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on Demographic Issues

Demographic Shifts in EU 27, Norway and Switzerland: Population and Dependency Ratio Forecasts until 2030

by Marc Trippel & Hans Groth

No. 2011/9

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Marc Trippel & Hans Groth

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The environment Europe is living in

As the financial uncertainties continue to dominate daily headlines, the demographic shifts start to become another stress factor for Europe. The 2010 European Commission's Demography Report states[1]: "The EU's demographic picture has become clearer: growth is fuelled mainly by immigration, whereas the population is becoming older and more diverse". So the question awaiting an urgent answer is: Europe's population structure will definitely shift within the next decades – but how is it possible to maintain sustainable social structures, social welfare systems, pensions and healthcare funding? There is no doubt, these are critical factors which determine Europe's global competitiveness, the stability of its civil society and finally also the wealth of its citizens.

Population shifts until 2030

The population within all of Europe passed the 500 million mark as of 2010 with over 90 million retirees (aged 65 years and older). One can observe a continuing and significant increase of older people within the whole EU, Norway, and Switzerland over the next decades (figure 1). The group of people aged 65 years and older within the EU will grow by 36.1% from the current level of 87 million people to 124 million by 2030. For Norway, the increase is 451'000 people (plus 62.4%) from currently 723'000. In Switzerland, the picture is similar with plus 61% from 1.3 million to 2.1 million aged 65 years and older. This leads to the "good-bye pyramid" syndrome – a phenomenon where the classical population pyramid is reshaping into a rectangle with a peak on the top.

Within the European Union, Germany is affected the most by the ageing of its society with a projection of a 28% proportion of people aged 65 years or older in the total population by 2030. The smallest increases in elderly people cohorts (4-5% to 17% of total population) can be observed in Cyprus, Ireland and Luxembourg. For further details table 1 serves as an in-depth resource.

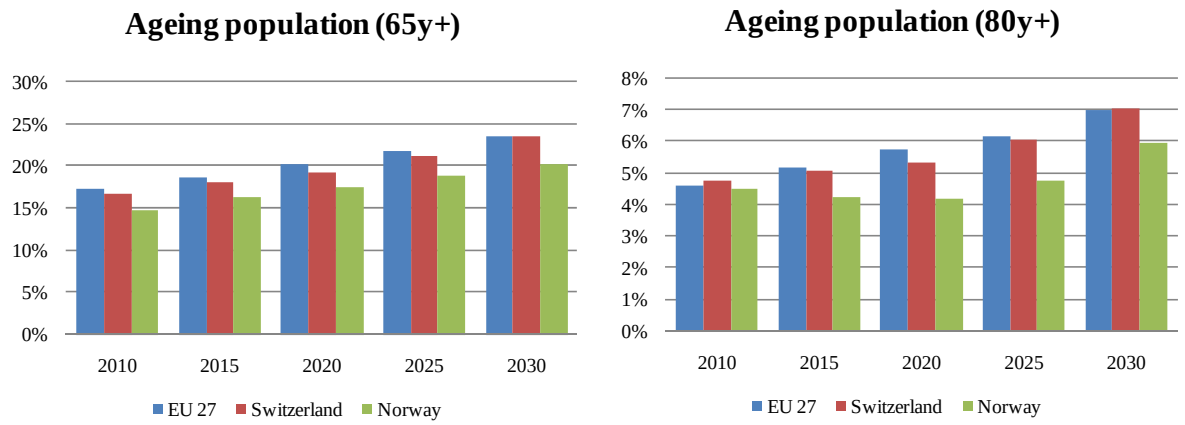

Figure 1: Ageing till 2030 in EU27, Switzerland and Norway expressed in % of total population. Data: Eurostat (Last update: May 27, 2011)[2].

The transition towards ageing societies is even more dominant for the age group 80 years and older with an increase of 57% for the EU and 70% for Switzerland. Surprisingly, the growth rate for people aged 80 years and older in Norway (57.5%) is below the growth rate for people aged 65 years and older. The rationale therefore might be World War II, as the lack of young men prevented population growth, in contrast to Switzerland where the male population was not as affected by the war. Within Europe, the largest cohort of 80+ year olds until 2030 will occur in Sweden with 8.4% of total population.

