

Migration and development policies in a phase of labor shortage. The case of San Marino

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Abstract

The paper provides a stock-flow analysis of San Marino labor market in the framework of the demographic evolution of the country. The research covers the period 2003-2013 during which WAP was declining under the impact of the Demographic transition, while the economy of the country was first affected by a notable economic expansion and then by a deep crisis. After presenting jointly build labor market and demographic scenarios, the paper outlines some demographic and development policies that could be of interest in the incoming dialogue with EU.

JEL Classification: J11, J2, J61, O14, O15

Keywords: San Marino, demographic transition, migration, labor market, stock-flow analysis, scenarios, migration policy, development policy.

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Introduction

Up to now no scholarly article has been devoted to San Marino's labor market in spite of the availability of high quality and up-to-date statistical information¹. A second reason for writing this paper is that San Marino, as all other European countries, has entered the phase of the demographic transition² in which the natural balance of WAP becomes negative, a phenomenon that is very likely to provoke a structural shortage of labor³. The case of San Marino is particularly interesting because, due to its dimension and being an enclave⁴, San Marino finds itself in the peculiar situation of having the possibility to face the incoming shortage of labor by resorting both to immigrants and *frontalieri* (border workers)⁵.

San Marino has been severely hit by the global fiscal crisis; moreover in the same period its economy had to confront serious internal problems -first of all the need to adopt the measures necessary to be cancelled from the black list- that had an additional negative impact on its rate of growth. The paper analyses the impact of these events on San Marino's labor market, while providing some future perspectives that could be useful to devise demographic and development policies, broadly defined.

The paper is articulated into four sections. The first presents a short description of the trends and structure of the San Marino population. The second is devoted to the analysis of the labor market, first in terms of stock and then of flows. In the third we present some scenarios for the 2013-2028 period during which the Republic is also planning to enter in a new relationship with the European Union. One of the main goals of this section is estimating the potential need of foreign workers in connection both with the problem of demographic equilibrium and labor shortage⁶. Finally, some policy suggestions will be presented and discussed in the fourth and last section of the paper.

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² The demographic transition is defined as the passage from a “traditional” demographic equilibrium, characterized by high rates of fertility and mortality, to a “modern” demographic equilibrium, characterized by low rates of fertility and mortality.

³ A country affected by a demographic transition will go through three main phases: in the first population increases at an increasing rate, in the second at a declining rate, in the third it declines. Any subpopulation, first of all Working age population (WAP), will go through the same three phases. It is in the third phase of the demographic transition of WAP that a country will most likely be affected by a structural shortage of labor (Bruni, 2009).

⁴ There are only other two states that are totally surrounded by another state, The Vatican and Lesotho.

⁵ This makes the analysis relevant for other small countries like Andorra, Monaco, Liechtenstein, but also Luxembourg and Singapore.

⁶ For the stock flow model used to analyze the labor market see Bruni, 2015, while for the procedure adopted to build the labor market and demographic scenarios see Bruni, 2012.

Population

The total population: trends and structure

At the end of 2013 the population present in San Marino amounted to 33.540 people: 27,705 citizens, 4,867 foreigners and 968 sojourners (Table 1). Women represented 51.4 percent and more specifically: 51.9 per cent of the citizens, 44.7 per cent of the foreigners and 69.6 per cent of the sojourners.

Between the end of 2003 and the end of 2013, the population resident in San Marino -that includes nationals and foreigners- increased by a notable 11.4 per cent (3,331 people, from 29,241 to 32,572). The percentage increase has been higher for nationals (11.6 per cent) than for foreigners (10.5 per cent) and sojourners (+4 per cent).

In the case of the nationals the increase has affected more the men (13.5 per cent) than the women (9.8 per cent); foreigners and sojourners present the opposite situation: 20.2 per cent versus 3.7 per cent in the case of foreigners; 20.8 per cent versus -21.2 per cent in the case of sojourners. As a consequence of these opposite trends the citizens registered a slight increase in the share of men, foreigners and sojourners of women, while the percentage of women in the total population present in San Marino slightly increased from 51.2 per cent to 51.4 per cent.

Table 1 - San Marino; Total population by typology and sex; absolute values, absolute change and percentage change; 2003-2013

	2003			2013		
	Men	Women	Total	Men	Women	Total
	Absolute values					
Citizens	11 743	13 093	24 836	13 331	14 374	27 705
Foreigneirs	2 595	1 810	4 405	2 691	2 176	4 867
Total Residents	14 338	14 903	29 241	16 022	16 550	32 572
Sojourners	373	558	931	294	674	968
Present population	14 711	15 461	30 172	16 316	17 224	33 540
Citizens living abroad	4651	7338	11 989	5263	7675	12 938
Total number of citizens	16 394	20 431	36 825	18 594	22 049	40 643
	2003-2013					
	Absolute change			Perenatge change		
Citizens	1 588	1 281	2 869	13,5	9,8	11,6
Foreigneirs	96	366	462	3,7	20,2	10,5
Total Residents	1 684	1 647	3 331	11,7	11,1	11,4
Sojourners	-79	116	37	-21,2	20,8	4,0
Present population	1 605	1 763	3 368	10,9	11,4	11,2
Citizens living abroad	612	337	949	13,2	4,6	7,9
Total number of citizens	2 200	1 618	3 818	13,4	7,9	10,4

At the same time, the structure of population registered only minor changes: a slight increase of nationals, a slight decline of foreigners and sojourners (table 2).

Table 2 - Present population; percentage structure by typology and sex, and share of women; 2003 and 2013

	Men	Women	Total	Women/Total
2003				
San Marino Citizens	79.8	84.7	82.3	52.7
Foregneirs	17.6	24.7	36.7	41.1
Sojourners	2.5	3.6	3.1	59.9
Present population	100.0	100.0	100.0	51.2
2013				
San Marino Citizens	81.7	83.5	82.6	51.9
Foregneirs	16.5	12.6	14.5	44.7
Sojourners	1.8	3.9	2.9	69.6
Present population	100.0	100.0	100.0	51.4

To complete the picture we have to recall that around 13,000 citizens live abroad, which brings the total number of San Marino's citizens to more than 40,000. The number of citizens living abroad has increased less (7.9 per cent) than that of those living in San Marino, so that their percentage has slightly declined to a still very notable 32 per cent. The citizens residing abroad are characterized by a much higher percentage of women and elderly: 59.3 per cent versus 50.8 the former, 25.9 versus 13.2 per cent the latter.

The age structure

Over the ten-year period we are considering, the age structure of residents does not present major modifications (Table 3). However and rather surprisingly, the weight of the 0-14 age group registers a small positive change, both for boys and girls. More pronounced the growth registered by the elderly, from 11.5 per cent to 13.2 per cent. The working age population (here defined between 15 and 69 years of age) is the only age group registering a rate of growth well below that of total population (8.4 per cent versus 11.4 per cent) so that its share declines by two percentage points while remaining above 71 per cent. Women live longer than men so that the percentage of the 70+ age group is 14.8 for women and 11.6 per cent for men.

