



Impact of future demographic trends in Europe

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UN population forecast

- The only forecast to cover entire CoE area and offer satisfactory level of details is *UN World Population Prospects: 2004 Revision*
- Other options : Eurostat, World Bank, USBC, CEFMR



Data interpolation

Karup-King interpolation of 5-year into 1-year age groups

- Pre-school age group: 0–5 years
- School-age group: 6–18 years, distinguishing three levels: elementary (6–11), lower secondary (12–15), and upper secondary (16–18)
- Tertiary-education age group: 19–23 years
- Working-age group: 24–64 years, distinguishing younger (24–34), middle-aged (35–44), and older (45–64) groups
- Elderly population: 65 or more years, distinguishing the group of 65–79 years of age, and the oldest-old population (80+)



Data aggregation

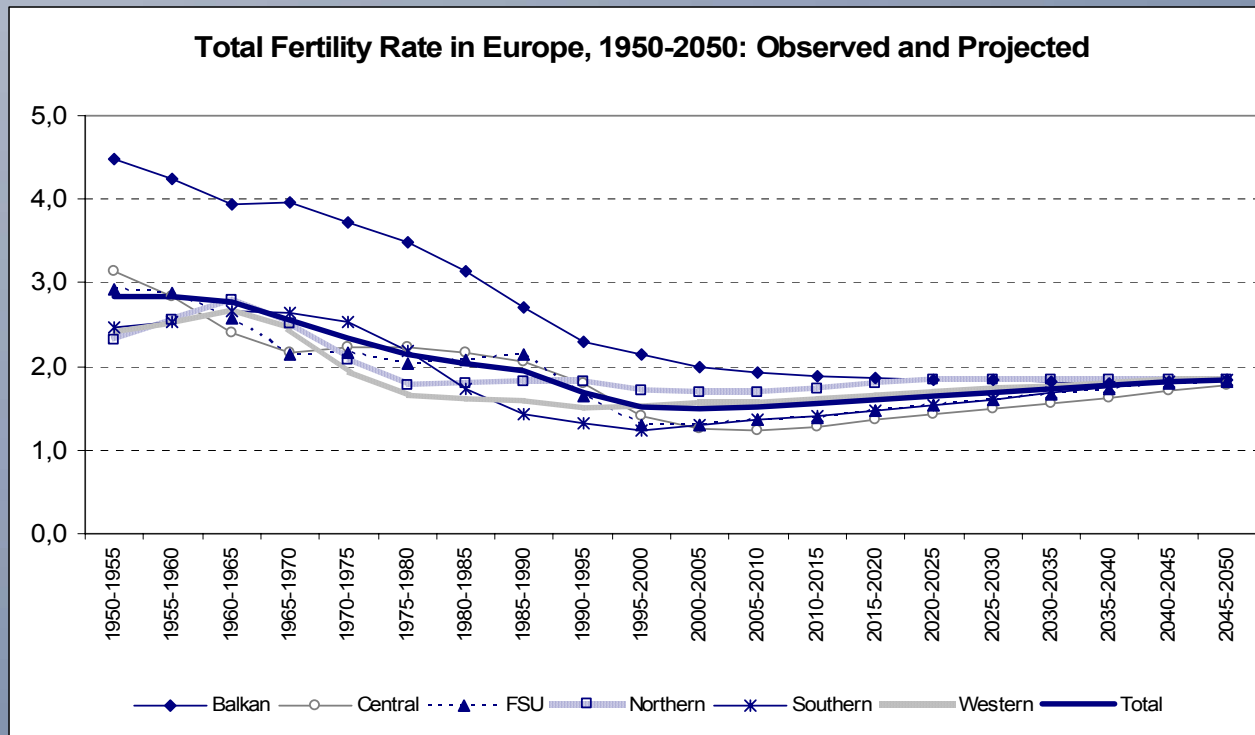
- **Balkan Europe** (8 countries)
Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Former Yugoslav Republic of Macedonia, Romania, Serbia and Montenegro, and Turkey
- **Central Europe** (8 countries)
The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic, and Slovenia
- **European and Trans-Caucasian part of the former Soviet Union (FSU)**: 6 countries (excluding the three Baltic EU members)
Armenia, Azerbaijan, Georgia, Moldova, the Russian Federation, and Ukraine
- **Northern Europe** (7 countries)
Denmark, Finland, Iceland, Ireland, Norway, Sweden, and the United Kingdom
- **Southern Europe** (6 countries)
Cyprus, Greece, Italy, Malta, Portugal, and Spain
- **Western Europe** (7 countries)
Austria, Belgium, France, Germany, Luxembourg, the Netherlands, and Switzerland