The overall population size of a given nation is driven by life expectancy, fertility and migration. The increase in life expectancy is a matter of high living standards, balanced nutrition, and constantly improving health care and medical services. In hand with this, amelioration of personal wealth, higher education, and individual freedom in terms of family planning have contributed to fertility rates (amount of children per woman) below the replacement level of 2.1. Children no longer serve as insurance or pension in the second or third stage of life. Hence, Europe's population has started to decline and relies more and more on immigration with the hope to remain stable or maintain slight growth even. Within the countries in question, we still observe a small total population growth for the EU with 4.3% until 2030 to 522 million (the annual population growth rate until 2030 in Europe is 0.3%). Bulgaria needs to handle the largest population decrease

of over 14% until 2030, followed by Hungary and Germany with 9% and 5%, respectively.

The largest population increase in relative terms will occur in Lithuania and Ireland (+24%), followed by Cyprus and Belgium with approximately each 20%. Interesting again is Norway with 19.1% and Switzerland with 14.9% population growth up to 5.8 million and 8.9 million, respectively, by 2030 – clearly above the European average.

For the EU, there is a slightly positive trend in fertility rates up from lows of 1.3 children per women to 1.6. This is still significantly below replacement but contributes to a slower population decline. The positive upward trend in fertility rates is predicted to remain consistent as family structures might change in favor of more children. The latest EU report on demography states that fertility is rising again with wealth, after decades of decaying fertility. Hence, the observed postponement of childbearing to a later age is accompanied by higher fertility rates and better public support for parents. This is in line with the surprisingly high fertility rate in Norway (1.92) compared to the rest of Europe and is driven by the relatively good parent support within the Norwegian society. Moreover, Norway never had to cope with very low reproduction rates since the fertility rate low in the 80's was never lower than 1.6. By 2030, the fertility rate in Norway is assumed to be at 2.0. In Switzerland the fertility rate is currently at 1.46, indicating a slightly positive trend towards 1.7 by 2030. However, as fertility rates are clearly below replacement in both countries, the population growth is driven, next to higher life expectancy, by immigration. While Switzerland relies heavily on immigration in order to attain population growth and to balance the ageing effect, Norway's high fertility rate makes them less dependent on immigration as the population's replacement rate is almost met.

The decline of the working age group, defined as the age group between 20 and 64 years, is ongoing until 2030. In the EU, the reduction in labor market participants is forecasted at 12.5 million, a drop from 307 to 295 million (-4.1%). For Norway and Switzerland, the situation looks similar in relative terms as the working age group is also declining with -4.2% and -5.3% respectively.

Nevertheless, in absolute terms both countries show an increase of 313 thousand for Norway (+10.8%) and 249 thousand for Switzerland (+5.1%) as a result of the growing total population. Figure 2 shows the development of the working age cohort (20 to 64 years) in relation to the total population (left axis). The current levels are 61.3% for the EU, 59.6% for Norway and 62.2% for Switzerland. Until 2030, the working age group declines by roughly 5% to 56.4% of total population within the EU, to 55.4% in Norway and down to 56.9% in Switzerland.

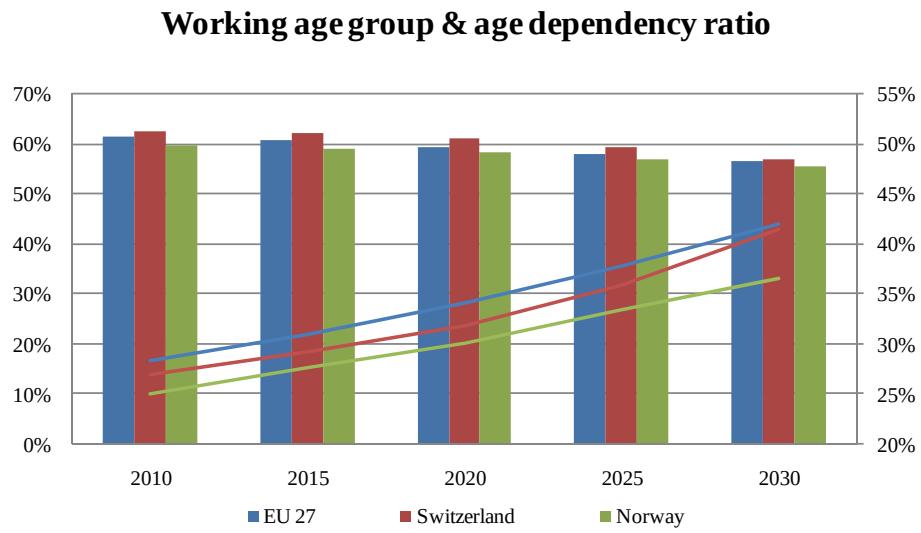

Figure 2: Working age population & age dependency ratio in EU 27, Switzerland and Norway. Data: Eurostat (Last update: May 27, 2011)[2].