Table 3 – Resident population by sex and main age group; absolute values and percentage composition; 2003, 2008, and 2013

	0-14	15-69	70+	Total	0-14	15-69	70+	Total
	Absolute values				Percentage composition			
Men								
2003	2,326	10,633	1,379	14,338	16.2	74.2	9.6	100.0
2008	2,535	11,150	1,658	15,343	16.5	72.7	10.8	100.0
2013	2,621	11,536	1,865	16,022	16.4	72.0	11.6	100.0
Women								
2003	2,099	10,817	1,987	14,903	14.1	72.6	13.3	100.0
2008	2,284	11,380	2,233	15,897	14.4	71.6	14.0	100.0
2013	2,377	11,725	2,448	16,550	14.4	70.8	14.8	100.0
Total								
2003	4,425	21,450	3,366	29,241	15.1	73.4	11.5	100.0
2008	4,819	22,530	3,891	31,240	15.4	72.1	12.5	100.0
2013	4,998	23,261	4,313	32,572	15.3	71.4	13.2	100.0

Table 4 – San Marino citizens living abroad by sex and main age group; absolute values and percentage composition; 2003, 2008 and 2013

	0-14	15-69	70+	Total	0-14	15-69	70+	Total
	Absolute value				Percentage composition			
Men								
2003	461	3,317	873	4,651	9.9	71.3	18.8	100.0
2008	552	3,380	976	4,908	11.2	68.9	19.9	100.0
2013	599	3,539	1,125	5,263	11.4	67.2	21.4	100.0
Women								
2003	417	5,273	1,648	7,338	5.7	71.9	22.5	100.0
2008	525	5,121	1,933	7,579	6.9	67.6	25.5	100.0
2013	543	4,911	2,221	7,675	7.1	64.0	28.9	100.0
Total								
2003	878	8,590	2,521	11,989	7.3	71.6	21.0	100.0
2008	1,077	8,501	2,909	12,487	8.6	68.1	23.3	100.0
2013	1,142	8,450	3,346	12,938	8.8	65.3	25.9	100.0

As we have already seen, the San Marino citizens living abroad are much older, more than ¼ being 70 and older (table 4) and their average age has been increasing faster than that of those residing in the home land.

Demographic accounting

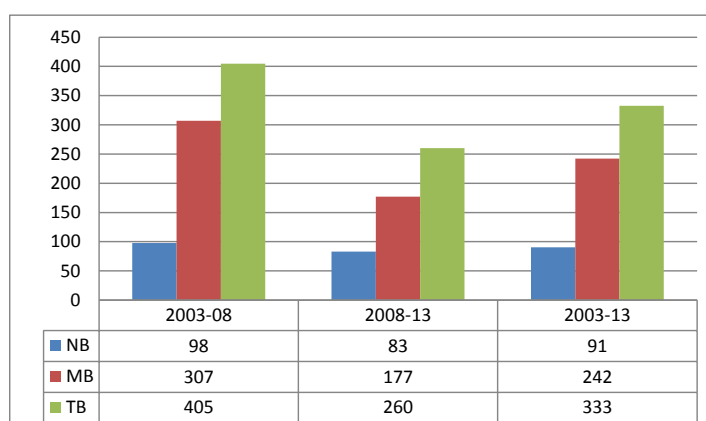
The analysis of demographic flows allows capturing the “causes” of the demographic dynamics we have just commented. Between 2003 and 2013 the number of births has averaged 311 per year and those of deaths 221, so that the Natural balance (NB) has been equal, on the average, to 90 people per year⁷ (Table 5). The average number of births has been very similar in the two 5 year periods we have considered, while the number of deaths has been slightly higher in the second period. Between 2003 and 2013, the Migration balance (MB) has been equal to 242 people per year. However, due to the slow-down in economic growth, the MB has notably declined from an average yearly value of 307 in the first period to 177 in the second.

Table 5 - Demographic accounting by sex; 2003-2013

	2003 (end)	Births	Deaths	Natural balance	Migration balance	Total Balance	2008 (end)
Men	14,335	797	529	268	734	1,002	15,337
Women	14,905	736	515	221	801	1,022	15,927
Total	29,240	1,533	1,044	489	1,535	2,024	31,264
	2008 (end)	Births	Deaths	Natural balance	Migration balance	Total Balance	2013 (end)
Men	15,337	830	586	244	434	678	16,015
Women	15,927	747	575	172	451	623	16,550
Total	31,264	1,577	1,161	416	885	1,301	32,565
	2003 (end)	Births	Deaths	Natural balance	Migration balance	Total Balance	2013 (end)
Men	29,672	1,627	1,115	512	1,168	1,680	31,352
Women	30,832	1,483	1,090	393	1,252	1,645	32,477
Total	60,504	3,110	2,205	905	2,420	3,325	63,829

⁷ In the ten-year period the number of baby boys per 100 baby girls is of almost 110 a value notably above the world average.

Graph 1 – Natural balance, Migration balance and Total balance; 2003-08, 2008-13, 2003-13; average yearly values



Therefore, the yearly average Total balance (TB) of the entire period has been equal to 333 people, but has declined from 405 in the first period to 260 in the second, while the contribution of the MB has decreased from 72.8 per cent to 69.5 per cent.

Labor market

The analysis of San Marino's labor market presents an unusual complexity due to the presence of five demographic components: citizens and foreigners (that make up the resident population), the sojourners⁸, the *frontalieri* and the citizens living abroad⁹. Data on Population in working age (WAP), on employment and unemployment is available only for the first three groups (that make up the population present in San Marino), while *frontalieri* and citizens resident abroad (the last being however very marginal) are included only between the employed¹⁰. As a consequence, the standard labor market indicators can be computed only for residents and sojourners.

The analysis of San Marino labor market will be conducted from two complementary perspectives: the stock perspective and the generational flow perspective.

The analysis in terms of stock: 2003-2013

Working age population

In the ten-year period considered in this paper the WAP present in San Marino and composed by citizens, foreigners and sojourners increased, on the average, by 181 persons per year (from 21,450 to 23,261), but the yearly increase declined from 216 in the first five year period to 145 in the second due, as we have already seen, to the contraction in the migration balance.

⁸ Persons that live in San Marino but are not residents.

⁹ A San Marino citizen living abroad can work only in the private sector since in order to work in the public sector a person must be resident.

¹⁰ In other words, for the *frontalieri* and the citizens living abroad the only relevant labor market variable is employment

Labor force, employment and unemployment

In the same time interval, the San Marino's economy succeeded in creating 931 additional jobs corresponding to an increase by 4.8 per cent. However, the labor force¹¹ registered a much larger increase (1,796 people, + 9 per cent) so that unemployment more than doubled (from 638 to 1,493) (Table 6).

Table 6 – Labor force, employment, and unemployment by sex; absolute value, absolute change and percentage change; 2003, 2008 and 2013

	Labour force			Employment			Unemployment		
	Maschi	Femmine	Totale	Maschi	Femmine	Totale	Maschi	Femmine	Totale
Absolute values									
2003	11,658	8,318	19,976	11,484	7,864	19,348	174	454	628
2008	13,164	9,544	22,708	12,967	9,028	21,995	197	516	713
2013	11,984	9,788	21,772	11,464	8,815	20,279	520	973	1,493
Absolute change									
2003-08	1,506	1,226	2,732	1,483	1,164	2,647	23	62	85
2008-13	-1,180	244	-936	-1,503	-213	-1,716	323	457	780
2003-13	326	1,470	1,796	-20	951	931	346	519	865
Percentage change									
2003-08	12.9	14.7	13.7	12.9	14.8	13.7	13.2	13.7	13.5
2008-13	-9.0	2.6	-4.1	-11.6	-2.4	-7.8	164.0	88.6	109.4
2003-13	2.8	17.7	9.0	-0.2	12.1	4.8	198.9	114.3	137.7

It must be underlined that women not only took all additional jobs, but they also substituted men in 20 job positions. Women represented also 81.8 per cent of the additional people in the labor force, but only 60 per cent of the additional unemployed. Therefore, the share of women increased in the labor force (from 41.6 per cent to 45 per cent) and in employment (from 40.6 per cent to 43.5 per cent), but declined in unemployment (from 72.3 per cent to 65.2 per cent) (Graph. 2).