UN forecast assumptions

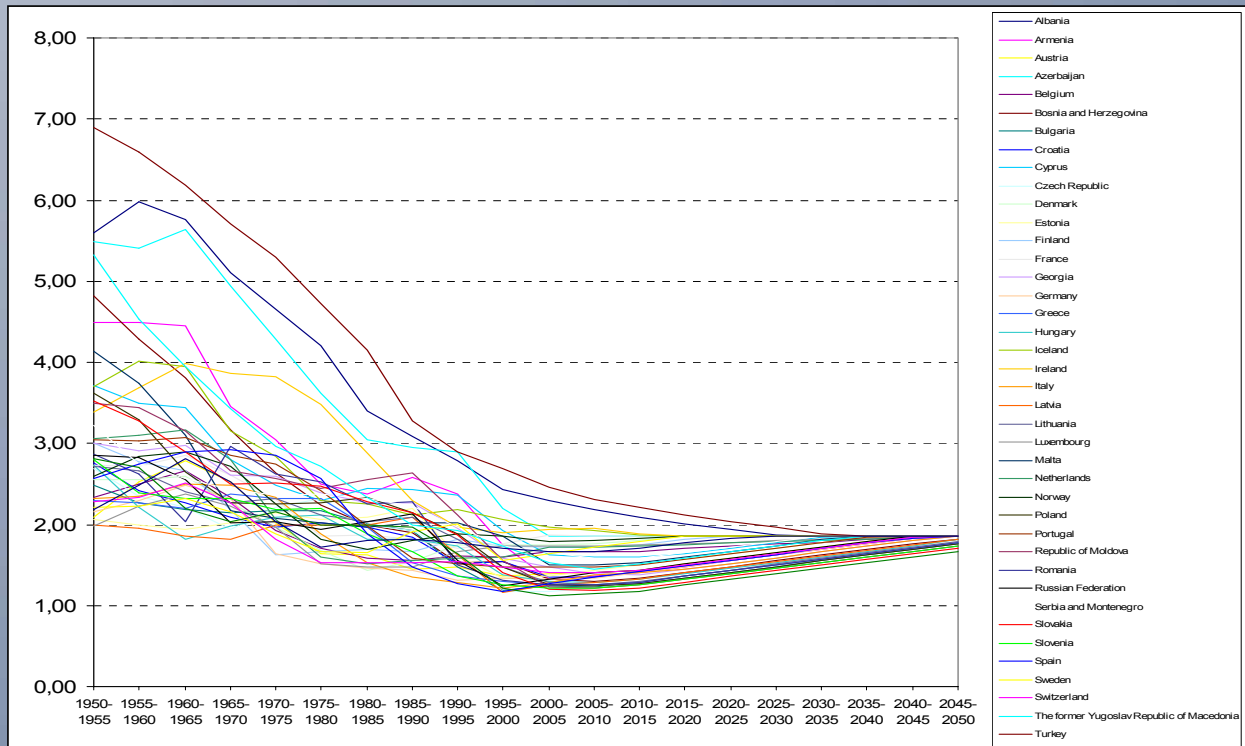
- Fertility
- Mortality
- International migration