The age dependency ratio – the quotient of the population group aged 65 years and older to the working age group 20 to 64 year – provides a measure of the relationship of the productive or taxable to the pension-dependent (most not taxed or lower taxed) population groups. The axis on the right of figure 2 shows the increasing dependency ratio from currently 28% in the EU, 25% in Norway and 27% in Switzerland, up to 42% for the EU, 37% for Norway, and 41% for Switzerland. This means that by 2030, approximately 2.5 participants in the labor markets will finance one retiree through transfer payments. Such an unprecedented shift, from currently 4 workers financing one pensioner, down to 2.5 within two decades highlights the severity of the demographic challenge in the coming two decades. It is at hand that this structural change will force our society to re-think and potentially rebuild our social welfare & benefit systems in order to ensure a sustainable continuity.

The population histograms for Norway, Switzerland, and the EU for 2010 in the top line and the forecast for 2030 in the bottom line are illustrated in figure 3. It is obvious that the classical demographic pyramid is history and that we are currently observing a hexagon structure that should transfer into a rectangle by 2050 for most European countries. Two phenomena can be observed, the impact of low fertility and the effect of living longer. As Norway shows relatively high fertility rates, the evolution of their population basis (children and teenagers) is relatively constant. Switzerland, and more so the EU, are confronted with low fertility, resulting in a massive break-in of births, children, and teenagers in relation to the total population.

Furthermore, the largest generation (the baby-boomers) are retiring within the next decade, leading – as reflected in the changes in the dependency ratios – to massive population shifts towards more elderlies.

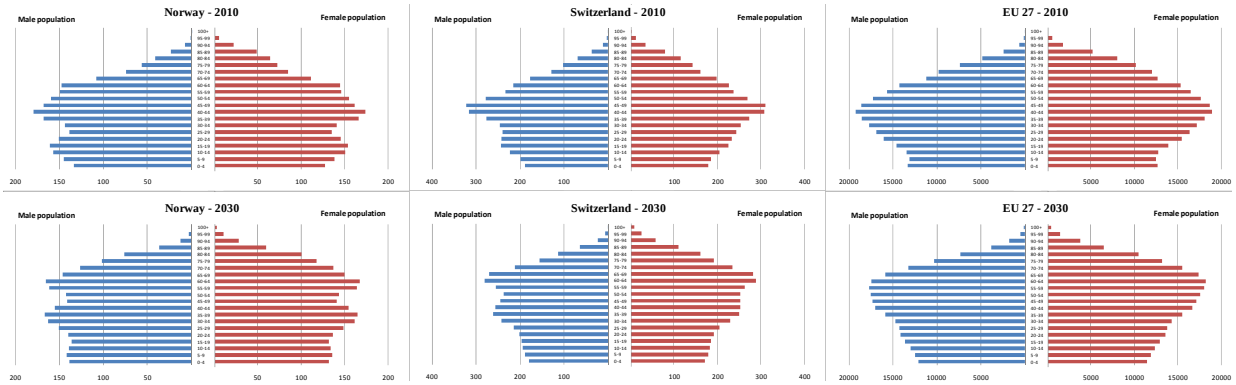

Figure 3: Working age population & age dependency ratio in EU 27, Switzerland and Norway. Data: U.S. Census Bureau[3].

There is no doubt that demographic ageing will occur all across Europe. The question if this transition becomes either a problem or an opportunity for civil societies, social welfare states, and their economies will be decided within the next years. One needs to discuss, without further delay and in a proactive manner, how to balance the unprecedented 20th century improvements in life expectancy with the so far untapped potential for longer individual productivity. The intergenerational dialog within our civil society, guided by policy makers, has to be centered on the following question: At what age should 21st century citizens retire since this sensitive age has to satisfy both the interests of young and elderly generations?

This discussion is urgent for the future fiscal health of each nation, and ultimately for each individual's financial security. Europeans need to succeed in transforming the additional life years into some sort of measurable and taxable productivity. The key is therefore to establish a system that brings a benefit to all age groups. This means that the position and responsibility of elderly people in our society needs to be redefined without jeopardizing ethical standards, dignity and the principles of solidarity.