Graph 2 – Labor force, employment, unemployment; percentage of women; 2003 and 2013



¹¹ For *frontalieri* and citizens living abroad employment and labor force coincide.

The trends in employment and labor force we have presented are the balance of the opposite evolutions registered in the two five-year periods¹². Between 2003 and 2008 the economy of San Marino created on the average 530 additional jobs per year, which corresponds to an average rate of growth of 2.7 per cent. The growth in employment was paralleled by a slightly higher growth of the labor force (+546 people per year). Therefore, in spite of the extremely relevant expansion of labor demand, the level of unemployment increased. In the following five-year period the employment trend became negative and the number of jobs decreased at an average rate of 343 per year, which brought to a decrease in total employment by 7.8 per cent. The decline in labor force was less pronounced (-187 people per year) so that the number of unemployed more than doubled (Table 6).

The previous data clearly suggest that over the ten-year period the growth in the WAP present in San Marino would have been sufficient to face the employment needs of the country, but that this was clearly impossible in the first period.

The “demographic” structure of labor force and employment

As we have already seen, the employed include not only members of the population that lives in San Marino, but also *frontalieri*, and citizens that reside abroad (AIRE) (Table 7). The main contributions come from the residents (citizens and foreigners, which accounted for 71.3 per cent in 2013), and the *frontalieri* (24.7 per cent); sojourners and AIRE citizens account respectively for only 3.1 per cent and 0.9 per cent.

Table 7- Employment by sex and demographic group; absolute value and absolute change; 2003, 2008 and 2013

	Employment				Employment		
	Men	Women	Total		Men	Women	Total
	Absolute value				Absolute change		
Residents							
2003	7,291	6,253	13,544	2003-08	294	532	826
2008	7,585	6,785	14,370	2008-13	-241	-37	-278
2013	7,344	6,748	14,092	2003-13	53	495	548
Sojourners							
2003	145	296	441	2003-08	113	193	306
2008	258	489	747	2008-13	-113	32	-81
2013	145	521	666	2003-13	0	225	225
Present							
2003	7,436	6,549	13,985	2003-08	407	725	1,132
2008	7,843	7,274	15,117	2008-13	-354	-5	-359
2013	7,489	7,269	14,758	2003-13	53	720	773
Frontalieri							
2003	3,948	1,164	5,112	2003-08	1,100	468	1,568
2008	5,048	1,632	6,680	2008-13	-1,131	-176	-1,307
2013	3,917	1,456	5,373	2003-13	-31	292	261
Aire							
2003	100	151	251	2003-08	-24	-29	-53
2008	76	122	198	2008-13	-18	-32	-50
2013	58	90	148	2003-13	-42	-61	-103
Total							
2003	11,484	7,864	19,348	2003-08	1,483	1,164	2,647
2008	12,967	9,028	21,995	2008-13	-1,503	-213	-1,716
2013	11,464	8,815	20,279	2003-13	-20	951	931

¹² Real GDP registered negative changes starting in 2008, with a record value of -12.8 in 2009 so that in a six-year period real GDP declined by more than 35 per cent.

The most important element we can immediately detect from the distribution of the employed by origin (Tables 8) is that the share of residents is characterized by a countercyclical behavior, declining in the phase of expansion and increasing in the phase of contraction. The *frontalieri* present the opposite tendency, which clearly implies that the San Marino economy resorts to them to sustain employment growth, while they become an important buffer for the local labor force in a phase of contraction.

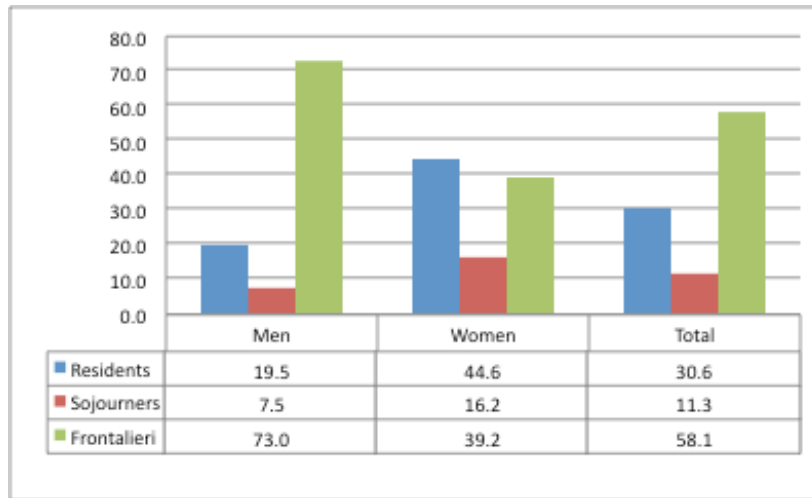
Let's now analyze this process in more detail. Between 2003 and 2008, the growth in employment was sustained for 30.6 per cent by residents and for 12 per cent by sojourners. With 58.1 per cent the role of the *frontalieri* was clearly majoritary and essential for the expansion of production (Graph 3).

Table 8 - Employed and Labor force; percentage composition by group; 2003, 2008 and 2013

	Labor force				Employed		
	Men	Women	Total		Men	Women	Total
Residents							
2003	64.0	80.4	70.8	2003-08	63.5	79.5	70.0
2008	59.0	76.4	66.3	2008-13	58.5	75.2	65.3
2013	65.5	78.5	71.3	2003-13	64.1	76.6	69.5
Sojourners							
2003	1.3	3.6	2.2	2003-08	1.3	3.8	2.3
2008	2.0	5.1	3.3	2008-13	2.0	5.4	3.4
2013	1.2	5.4	3.1	2003-13	1.3	5.9	3.3
Present							
2003	65.2	84.0	73.0	2003-08	64.8	83.3	72.3
2008	61.0	81.5	69.6	2008-13	60.5	80.6	68.7
2013	66.7	83.9	74.4	2003-13	65.3	82.5	72.8
Frontalieri							
2003	33.9	14.0	25.6	2003-08	34.4	14.8	26.4
2008	38.4	17.1	29.4	2008-13	38.9	18.1	30.4
2013	32.7	14.9	24.7	2003-13	34.2	16.5	26.5
Aire							
2003	0.9	2.1	1.4	2003-08	0.9	1.9	1.3
2008	0.6	1.4	0.9	2008-13	0.6	1.4	0.9
2013	0.6	1.2	0.9	2003-13	0.5	1.0	0.7
Total							
2003	100	100	100	2003-08	100	100	100
2008	100	100	100	2008-13	100	100	100
2013	100	100	100	2003-13	100	100	100

The situation was however quite different for men and women. In the case of men, border workers contributed by almost $\frac{3}{4}$ and residents for less than 20 per cent. In the case of women, residents contributed by 44.6 per cent and border workers by 39.2 per cent. As we will see in the next paragraph, this was due to the fact that in the case of resident the percentage of men in the labor force (the rate of activity) was already close to the physiological limit, while that of women still had some margin for growth. Let's also remind that female sojourners contributed by 16.2 per cent.