UN assumptions – fertility

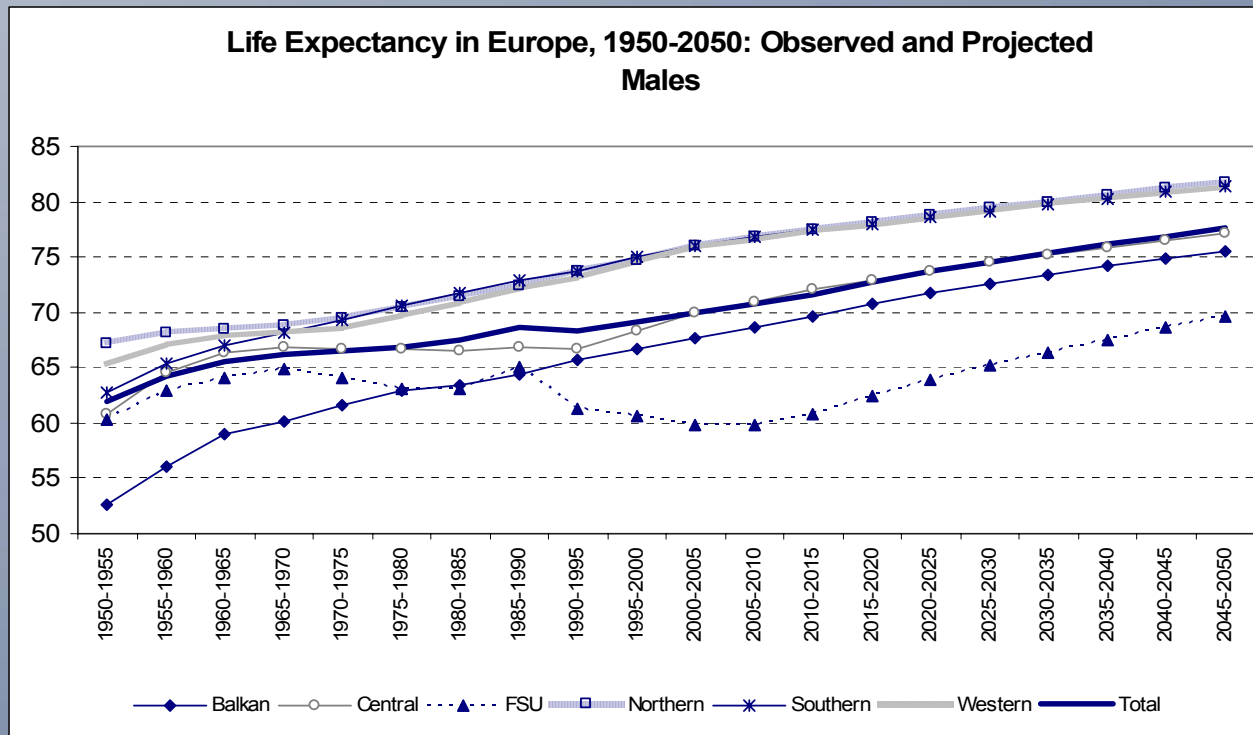




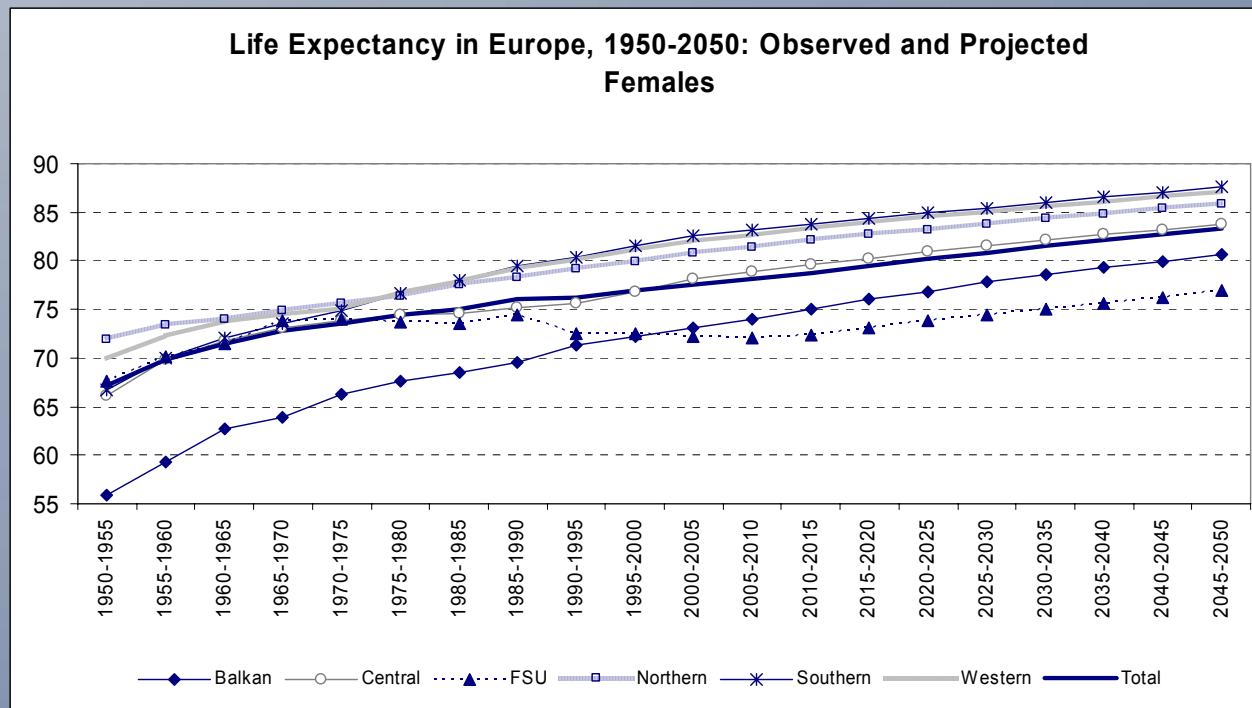
UN assumptions – fertility



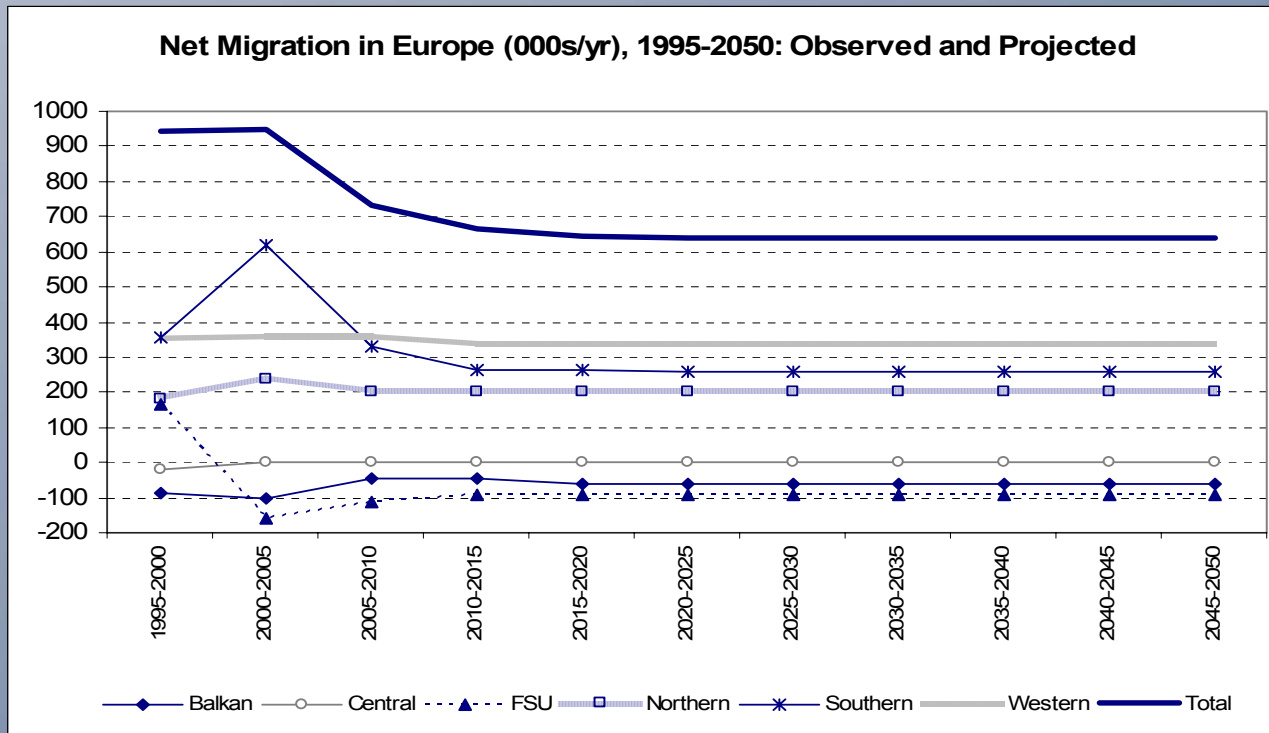
UN assumptions – mortality



UN assumptions – mortality



UN assumptions – international migration





UN Assumptions – International migration

Country	1995	2000	2005	2010	2015		2045
	-2000	-2005	-2010	-2015	-2020		-2050
Albania	-53	-20	-15	-10	-10		-10
Bulgaria	-10	-10	-10	-10	-10		-10
Georgia	-70	-50	-30	-15	-15		-15
Germany	227	220	220	200	200		200
Greece	60	36	35	35	35		35
Poland	-14	-16	-16	-16	-16		-16
Romania	-70	-30	-20	-5	-5		-5
Spain	135	405	120	60	60		60
Switzerland	16	8	8	8	8		8
Turkey	27	-50	-10	-10	-30		-30
Ukraine	-140	-140	-100	-100	-100		-100



- Simplification and unrealistically high assumptions on fertility, leading in general to overestimation of birth numbers
- Mortality is slightly higher than assumed in other studies.
- Fix net international migration is rather unrealistic and defining assumptions in absolute numbers may generate high errors for small countries with high net migration.
- One may suggest that UN projections will generate more numerous and younger populations in comparison to what may realistically be expected and what is predicted by other specialists.