Thoughts on the dependency ratio

The "dependency ratio" provides a powerful insight into the economic impact of demographic changes as it provides a ratio for the dependent to the productive/taxable age groups within a society. But this measure is also somewhat misleading as it does not take unemployment rates into account. The retirement age is assumed to be 65 years, and the working age group is defined as people between 20 and 64 years. This

makes the quotient a rather static tool. For example, it does not capture policy changes such as a postponement in retirement age and hence is no longer a really valid planning tool of the 21st century. In addition, it fails to capture any improvements in health or how good health could be translated in additional productivity.

In order to improve the planning impact of the dependency ratio, we propose to correct the working age group by considering

1. historical long term unemployment rates
2. a range for the dependency ratio depending on the retirement age
3. improvements in health status which makes working past the traditional retirement age a new and so far not maximized option

To make oneself familiar with the complex and diverse demographic shifts in EU 27, Norway and Switzerland, table 1 gives a comprehensive overview for the time period 2010 - 2030 about a country's size, fertility levels, life expectancy at birth, relevant population cohorts and the resulting dependency ratios.

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Country	Population (in mio) 2010	% of Europe	2030	Change	Fertility 2010	2030	Change	Life Expectancy 2010	2030
Austria	8.04	1.6%	8.08	0.05	1.39	1.55	0.16	79.7	81.9
Belgium	10.08	2.0%	12.02	1.94	1.65	1.67	0.02	79.4	81.7
Bulgaria	7.06	1.4%	6.06	-1.00	1.41	1.56	0.15	73.4	77.7
Cyprus	0.08	0.0%	0.10	0.02	1.45	1.50	0.05	77.7	80.6
Czech Republic	10.05	2.0%	10.08	0.03	1.25	1.48	0.23	77.0	80.2
Denmark	5.05	1.0%	5.09	0.04	1.74	1.72	-0.02	78.5	81.1
Estonia	1.03	0.2%	1.03	-0.01	1.43	1.56	0.13	73.1	77.4
Finland	5.04	1.0%	5.07	0.04	1.73	1.71	-0.02	79.1	81.5
France	64.07	13.0%	70.03	5.96	1.97	1.84	-0.13	81.1	82.8
Germany	81.07	16.4%	77.09	-3.99	1.40	1.55	0.15	79.9	82.1
Greece	11.03	2.2%	11.06	0.03	1.37	1.54	0.17	79.8	82.0
Hungary	10.00	2.0%	9.07	-0.93	1.39	1.54	0.15	74.6	78.5
Ireland	4.05	0.8%	5.03	0.98	2.03	1.85	-0.18	80.1	82.1
Italy	60.03	12.2%	64.05	4.02	1.39	1.54	0.15	81.7	83.2
Latvia	2.02	0.4%	2.00	-0.02	1.31	1.51	0.20	72.4	77.0
Lithuania	3.03	0.6%	3.00	-0.03	1.24	1.47	0.23	75.1	78.8
Luxembourg	0.05	0.0%	0.06	0.01	1.78	1.74	-0.04	79.5	81.8
Malta	0.04	0.0%	0.04	0.00	1.52	1.61	0.09	79.6	81.8
Netherlands	16.06	3.3%	17.06	1.00	1.78	1.75	-0.03	80.7	82.5
Poland	38.02	7.7%	37.06	-0.96	1.29	1.49	0.20	75.9	79.4
Portugal	10.06	2.0%	10.08	0.01	1.50	1.60	0.10	78.4	81.1
Romania	21.05	4.3%	20.03	-1.02	1.27	1.49	0.22	73.7	77.9
Slovakia	5.04	1.0%	5.06	0.02	1.36	1.53	0.17	75.6	79.2
Slovenia	2.00	0.4%	2.02	0.01	1.29	1.49	0.20	77.1	80.2
Spain	45.10	9.1%	49.10	4.00	1.47	1.57	0.10	81.1	82.8
Sweden	9.03	1.8%	10.06	1.02	1.67	1.68	0.01	81.0	82.7
United Kingdom	62.00	12.6%	70.02	8.02	1.92	1.81	-0.11	79.9	82.1
EU 27	482.13	97.7%	501.35	19.22	1.56	1.64	0.08	79.4	81.8
Norway	4.09	0.8%	5.08	0.99	1.77	1.74	-0.03	80.1	82.1
Switzerland	7.08	1.4%	8.09	1.02	1.46	1.58	0.12	81.0	82.7
Median	32.78	6.6%	34.13	1.35	1.53	1.61	0.08	78.2	80.9
Min	0.04	0.0%	0.04	0.00	1.24	1.47	-0.18	72.4	77.0
Max	482.13	97.7%	501.35	19.22	2.03	1.85	0.23	81.7	83.2

Table 1, part 1: Total population, fertility rate and life expectancy at birth for EU 27, Norway and Switzerland during the time period 2010 – 2030. Data: Eurostat (Last update: May 27, 2011)[2].