Graph 3 – Percentage contribution of different groups to Employment growth between 2003 and 2008



In the following 5 year period the situation changed dramatically, and more than 1,700 people (-7.8 per cent) lost their jobs; interestingly only 12.4 per cent were women. The *frontalieri* offered a notable buffer to the residents. Around 76 per cent of those that lost their jobs were in fact *frontalieri*, the percentage reaching 82.7 in the case of women. From a different perspective we can observe that of the 6,680 *frontalieri* working in San Marino in 2008, 1,307 had lost their job by the end of 2013.

Table 9 – Labor force by group and sex; absolute value; 2003, 2008 and 2013

	Labour force						
	Men			Women			Total
	Absolute value			Absolute change			
Residents							
2003	7,459	6,687	14,146	2003-08	307	602	909
2008	7,766	7,289	15,055	2008-13	79	390	469
2013	7,845	7,679	15,524	2003-13	386	992	1,378
Sojourners							
2003	146	296	442	2003-08	113	193	306
2008	259	489	748	2008-13	-113	44	-69
2013	146	533	679	2003-13	0	237	237
Present							
2003	7,605	6,983	14,588	2003-08	420	795	1,215
2008	8,025	7,778	15,803	2008-13	-34	434	400
2013	7,991	8,212	16,203	2003-13	386	1,229	1,615
Frontalieri							
2003	3,948	1,164	5,112	2003-08	1,100	468	1,568
2008	5,048	1,632	6,680	2008-13	-1,131	-176	-1,307
2013	3,917	1,456	5,373	2003-13	-31	292	261
Aire							
2003	103	171	274	2003-08	-21	-38	-59
2008	82	133	215	2008-13	-7	-14	-21
2013	75	119	194	2003-13	-28	-52	-80
Total							
2003	11,656	8,318	19,974	2003-08	1,499	1,225	2,724
2008	13,155	9,543	22,698	2008-13	-1,172	244	-928
2013	11,983	9,787	21,770	2003-13	327	1,469	1,796

The crisis did, however, hit also the residents that lost 278 job positions, but their employment level declined only by less than 2 per cent. Other 131 jobs were lost by the sojourners and by San Marino citizens residing abroad.

In spite of the crisis (or because of the crisis¹³), between 2008 to 2013 also the labor force expressed by the population present in San Marino increased by 400 units, as the balance between an increase of 469 residents (79 men and 390 women) and 44 women sojourners, and a decline of 113 men sojourners¹⁴. As a consequence the share of residents in the labor force increased from 69.7 to 74.6 (men from 61.0 to 66.8 per cent, women from 81.6 to 84.2 per cent).

The trends just described provoked a modest increase in unemployment in the first period (+77), and a rather pronounced one in the second (788). The total number of unemployed increased from 626 in 2003 to 703 in 2008, to 1492 in 2013. The percentage of women reached a maximum of 72.3 per cent in 2008 to then decline to 65.2 per cent in 2013.

Table 10 - Unemployed by group and sex; absolute values in 2003, 2008 and 2013 and absolute changes

	Men	Women	Total		Men	Women	Total
	Absolute value				Absolute change		
Residents							
2003	168	434	602	2003-08	13	70	83
2008	181	504	685	2008-13	320	427	747
2013	501	931	1,432	2003-13	333	497	830
Sojourners							
2003	1	0	1	2003-08	0	0	0
2008	1	0	1	2008-13	0	12	12
2013	1	12	13	2003-13	0	12	12
Present							
2003	169	434	603	2003-08	13	70	83
2008	182	504	686	2008-13	320	439	759
2013	502	943	1,445	2003-13	333	509	842
Aire							
2003	3	20	23	2003-08	3	-9	-6
2008	6	11	17	2008-13	11	18	29
2013	17	29	46	2003-13	14	9	23
Total							
2003	172	454	626	2003-08	16	61	77
2008	188	515	703	2008-13	331	457	788
2013	519	972	1,491	2003-13	347	518	865

¹³ Data suggest that the additional worker effect prevailed over discouragement.

¹⁴ For completeness, also the supply of citizens living abroad declined by 21 units.

Main labor market indicators: the total rates

The main labor market indicators allow capturing the situation of the people that live in San Marino, for which we know the level of WAP and that can be unemployed in San Marino.¹⁵

From 2003 and 2013 the total Rate of employment (RoE) registered a notable decline from 63.1 per cent to 60.6 per cent, with a maximum value of 63.8 per cent registered in 2008. Coherently with the previous analysis, the RoE of women remained almost constant (from 57.8 per cent to 57.6 per cent), after climbing to 59.6 per cent in 2008. On the contrary, that of men did constantly decline from 68.6 to 63.7 per cent. Therefore the gender differential decreased from 10.8 to 6.1 percentage points.

The total Rate of activity (RoA) increased from 65.9 per cent to 66.7 per cent. This positive trend was determined only by the rate of women that increased from 61.8 per cent to 66.7 per cent, while that of men declined from 70.1 per cent to 68 per cent. Therefore, the gender differential decreased to 2.5 percentage points. We could interpret this phenomenon as the result of the crisis that, affecting the employment situation of the main breadwinners, pushed members of the secondary labor force (women and young people) to enter the labor market.

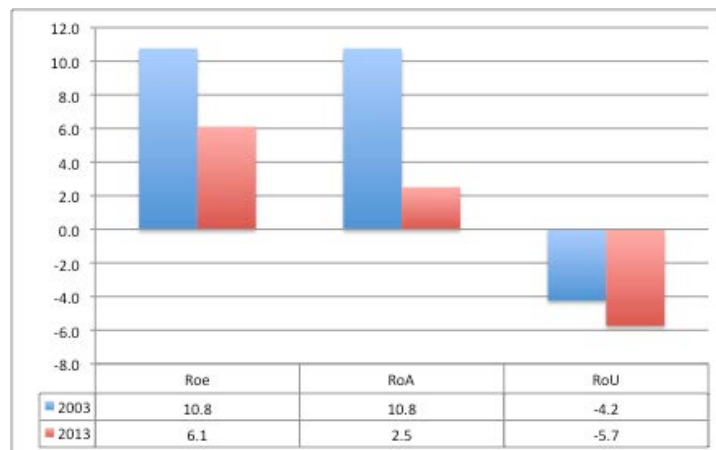
Table 11 - Rate of activity (RoA), Rate of employment (Roe) and Rate of unemployment (RoU) by sex; 2003, 2008 and 2013

	RoA			RoE			RoU		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
2003	70.1	61.8	65.9	68.6	57.8	63.1	2.3	6.5	4.3
2008	69.7	64.1	66.8	68.0	59.6	63.8	2.3	6.9	4.5
2013	68.0	65.5	66.7	63.7	57.6	60.6	6.4	12.1	9.2

The Rate of unemployment (RoU) reflects the opposite trends in the RoE and RoA, remaining substantially stable in the first period and then more than doubling in the second when it reached a maximum of 9.3 per cent (6.4 per cent for men and 12.1 per cent for women). In this case the gender differential increased (from 4.2 to 5.7 percentage points).

