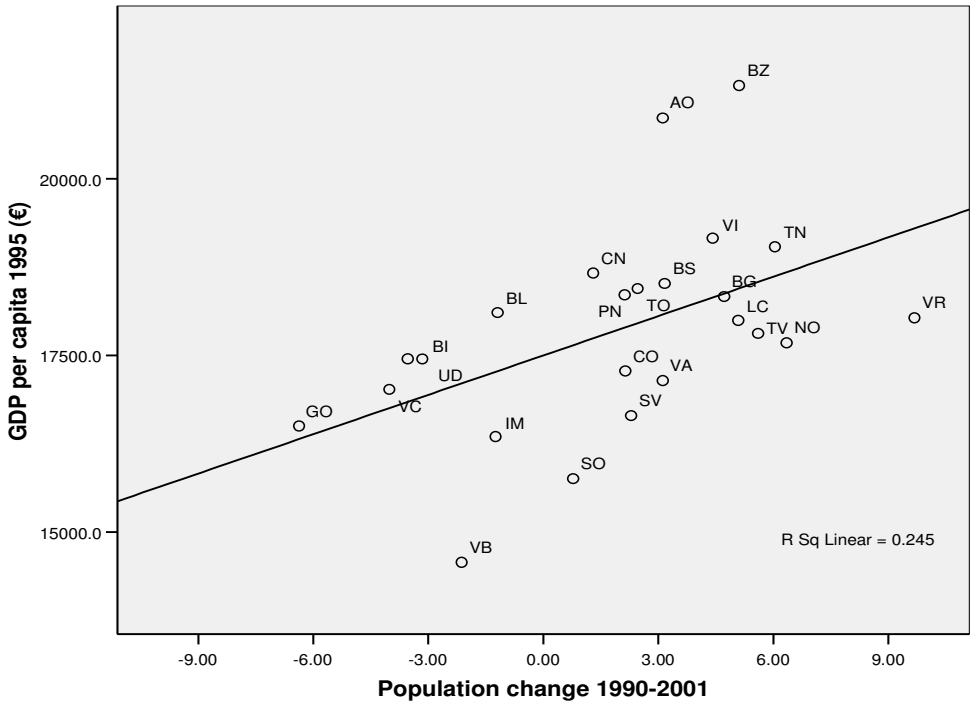

Fig. 6: *Correlation between the GDP per capita (1995) and the population change 1990-2000 (Abbreviations BL: Belluno, BG: Bergamo, BI: Biella, BZ: Bolzano/Bozen (=South-Tyrol), BC: Brescia, CO: Como, CN: Cuneo, GO: Gorizia, IM: Imperia, LC: Lecce, NO: Novara, PN: Pordenone, SV: Savona, SO: Sondrio,*

TO: Torino, TN: Trento, TV: Treviso, UD: Udine, AO: Valle d´Aosta, VA: Varese, VB: Verbania Cusio-Ossola, VC: Vercelli, VR: Verona, VI: Vicenza).

Source: GDP per capita: Eurostat; demographic change: see fig. 1.

By comparing figures 4 and 5 – concerning GDP distribution and unemployment rates – with figure 1 – regarding demographic change, a positive correlation seems to emerge between economic wealth and demographic growth. In other terms, it seems that regions with higher per-capita GDP and lower unemployment have been less hit by demographic decline. Such assumption is confirmed by the analysis of the relationship between demographic change in the 1990-2000 decade and per-capita GDP in 1995, considering Italian provinces alone[9]. Provinces with high per-capita GDP (such as, for instance, Bolzano-Bozen, Aosta, Vicenza and Trento) experienced population growth. By contrast, provinces like Imperia, Gorizia and Verbano-Cusio-Ossola experienced population decline (Fig. 6).

4.2 Accessibility

It is a given that mobility is one of the most important characteristics of modern society. Mobility allows individuals to perform production activities and satisfy their existential, social and cultural needs. Although transport repercussions are often severe – notably higher pollution and energy consumption – the availability of transport services is key to wealth creation, both in terms of economic results and enjoyment of leisure time and, in general, it enhances individual mobility. Commuting is possible if one lives close to the main transport links and infrastructures, and - other things being equal - well accessible areas are able to attract more investments than peripheral areas, which are more exposed to the risk of economic decline (Linneker, 1997).