	Aged 65+ years		Aged 80+ years		Total Dependency Ratio		Age Dependency Ratio	
Country	**2010**	**2030**	**2010**	**2030**	**2010**	**2030**	**2010**	**2030**
Austria	18.1%	26.0%	5.0%	7.6%	47.9%	65.1%	26.8%	42.9%
Belgium	17.8%	25.0%	5.3%	7.3%	51.1%	66.0%	26.9%	41.5%
Bulgaria	17.9%	24.6%	4.0%	7.0%	46.5%	58.4%	26.2%	39.0%
Cyprus	10.2%	16.9%	1.9%	3.9%	36.5%	46.6%	13.9%	24.8%
Czech Republic	15.9%	24.3%	3.9%	7.4%	41.5%	56.6%	22.5%	38.0%
Denmark	16.6%	22.7%	4.2%	7.0%	52.6%	64.3%	25.3%	37.3%
Estonia	17.6%	24.5%	4.3%	7.1%	48.4%	63.0%	26.1%	40.0%
Finland	17.2%	26.0%	4.6%	8.3%	50.2%	70.4%	25.9%	44.4%
France	16.5%	22.9%	5.3%	7.2%	54.0%	65.3%	25.4%	37.9%
Germany	20.6%	27.9%	5.2%	8.2%	51.6%	69.7%	31.2%	47.3%
Greece	19.4%	24.9%	5.3%	7.7%	50.6%	59.6%	29.1%	39.7%
Hungary	16.7%	22.9%	4.0%	6.7%	46.4%	57.1%	24.4%	35.9%
Ireland	11.3%	16.7%	2.8%	4.5%	47.7%	53.2%	16.7%	25.5%
Italy	20.1%	25.5%	5.9%	8.1%	51.3%	61.9%	30.4%	41.3%
Latvia	17.0%	23.1%	3.7%	5.9%	43.7%	55.9%	24.5%	36.1%
Lithuania	16.3%	23.7%	4.4%	6.8%	43.4%	57.7%	23.4%	37.4%
Luxembourg	14.8%	19.2%	4.1%	5.2%	49.7%	58.2%	22.2%	30.3%
Malta	15.1%	25.1%	3.4%	7.5%	45.0%	64.4%	21.9%	41.3%
Netherlands	15.5%	23.6%	4.0%	7.0%	49.2%	65.8%	23.1%	39.1%
Poland	13.5%	23.1%	3.4%	5.9%	39.4%	56.6%	18.8%	36.2%
Portugal	17.8%	23.2%	4.9%	7.2%	51.6%	57.9%	26.9%	36.6%
Romania	14.8%	20.1%	3.2%	5.2%	42.2%	48.9%	21.0%	29.9%
Slovakia	12.6%	21.3%	3.1%	5.3%	39.5%	53.3%	17.6%	32.6%
Slovenia	16.6%	26.3%	4.0%	7.1%	43.1%	61.5%	23.8%	42.4%
Spain	16.9%	22.0%	4.9%	6.4%	46.9%	54.2%	24.9%	33.9%
Sweden	19.3%	24.4%	5.4%	8.4%	53.4%	67.3%	29.6%	40.9%
United Kingdom	16.3%	21.3%	4.6%	6.5%	50.8%	61.7%	24.6%	34.4%
EU 27	17.4%	23.8%	4.8%	7.1%	49.0%	61.5%	25.9%	38.4%
Norway	15.6%	22.4%	4.7%	6.7%	51.1%	63.8%	23.5%	36.7%
Switzerland	16.6%	24.7%	4.7%	7.3%	47.1%	63.3%	24.4%	40.3%
Median	16.4%	23.3%	4.3%	6.8%	47.4%	60.3%	24.2%	37.4%
Min	10.2%	16.7%	1.9%	3.9%	36.5%	46.6%	13.9%	24.8%
Max	20.6%	27.9%	5.9%	8.4%	54.0%	70.4%	31.2%	47.3%

Table 1, part 2: Percent of total population aged 65+ and 80+ years, respectively, total dependency ratio and age dependency ratio for EU 27, Norway and Switzerland during the time period 2010 – 2030. Data: Eurostat (Last update: May 27, 2011)[2].

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