¹⁵ A small number of sojourners and citizens living abroad are also classified as unemployed,

Graph 4 – RoA, RoE and RoU; gender differential; 2003 and 2013



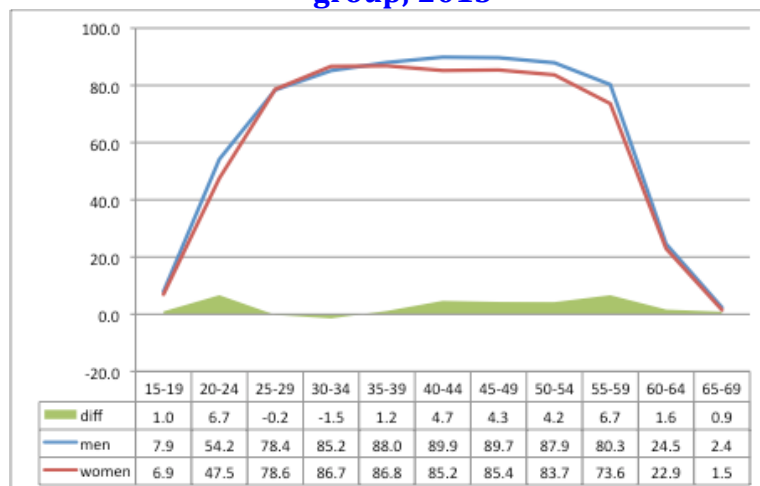
Therefore over the ten-year period we are considering:

- The total participation increased, while employment declined;
- Men’s presence both in employment and labor force did progressively decline;
- Women’s presence both in the labor force and employment did progressively increase;
- The gender differential both in employment and activity declined, while that in unemployment increased due the higher reactivity of women to total labor demand.

Main labor market indicators: the specific rates

The specific rates of participation well document the progressive convergence in the labor market behavior of men and women. In 2013 the specific RoAs of men and women have the same box shape. The differences are extremely limited for the younger age groups, and then increase with age. This shows that the convergence is the result of the behavior of the youngest cohorts, the last that have entered into the labor market.

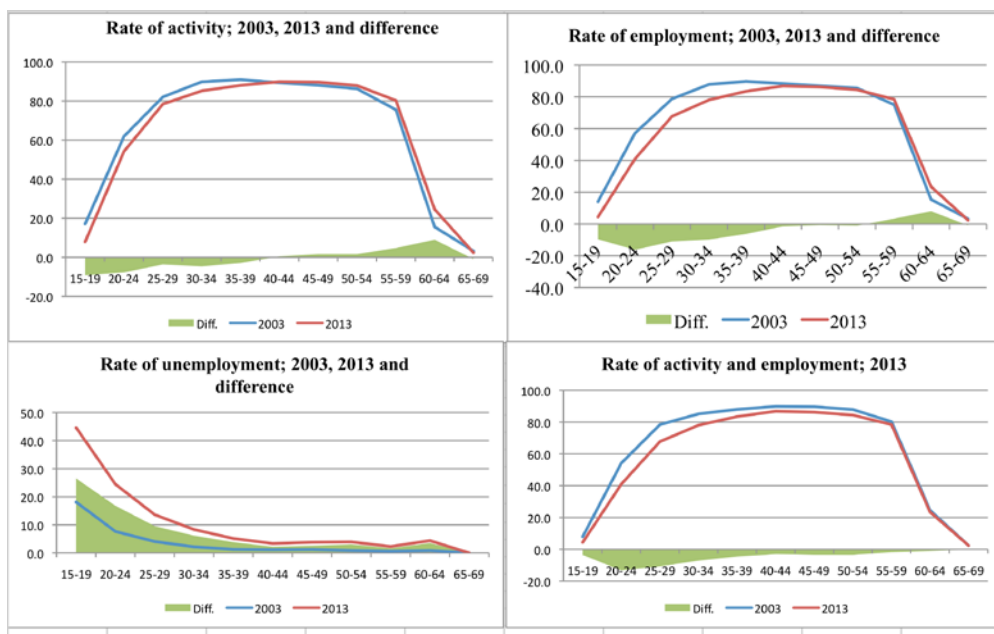
Graph 5– Men and women; total rates of activity by five-year age group; 2013



Lets now analyze the age specific rates by sex.

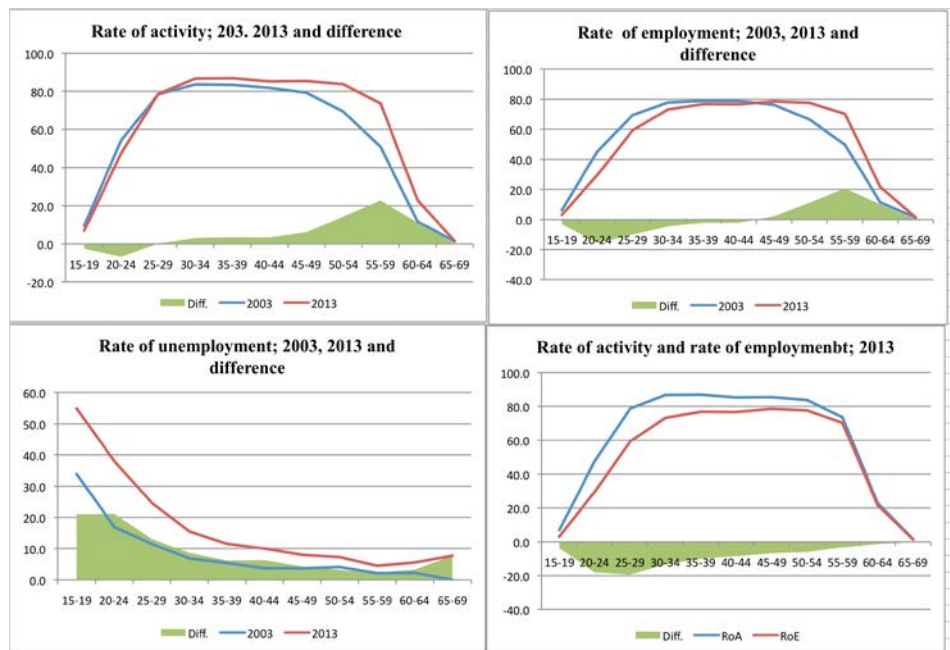
Men – As we have already seen, the 2003-2013 period is characterized by a decline in the labor market participation of men. However, the specific rates of participation decline, albeit in a decreasing way, only for the five-year age groups up to 40-44 and then increase for the older age groups. While the decline of the rates up to 29 year of age can be imputed to a more pronounced presence in education and training, that of the central age group is more difficult to interpret. The rates of employment present the same general trend. However, in this case the decline has affected the aged groups up to 50-54, the phenomenon being particularly relevant for the 19-29 age group. The rate of unemployment has increased for all age group and, also in this case, the most affected are the young people.

Graph 6 – Men; specific labor market indicators; 2003-2013



Women – The specific rates of participation have increased for all age groups, with the only exception of the first two, those affected by a relevant presence in the education system, the largest increase being that of the 55-59 age group. This trend is not paralleled by that of the rate of employment that registers a decline up to the 45-49 age group and increase only in correspondence of the older age groups. The consequence is a generalized increase of the specific rates of unemployment, the increase being inversely related to age. Finally, a comparison between the rates of activity and those of employment shows that the difference peaks in correspondence of the 25-29 age group.

Graph 7 – Women; specific labor market indicators; 2003 and 2013



Generational flow analysis ¹⁶

Let's first of all recall that the flow data on Working age population, Labor force and Employment do not include the *frontalieri* and the citizens enrolled in AIRE, that account for around 1/4 of the employed.

Working age population

From a flow perspective the WAP Total balance (TB) is given by the difference between First time entries and Definitive exits. First time entries are the results of two components: i) entries by ageing or Generational entries (GE) represented by those who become 15 and ii) the Migration balance (MB). Also Definitive exits are made up of two components: i) exits by ageing or Generational exits (GX) represented by those who turn 70 and ii) deaths in working age (D).