In the light of the above, despite empirical research has pointed out that good accessibility by itself is not a guarantee of economic prosperity (Favry et al., 2004), the author of this paper assumed that a negative correlation exists between accessibility and old-age index. Indeed, whereas the elderly are reluctant to leave the place where they have spent most of their life, the young are prone to moving to the areas that attract more investments, where they have better chances to find a qualified job. In other words, the young are likely to move to easily accessible areas.

As shown in Table 9 analyses revealed no meaningful linear relationship between these two variables. Municipalities with an old-age index lower than 100 are the largest percentage of ‘less accessible municipalities’ category (less than 0.4 million inhabitants accessible with a three hours’ journey) and the smallest percentage of the ‘most accessible municipalities’ category (over 1.5 million inhabitants accessible with a three hours’ journey). However, when average accessibility values are taken into account (between 0.4 million and 1.5 million inhabitants accessible with a three hours’ journey) trends are less clear.

Considering the demographic size of municipalities, communities with less than 500 people and an old-age index over 100 are the largest category both in the group of municipalities with the poorest accessibility and in the two groups with the best accessibility. It seems therefore that the old-age index is linked to other variables and that good accessibility alone is not enough to guarantee a balanced demographic structure. As project REGALP pointed out, some municipalities display a good demographic growth in spite of their poor accessibility. That is the case of areas whose economy is dominated by the tourism industry with a high number of ‘incoming’ commuters, a growth in the number of new buildings and a very small-sized primary sector.

[9] The achieved stability index of 0.245 (Pearson correlation significant at the 0.05 level = 0.495) demonstrates the relevancy of the GDP for the population change tendency within a region.

Tab. 9: *Municipalities with an old age index above and below 100 according to the population classes and accessibility10 (Regalp, 1995) (no data: 35 municipalities).*

Accessibility	Total	Municipalities (%)							
		inh. <= 500		inh. 501-1,000		inh. 1,001-2,500		inh. > 2500	
Mio. Inh.		Old-age index <= 100	Old-age index >100	Old-age index <= 100	Old-age index >100	Old-age index <= 100	Old-age index >100	Old-age index <= 100	Old-age index >100
0.0 - 0.2	1475	17,8	20,2	11,1	6,1	17,4	7,9	11,3	8,3
0.2 - 0.4	1258	13,2	8,7	11,9	5,5	22,7	8,9	18,7	10,5
0.4 - 0.6	1265	11,9	24,3	6,7	12,6	11,7	13,2	10,9	8,6
0.6 - 0.8	133	3,8	0,8	9,8	5,3	27,8	3,8	42,9	6,0
0.8 - 1.0	707	12,7	19,0	15,3	8,9	13,7	10,0	10,7	9,6
1.0 - 1.5	687	15,7	20,1	8,6	6,0	14,6	10,5	13,0	11,6
1.5 - 2.0	59	0,0	42,4	0,0	8,5	10,2	11,9	13,6	13,6
2.0 - 3.0	345	0,6	22,0	3,5	18,6	4,9	20,6	5,2	24,6
Total	**1475**	**17,8**	**20,2**	**11,1**	**6,1**	**17,4**	**7,9**	**11,3**	**8,3**

Source: Austria (Old age index: Statistik Austria 2001; France (Old age index: INSEE 1999); Germany (Old age index: Bayerisches Landesamt für Statistik und Datenverarbeitung, 2001); Italy (Old age index: ISTAT 2001); Slovenia (Old age index: Statistical Office Slovenia 2002); Switzerland (Old age index: Swiss Federal Statistical Office 2000).

4.3 Quality of life and socio-cultural factors

Besides economic factors (job opportunities first and foremost) and environmental aspects (landscape, healthier air), also social factors play an important role in the decision to remain in the Alps, or leave to other places. In an efficient and organised community that features a health system able to provide care for the children and the elderly, an education system, cultural associations etc, people can fulfil their individual needs and develop a sense of belonging to a territory (Götz et al., 2005).

As mentioned above, in small peripheral municipalities, the progressive depopulation often reduces the number of inhabitants to an extent that not enough people remain to keep stores, pharmacies, post offices and associations open. This triggers a vicious cycle whereby the closing down of just one of such basic services undermines the entire local fabric. If one of such basic services ceases to operate, a part of the autochthonous population might leave, thus jeopardising the survival of existing facilities because the number of pupils in the schools will drop, business will become less profitable, thus making these communities less appealing to current residents and potential ones (Steiner, 2005; Machold, Tamme, 2005).