In symbols:

$$TB = (GE + MB) - (GX+D)$$

Alternatively we can see the total balance as the algebraic sum of the Generational balance and the Migration balance. Both elements can be positive or negative:

$$TB = NB + MB = (GE - GX) + MB$$

Our computations (table 12) show that the yearly average TB was equal to 182 as a difference between 547 First time entries and 365 Definitive exits. First time entries were the result of 296 GE and of a MB equal to 251. Therefore almost 46 per cent of entries into WAP were the result of the MB. Coming to definite exits, 251 were due to ageing and 114 to deaths.

¹⁶ The generational flow model was introduced by Bruni and Franciosi, (1979); for a more complete specification of the model see M. Bruni, 1988,1993 and 2015

$$(296 + 251) - (251 + 114) = 547 - 365 = 182$$

Alternatively the Total balance can be seen as the difference between the NB (obtained as the difference between GE and GX) and the Migration balance. Since the NB was negative and equal to around 70 people per year the increase registered by WAP between 2003 and 2013 was due only to immigration

$$(296 - 365) + 251 = -69 + 251 = 182$$

The difference between the first and the second period we have previously discussed emerges also from the flow analysis of WAP. The main element is represented by a decline in the yearly average TB from 217 to 146 that is provoked by a decline in the MB from 286 to 216.

Table 12 – WAP; generational flows; 2003-08, 2008-13 and 2003-13

	2003-2008			2008-2013			2003-2013		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Total values									
Gen Entries	717	686	1,403	818	734	1,552	1,535	1,420	2,955
Imm. Balance	735	696	1,431	569	512	1,081	1,304	1,209	2,513
Total Entries.	1,452	1,382	2,834	1,387	1,246	2,633	2,839	2,629	5,468
Gen. Exits	576	635	1,211	605	696	1,301	1,181	1,330	2,512
Deaths	356	183	540	396	204	600	752	388	1,140
Total Exits	932	818	1,750	1,001	900	1,901	1,933	1,718	3,651
Gen Balance	141	51	192	213	38	251	354	90	443
Natural Balance	-215	-132	-347	-183	-166	-349	-398	-298	-696
Total Balance	520	564	1,084	386	346	732	906	910	1,816
Average values									
Gen Entries	143	137	281	164	147	310	154	142	296
Imm. Balance	147	139	286	114	102	216	130	121	251
Total Entries.	290	276	567	277	249	527	284	263	547
Gen. Exits	115	127	242	121	139	260	118	133	251
Deaths	71	37	108	79	41	120	75	39	114
Total Exits	186	164	350	200	180	380	193	172	365
Gen Balance	28	10	38	43	8	50	35	9	44
Natural Balance	-43	-26	-69	-37	-33	-70	-40	-30	-70
Total Balance	104	113	217	77	69	146	91	91	182

The natural balance remains almost unchanged due to a contemporary increase in generational entries and exits. In its turn the increase in the number of exits is due to a parallel increase in the number of people who have become 70 and in the number of deaths. Both phenomena are the result of the ageing process that is affecting the population of San Marino.

Labor force and Employment

Between 2003 and 2013 First time entries into the labor force have been around 3,900 and those into employment a little more than 3,100 (Table 13). Since total entries into WAP have been around 5,500, 71.5 per cent of the people that have entered into WAP did also enter into the labor force, but only 57.1 per cent did find a job. In substance 1 out of 5 people that entered the labor force did not find a job (Table 14). Let's also observe that in both cases women represent the majority, 51.7 per cent in the case of labor force and 50.4 per cent in the case of employment.

Table 13 – Labor force and employment; generational flows; 2003-2008, 2008-2013 and 2003-13

	2003-08			2008-13			2003-13		
	Men	Womern	Total	Men	Womern	Total	Men	Womern	Total
Labor force									
Entries	1,060	1,124	2,183	828	898	1,726	1,888	2,022	3,910
Exits	-759	-520	-1,278	-744	-506	-1,250	-1,503	-1,026	-2,529
Gen. Exits	-707	-497	-1,204	-688	-480	-1,169	-1,395	-978	-2,373
Deaths	-52	-22	-75	-56	-26	-82	-108	-48	-156
Gen, Bala	301	604	905	84	392	476	385	996	1,381
Employment									
Entries	1,040	1,030	2,070	510	542	1,052	1,549	1,573	3,122
Exits	-752	-496	-1,248	-746	-577	-1,323	-1,497	-1,074	-2,571
Gen. Exits	-701	-476	-1,176	-692	-553	-1,245	-1,392	-1,029	-2,421
Deaths	-51	-21	-72	-54	-24	-78	-105	-45	-150
Gen, Bala	288	534	822	-236	-35	-271	52	499	551

As we have already seen, the performance of the two periods has been quite different and flow data portrays even better than stock data the crisis that intervened after 2008.

Between 2003 and 2008, First time entries into employment averaged 414 per year. They represented 94.8 per cent of First time entries into the labor force, the ratio being higher for men (98.1 per cent) than for women (91.6 per cent). In the following five-year period, First time entries into employment fell by almost 50 per cent, down to 210. In spite of the notable decline also in Labor force entries (that fell from a yearly value of 437 to 345) First time entries into employment represented only 61 per cent of First time entries into labor force, the values for men and women being similar (61.6 per cent and 60.4 per cent respectively). We should also point out that entries into labor force fell more sharply for men (22 per cent) than for women (8 per cent).

We should also notice that while in the first period entries into employment largely exceeded generational entries into WAP, in the second period they represented only 68 per cent.

These tendencies are well reflected by the main flow indicators: the Flow Rate of Activity (FRoA), the Flow Rate of Employment (FRoE) and the Flow Rate of Success (FSR). The first measures the percentage of Generational entries into the Labor force with respect to Generational entries into WAP; the second the percentage of Generational entries into Employment with respect to Generational entries into WAP; the third the percentage of Generational entries into Employment with respect to Generational entries into Labor force.

During the first period, all main flow indicators underline the good health of the San Marino economy and its positive impact on resident population. The FRoA and the FRoE were respectively 77 per cent and 73 per cent and, as we have already seen, the FSR was equal to almost 95 per cent. Women registered slightly higher values for the first two indicators, and slightly lower for the third.

Table 14 – Flow labor market indicators; 2003-2008, 2008-2013 and 2003-13

	2003-2008			2008-2013			2003-2013		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
LF/WAP	73.0	81.3	77.0	59.7	72.1	65.6	66.5	76.9	71.5
E/WAP	71.6	74.5	73.0	36.8	43.5	40.0	54.6	59.8	57.1
E/LF	98.1	91.7	94.8	61.6	60.4	61.0	82.1	77.8	79.9

The most dramatic evidence of the crisis that hit San Marino in the following year is provided by the FRoE and by the FSoR. The FRoE declined by 33.1 percentage points, showing that only 40 per cent of the people that entered WAP for the first time found a job; the FroA declined by 33.8 percentage points. Therefore only 61 per cent of the people that entered the labor force for the first time did find a job. The fall in the FRoE was more dramatic for men than for women, as well as in the FSR.

Some final considerations

Our analysis has shown that San Marino has already progressed along the path of the Demographic transition to the stage in which the natural balance of WAP is negative. In the last ten years, in absence of migration, WAP would have declined by around 700 people so that the increase by around 1,800 persons in working age is the result of the arrival of around 2,500 foreigners.

Between 2003 and 2008 a largely positive migration balance and the hiring of border workers have been essential to face an exceptional increase in employment. In spite of the reduction in the migration balance and the possibility to use the *frontalieri* as a buffer, the following crisis had a notable impact on the residents and especially on those that had just left the Education system. It will suffice to recall that First time entries into employment declined by almost 50 per cent for both men and women and although First time entries into labor force did also decline, the success rate was of only 61 per cent, while the number of unemployed doubled.

Labor market and demographic scenarios

WAP

The first step to build our labor market and demographic scenarios¹⁷ is to project WAP by sex and age group. In order to make the projections robust, we have chosen a 15-year horizon so that all the entries in WAP, the central demographic variable in our approach, will be constituted by young boys and girls that are already born, while the hypotheses on mortality that will determine Generational exits cannot be affected by relevant errors.

As we have already point out, the natural balance of WAP was negative between 2003 and 2013 due to the fact that the Total fertility rate - that at present can be evaluated at approximately 1.5 children per woman- has already been below the replacement level of 2.1 children per woman for many years.

¹⁷See Bruni 2009, 2012, and 2014

According to our computations, between 2013 and 2028, in absence of migration, WAP will decline from 23,261 to 21.519, bringing WAP back to the 2003 level.

Table 15 – WAP by sex; observed values (2003, 2008, and 2013) and projected values (2018, 2023, and 2028)

	men	women	Total
2003	10,633	10,817	21,450
2008	11,150	11,380	22,530
2013	11,536	11,725	23,261
2018	11,303	11,493	22,797
2023	11,009	11,226	22,235
2028	10,637	10,881	21,519

The natural decline of WAP will progressively increase in absolute terms from an average yearly value of -70, registered between 2003 and 2013, to more than -140 between 2023 and 2028 (Table 16). As a consequence between 2013 and 2028 WAP will decline by more 1,700 people (-7.5 per cent). Life expectancy being consistently higher for women, the decline will be more pronounced for men (7.8 per cent) than for women (7,2 per cent), as it did already happen between 2003 and 2013.

Table 16– Natural balance by sex and five year period; observed (2003-13) and projected (2013-28) values; absolute values, absolute change and percentage change

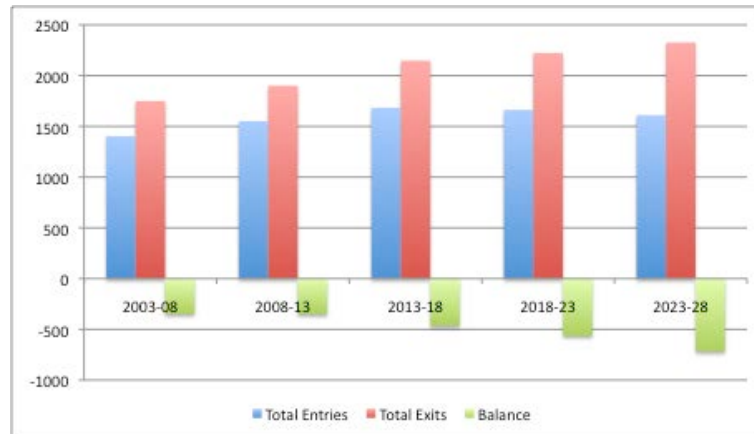
	men	women	Total
2003-08	-215	-132	-347
2008-13	-183	-166	-349
2003-13 (abs. ch)	-398	-298	-696
2003-13 (% ch)	-3.7	-2.8	-3.2
2013-18	-233	-232	-464
2018-23	-294	-267	-561
2023-28	-372	-345	-717
2013-28 (abs. ch)	-899	-844	-1742
2013-28 (% ch)	-7.8	-7.2	-7.5

Generational entries and exits flows “explain” the dynamic of the natural decline in WAP (Table 17). As we saw analyzing demographic accounting, the yearly number of births has remained substantially constant since the beginning of the century. Therefore, in the next 15 years, the number of generational entries into WAP will decrease only marginally. On the contrary, the ageing process that is affecting the population of San Marino will provoke a progressive and notable increase in Generational exits and in the number of deaths, a phenomenon that was already evident between 2003 and 2013 (Graph. 8).

Table 17 – WAP; Expected generational flows; 2013-28

	2013-18			2018-23			2023-28		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Gen. entries	885	799	1684	867	795	1662	833	777	1610
Total exits	1,118	1,031	2,149	1,161	1,062	2,223	1,205	1,121	2,326
Gen exits	682	805	1,487	705	824	1,529	728	868	1,596
Deaths	436	226	661	456	238	694	477	253	731
Natural balance	-233	-232	-464	-294	-267	-561	-372	-345	-717

Graph 8 - WAP; Entries, exits and balance; 2003-2028



In recent years the ageing process has been slowed down by immigration, but in absence of immigrants the share of people 50 and older will increase from a present value of 35.5 per cent to 47.5 per cent. At the same time immigration contributed to the slight increase in the number of women in fertile age. From 2013 to 2028 in absence of immigration their number is expected to decline by around 1,800 (-24 per cent).

Labor demand and supply

According to the forecasting procedure we are proposing (Bruni, 2012), the next step is estimating the level of labor shortage in alternative scenarios of labor demand and supply (Table 18).

For what relates to labor supply we have assumed, for simplicity, that the specific rates of participation will remain constant¹⁸. Under this assumption the trend in labor supply will reflect that in WAP and LF will decline at an increasing rate: 310 people between 2013 and 2018, 375 between 2018 and 2023, and 478 between 2023 and 2028.

For what relates to employment, we have considered three alternatives. The low variant (E1) assumes a zero employment growth, the medium variant (E2) assumes a rate of growth in each interval equal to that registered between 2003 and 2013 (4.8 per cent), and the high variant a rate of growth equal to that registered in the last expansionary phase (2003 – 2008), 13.7 per cent.

The labor shortage is computed as the gap created by the dynamic of labor supply and labor demand. Considering the 15-year period, the gap is equal to 1,163 people in scenario 1, to 4,225 in scenario 2 and to 10,691 in scenario 3, corresponding to average yearly values of 78, 281, and 713. In all

¹⁸ Different hypotheses based on trends and homogenization of the participative behavior of men and women have not produced relevant differences.

scenarios the labor shortage is going to increase with time. In the medium scenario, for instance, the yearly average shortage would increase from 257, to 279, to 309.

Table 18 – WAP, Labor force, and Employment in three alternative scenarios; absolute changes between 2013 and 2018; Structural Shortage of Labor in the three scenarios; absolute values

	2013-18	2018-23	2023-28	Total
WAP	-464	-561	-717	-1,742
LF	-310	-375	-478	-1,163
E1	0	0	0	0
E2	973	1,020	1,069	3,063
E3	2,778	3,159	3,592	9,529
LS1	310	375	478	1,163
LS2	1,283	1,395	1,547	4,225
LS3	3,088	3,533	4,070	10,691

In conclusion, even considering the intermediate scenario, the economic system would absorb unemployment and still need foreign labor. Therefore unless the employment level would remain stationary (a situation that could have interesting implication from an ecological perspective, but that is difficult to imagine in the agenda of politicians and entrepreneurs) the recourse to foreign labor (immigrants and *frontalieri*) is going to be not an option, but a necessity.

In order to better understand the implications of our three scenarios, we have computed the ratio between the local Resident labor force (RLF) and total employment (Table 19). In 2013 the value was equal to 76.5 per cent, which implies that the local supply could satisfy a little more than $\frac{3}{4}$ of the labor demand in terms of stock. In the following 15 years this ratio is projected to progressively decline in all the three scenarios: to 70.8 per cent in scenario 1, to 61.5 per cent in scenario 2, and to 48.1 per cent in scenario 3.