The number of initiatives and programmes promoted to support mountain municipalities at risk of depopulation bear witness to the political relevance of the topic. One of the many examples is project PUSEMOR ("Public Services in Sparsely Populated Areas"), whose objective is to improve public services in peripheral Alpine regions in five specific sectors: public transport and road infrastructure, initiatives for the youth, health and care, telecommunications and daily needs (Petit, 2006).

Strategies used to make small peripheral municipalities more vital and dynamic include: the networking of small cities and peripheral regions to strengthen cooperation in the political, economic and cultural sectors; the promotion of traditional mountain products through regional marketing initiatives; a closer collaboration between agriculture and other economic activities; the establishment of a 'platform' that facilitates job matching so as to encourage skilled workers or professionals to stay and limit brain drain (that commonly leads to a decrease in tax revenue and a decline of the local

[10] Accessibility is here defined as accessible inhabitants within a travel time of three hours.

economy); the appointment of a person in charge of the economic and cultural promotion of the community; the offer of parcels of land for sale where houses can be built, so as to offset the problems linked to the increase in property prices and the scarce availability of flats to rent[11].

5 Conclusions

Surveys evidence that the Alpine arch is experiencing two opposite trends:

- concentration and urban development of small and medium-sized settlements;
- population reduction and depression in peripheral areas (except some tourist resorts, which in spite of their remoteness witness a dynamic demographic evolution).

Such contrasting trends are evident at different levels:

- Alpine arch (central Alps, vs. western and eastern Alps);
- regions (local urban centres vs. surrounding areas);
- municipalities (valley bottom vs. slopes).

In the Alpine arch, the divergent evolution of rapidly growing central Alps, on the one hand, and south-western Alps at risk of depopulation, on the other, testifies to the fact that an initially latent development trend can have dramatic repercussions at a later stage. It proves also that when population loss overcomes a given threshold, such trend is unlikely to reverse. However, also in the western Alps some areas are showing a modest countertrend: for instance, Izon-la-Bruisse and Chevaline in Rhône Alpes and Revest les Roches in Provence-Alpes Côte d'Azur saw their population growing in the 90s and have a largely positive migration balance. Also many municipalities in Italy's Piedmont, in spite of their high old age index, recorded a positive migration balance[12]. In other words, low birth rate and a poor generation change coexist and allow municipalities located up to 700 metres a.s.l. to grow stronger. This is the area that acts as interface between the mountains and the plains. By contrast, the depopulation risk increases in higher altitude municipalities (over 700 meters a.s.l.) both because of a declining primary industry and the lack of alternative business activities. (IRES Piemonte, 2002). An ever growing ageing index and a positive migration balance coexist also in many areas of the eastern Alps, where however the positive trend of the latter is not always able to offset the negative trend in the natural balance, thus leading to a decrease in the number of inhabitants. That is the situation in Carnia, the northern part of Friuli-Venezia Giulia (Regional Statistics Office Friuli-Venezia Giulia, 2006) and in the province of Belluno in the Veneto region (Regional Department for territorial policies, Veneto Region, 2006).

Generally speaking, the regional level displays the same demographic trends as the national level: the regions that belong to countries marked by small demographic growth and a high percentage of senior citizens, such as Italy, post both a lower population growth and a higher share of senior population. In the 90s the municipalities that were most affected by population loss were peripheral small-sized municipalities and urban settlements with more than 25,000 inhabitants. In the former, smaller population numbers cause infrastructures to be less used and frequently the closing down of services and activities. A worsening of quality of life and additional population ageing derive therefrom. On the other hand, urban settlements with more than 25,000 inhabitants, which house more than 50% of population an over 70% of jobs, tend to lose population as people move to nearby neighbourhoods. That is particularly true for the young, who are looking for cheaper housing and healthier environment,

[11] An exhaustive overview of such initiatives can be found in the review "Montagna", published in three languages by SAB (Swiss Group of Mountain regions).

[12] Almost one fourth of the migration balance depends on migration from abroad (that can refer to a variety of situations, from the war refugee to the wealthy middle-european citizen).

while being close to their workplace in the city. A significant example of such trend is provided by the province of Bolzano, where in the 90s a negative migration balance was posted by the main city, Bolzano (neighbouring municipalities grew by contrast) and some peripheral municipalities such as Predoi, Brennero, Tubre and Stelvio.