Table 19 – Resident labor force, employment level labor and labor force employment ratio in alternative scenarios; 2013, 2018, 2023, and 2028

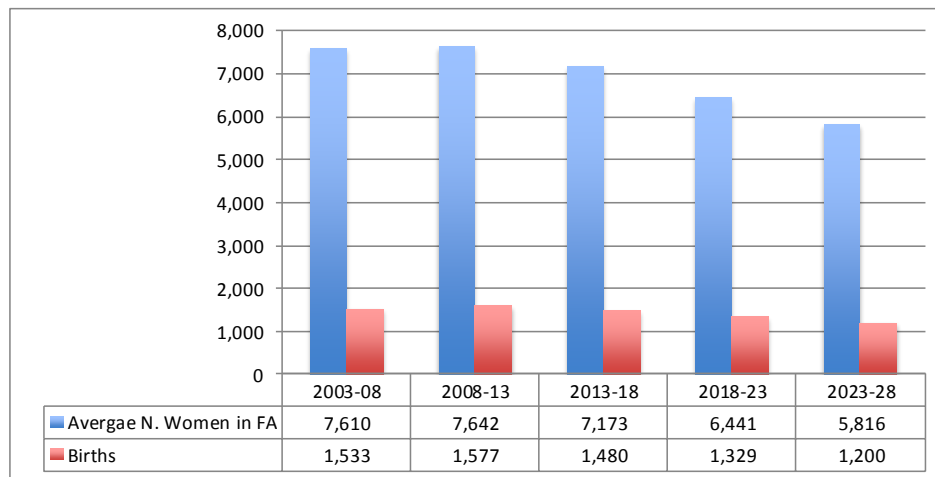
	RLF	E1	E2	E3	RLF/E1	RLF/E2	RLF/E3
2013	15,514	20,279	20,279	20,279	76.5	76.5	76.5
2018	15,204	20,279	21,252	23,057	75.0	71.5	65.9
2023	14,830	20,279	22,273	26,216	73.1	66.6	56.6
2028	14,351	20,279	23,342	29,808	70.8	61.5	48.1
2013'28	-1,163	0	3,063	9,529	-5.7	-15.0	-28.4

Women in fertile age and births

One of the main consequences of the demographic transition is the progressive decline in the number of women in fertile age and the progressive increase in their average age.

From the period 2003-2008 to the following two, the average number of women in fertile age resident in San Marino has marginally increased, due to immigration. According to our projections, from 2013 to 2028 the number of women in fertile age, in absence of migration, will decline by more than 1,800 units, i.e. by 24 per cent. Assuming for simplicity that the Total fertility rate will remain constant, the number of children born every year would therefore decline approximately by the same amount, from a present value of around 310 to around 240.

Graph 9 – Average yearly number of women in fertile age and number of births



Since the births of today will be the generational entries into the labor market of tomorrow, a very important implication of the phenomenon we have just outlined is that from the period 2023-28 to the period 2038-43 the generational entries into WAP will, *ceteris paribus*, decline from 1,610 in the first five year period to 1,200 in the last, provoking an increasing structural shortage of labor.

Manpower needs and demographic needs.

The previous analysis has shown that the demographic transition is creating two distinct, but connected problems: on the one hand, an increasing structural shortage of labor, on the other, a growing demographic disequilibrium. While the great majority of countries in the third phase of the demographic transition can resort only to mass immigration to deal with both problems¹⁹, San Marino, due to its size and geographical setting, has an extra degree of freedom: the possibility to face the structural shortage of labor resorting to *border workers*.

Which criteria should San Marino adopt to choose between these two alternatives or in defining the right mix of them? More specifically how should the country proceed in defining:

- The number and the typology of immigrants;
- The number and typology of *frontalieri*?

¹⁹As a matter of fact many countries (including France, Germany, Switzerland) use a large amount of border workers, but in no country border workers have the relevance they have in San Marino.

The long run demographic equilibrium

While migrants can provide labor and “produce” children, *frontalieri* can only satisfy manpower needs. Moreover, once immigrants are regularly admitted in the country they become a structural component of the local supply of labor. On the contrary the *frontalieri* remain flexible and “disposable” members of the local labor market. Last but not least, immigrants endow the country of arrival with their knowledge and competencies, in other words they bring a relevant “gift” of human capital.

Taking into consideration positive and negative aspects of this alternative, our suggestion is that San Marino should choose:

- A number of migrants sufficient to keep births constant at the present level, so to reach a situation of natural equilibrium in WAP toward the middle of the century;
- A number of *frontalieri* equal to that needed to satisfy the remaining amount of labor shortage.

Table 20 exemplifies this proposal in scenario 2.

Table 20 – Total need of foreign workers by typology in scenario 2; 2013-28

	Employment needs	Migrants	Border workers
2013-18	1,939	939	1,000
2018-23	2,187	1,462	725
2023-28	2,401	1,250	1,151

In our example, that assumes fertility constant, the number of immigrants is equal to the double of the number of women necessary to keep births at around 300 per year. The number of *frontalieri* is then estimated as the difference between the total Manpower Shortage and the number of immigrants.

Moving from the statistical exercise to policies, what I am suggesting is that every year the government should:

- Estimate the labor shortage for the following three to five year period, taking into consideration the demographic and employment trends, as well as the availability of local labor (unemployment);
- Define the yearly number of migrants equal to that needed to keep the number of births approximately constant;
- Hire a number of *frontalieri* equal to the difference between the total need and the number of migrants.

What remains to be defined is the typology of migrants.

Migration policy and economic development

A country that enters into the third phase of the demographic revolution²⁰ is characterized by a progressive decline in WAP. In a situation of normal economic development this will necessarily end up provoking a structural need of foreign labor that cannot be faced by changes in the wage rate, internal labor mobility, technological development or even by delocalizing part of its production (Bruni 2012, 2014). In substance, immigration is no more an option, but a necessity. In this situation, the rational solution is to transform what could be considered a problem into an advantage by linking immigration to the typology of economic development.

Countries that reach the third stage of the demographic revolution are generally well advanced along the path of economic growth so that the young people exiting the education and training system are already endowed with a good average educational level that will necessarily increase in the following years. The implication is that at the beginning the country will need mainly non-qualified workers, but with time it will need an increasing percentage of qualified workers, technicians and then university graduates. This evolution will depend not only on the supply side in terms of flows (the exits from the education and vocational system), but also from the demand side, which in its turn is determined by the typology of economic development.

San Marino could take advantage of this situation. On the one hand it could satisfy the need of foreign labor in occupations that require low and intermediate qualifications with border workers; on the other it could aim to rapidly develop an advanced tertiary sector satisfying the remaining need of labor by attracting foreign talents.

This would imply for San Marino designing and implementing a development strategy more coherent with its potentialities and aspirations and based on intellectual activities such as high level education and training, and research in advanced technologies.

The social, economic, and geographic situation offered by San Marino could certainly be attractive to foreign young people endowed with high educational levels and intellectual motivations, while the designing and implementation of the new development strategy could be pursued in connection with the incoming phase of further integration in EU and find financial support in some well aimed EU projects.

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²⁰ The term transition reflects the assumption of the passage from a situation of traditional equilibrium to a modern equilibrium. Present demographic trends suggest that in many countries equilibrium is not necessarily the end point of the process. Therefore it seems to me that the term revolution is more appropriate to describe the demographic upheaval that by now is affecting all the countries in the world.

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