At municipal level, the most striking population loss and the highest old-age index were recorded by high-altitude municipalities, which people leave to settle down in the valleys. For example, in the province of Belluno, between 1991 and 2001 the highest population loss was experienced by the high altitude municipalities of Cibiana di Cadore, Comelico Superiore, Cortina d'Ampezzo and Gosaldo.

Our analyses revealed no meaningful relationship between accessibility and old-age index. Accessibility facilitates individual mobility and, other things being equal, easily accessible areas attract more investments than peripheral areas. However accessibility alone is no guarantee of either economic prosperity or of a balanced demographic structure.

However, a correlation was identified in the Italian Alps between demographic growth and per-capita GDP: provinces with higher per-capita GDP – such as Bolzano, Aosta, Vicenza and Trento - posted a higher population growth in the 90s. To lessen demographic imbalances and polarization trends, on top of economic development, both integrated strategies and a better coordination of sectoral policies are required. As pointed out by the authors of the REGALP project, the future alpine landscape risks being marked by intensively exploited valley bottoms with conflicting land uses, intensive tourism areas, predominantly residential suburban neighbourhoods with suitable living conditions but poor services and economic activities and new " wild areas" where agriculture will be discontinued and population will sharply decrease.

Both the vitality of mountain areas and sustainable development are at risk: policy-making has to face such risk and find solutions to meet current needs without jeopardising future opportunities.

6 References

Amcoff J., Westholm E., 2007: "Understanding Rural Change – Demography as a Key to the Future", in Futures, 39.

ASTAT, Istituto provinciale di Statistica, 2003: "Manuale Demografico della Provincia di Bolzano/Bozen".

Bähr J., 2004: "Bevölkerungsgeographie", Ulmer Verlag, UTB, Stuttgart.

Bloom D.E., Canning D., 1999: "Economic development and the demographic transition: the role of cumulative causality", CAER discussion papers 51.

Bloom D.E., Freeman R.B., 1988: "Economic development and the timing and components of population growth", Journal of Policy Modelling, 10(1), pp.57-81.

Bloom D.E., Williamson J.G., 1998: "Demographic transitions and economic miracles in emerging Asia", World Bank economic review, vol.12 (3) pp.419-455.

Calza Bini, P., Turco S. (edited by), 2005: "Active Ageing and European Health Care Sectors – Italian report", in "Overcoming the Barriers and Seizing the Opportunities for Active Ageing Policies in Europe (ACTIVAGE)", working paper 4, online: http://www.iccr-international.org/activage/docs/ActivAge-WP4-Italy.pdf (March, 2007).

Esping-Andersen, G, 1990: "The Three Worlds of Welfare Capitalism", Princeton University Press.

European Commission, 2005: "Una Nuova Solidarietà tra le Generazioni di fronte ai Cambiamenti Demografici – Libro Verde".

EUROSTAT, 2006: "Regional GDP per inhabitant in the EU25 GDP per inhabitant in 2003 ranged from 33% of the EU25 average in Lubelskie to 278% in Inner London", Eurostat News Release, n. 63, 18th May, 2006. Online: http://epp.eurostat.cec.eu.int/pls/portal/docs/PAGE/PGP_PRD_CAT_PREREL/PGE_CAT_PREREL_YEAR_2006/PGE_CAT_PREREL_YEAR_2006_MONTH_05/1-18052006-EN-AP.PDF

Favry, E., Arlot M.-P., Atmanagara J., Castiglioni B., Cernic-Mali B., Egli H.-R., Golobic M., Massarutto A., Pfefferkorn W., Probst T., 2004: "Regalp: Projektbeschreibung, Hauptergebnisse und Schlussfolgerungen", Vienna, p. 19.

Gaido, L., 1999: "Città Alpine come Poli di Sviluppo nell'Arco Alpino", Revue de Géographie Alpine, 2.

Gavrilov, L.A. & Heuveline P., 2003: "Aging of Population". In: Demeny P., McNicoll G. (edited by): "The Encyclopedia of Population", Macmillan Reference, New York, USA.

Götz A., Hindenlang K., Pfefferkorn W., Revaz M., Ulrrich A., 2005: „Futuro nelle Alpi“, online: http://competition.cipra.org/it/domande/domande.

Ires Piemonte (2002): Agenzia per i nuovi insediamenti montani – Quadro della montagna del Piemonte, Azione N2 del PSR 2000-2006 della Regione Piemonte, dicembre 2002. Online: http://www.regione.piemonte.it/ montagna/ montagna/rurale/dwd/misura_n/quadro_testo.pdf

Kelley A.C., Schmidt R.M., 1995: “Aggregate population and economic growth correlations: the role of the components of demographic change“, Demography, 32 (4), pp.543-555.

Kertzer D.I., White M.J., Bernardi L., Gabrielli G., 2006: “Italy’s Path to Very Low Fertility. The Adequacy of Economic and Second Transition Theories”, Max-Planck-Institut für demographische Forschung, Working Paper 2006-049. Online: http://www.demogr.mpg.de/papers/working/wp-2006-049.pdf

Linneker, B., 1997: Transport Infrastructure and Regional Economic Development in Europe: A Review of Theoretical and Methodological Approaches, TRP 133. Sheffield, Department of Town and Regional Planning.

Machold I., Tamme O., 2005: “Versorgung gefährdet. Soziale und wirtschaftliche Infrastrukturentwicklung. In: Bundesanstalt für Bergbauernfragen”, Forschungsbericht 53, Vienna.

Massarutto A., Castiglioni B., Troiano S., 2004: “Lo Sviluppo Regionale nelle Alpi: Tendenze in Corso e Modelli di Valutazione”, Working Paper Series in Economics, Dipartimento di Scienze Economiche, Università degli Studi di Udine.

Menniti, A., 2005: “I Comportamenti Riproduttivi: Atteggiamenti, Intenzioni e Scelte delle Donne Italiane”, Consiglio Nazionale delle Ricerche, working paper n. 4.

Morettini G., 2005: “L’Influsso dei Fattori Demografici sull’Economia Italiana, Un’Analisi Empirica nel Periodo 1951-2001, working paper 234, Dipartimento di Economia, Università Politecnica delle Marche. Online: http://dea.univpm.it/quaderni/pdf/234.pdf

Perlik, M., 1999: “Processus de périurbanisation dans les villes des Alpes”, Revue de Géographie Alpine, 1.

Perlik, M. & Debarbieux B., 2001: “Die Städte der Alpen zwischen Metropolisation und Identität“, in „2. Alpenreport“, CIPRA (edited by.), Haupt Verlag, Schaan, pp. 86-95.

Petite, G., 2006: “PUSEMOR: un projet pout maintenir le service public”, Montagna, 3.

Pfefferkorn, W., Egli H.-R., Massarutto A., 2005: “Regional Development and Cultural Landscape Change in the Alps – The Challange of Polarisation”, Geographica Bernensia, Bern, p. 212.

Regional Department for territorial policies, Veneto Region, 2006: “Alpcity: Local endogenous development and urban regeneration of small alpine towns”. Online: http://www.alpcity.it/dwd/cards_packages/veneto/analisi. pdf.

Regional Statistics Office Friuli-Venezia Giulia Region, 2006: “Movimenti pendolari in Carnia”. Online: http://index.regione.fvg.it/fvgroot/sito/istituzionale/cifre/allegati/movimentiPendolariCarnia.pdf.

SAB (Schweizerische Arbeitsgemeinschaft für die Berggebiete), 2003: „Brain Drain in der Schweiz“, Heft 176, online: http://www.marcusbeyer.de/files/Brain_Drain.pdf (June 2006).

Steiner J., 2005: „Wir tun dieser Schweiz gut“, Montagna 1/2, 2005.

Torricelli, G.P., 1996: “Reti di Trasporto e Reti di Città – il Caso dell’Arco Alpino”, in: Dematteis G., Dansero E. (edited by): “Regioni e Reti nello Spazio Unificato Europeo; Memorie geografiche delle Rivista Geografica Italiana” 1996, n. 2, pp. 275-294.

Uncem-Censis, 2002: “Il Valore della Montagna – Rapporto di Sintesi”, online: http://www.ilforestale.org/ documenti/censis_uncem_-_il_valore_della_montagna.pdf.

Varotto, M., 2004: “Montagna Senza Abitanti, Abitanti Senza Montagna: le Recenti Tendenze Demografiche e Insediative nell’Arco Alpino Italiano (1991-2000). In: Angelini E.C., Giulietti S., Ruffini F.V. (edited by): Il Privilegio delle Alpi: Moltitudine di Popoli, Culture e Paesaggi, Accademia Europea Bolzano.