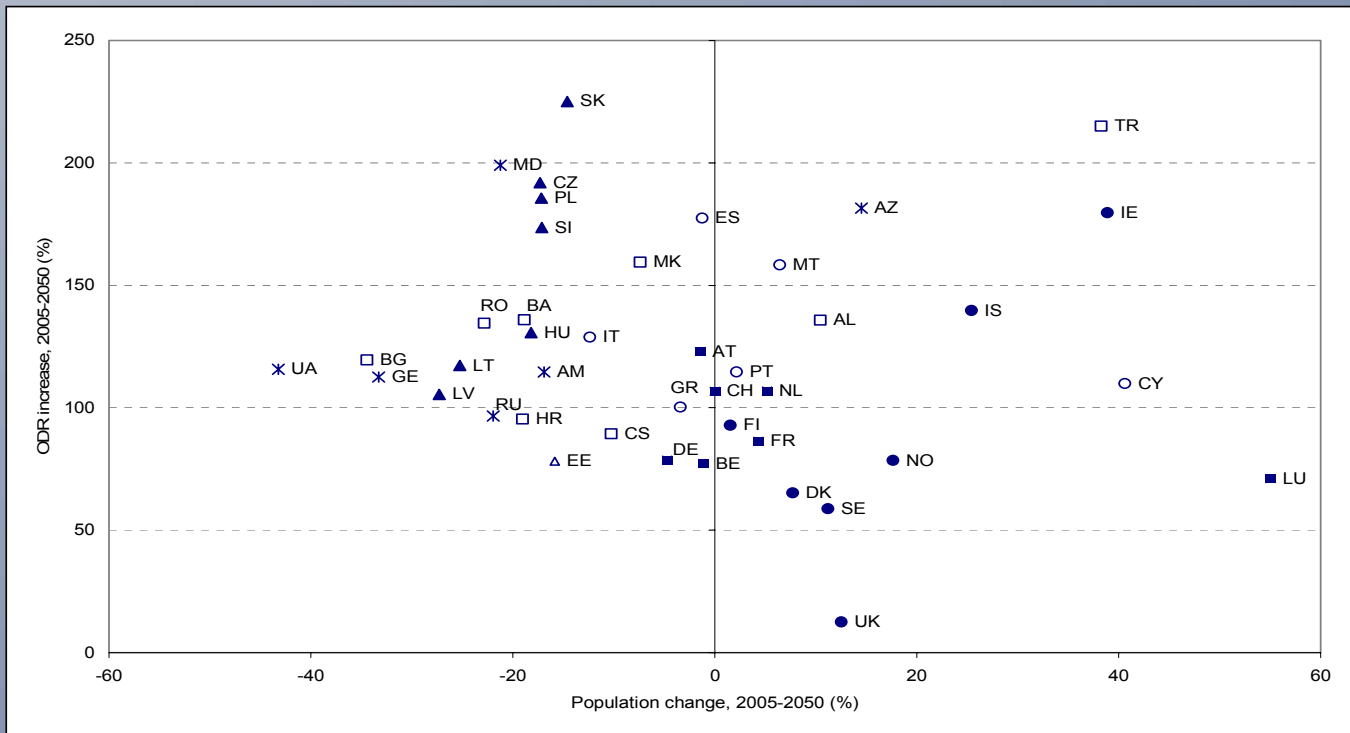


Population change over the period 2005–2050

Country	Population change (2005=100)	Country	Population change (2005=100)
Albania	110.5	Latvia	72.7
Armenia	83.1	Lithuania	74.8
Austria	98.6	Luxembourg	155.1
Azerbaijan	114.5	Malta	106.5
Belgium	98.9	Moldova	78.7
Bosnia and Herzegovina	81.1	Netherlands	105.2
Bulgaria	65.6	Norway	117.6
Croatia	81.0	Poland	82.8
Cyprus	140.6	Portugal	102.2
Czech Republic	82.7	Romania	77.2
Denmark	107.7	Russia	78.0
Estonia	84.1	Serbia and Montenegro	89.7
Finland	101.5	Slovakia	85.4
France	104.3	Slovenia	82.9
Georgia	66.7	Spain	98.8
Germany	95.3	Sweden	111.2
Greece	96.6	Switzerland	100.0
Hungary	81.8	The FYROM	92.6
Iceland	125.4	Turkey	138.3
Ireland	138.9	Ukraine	56.8
Italy	87.6	United Kingdom	112.5

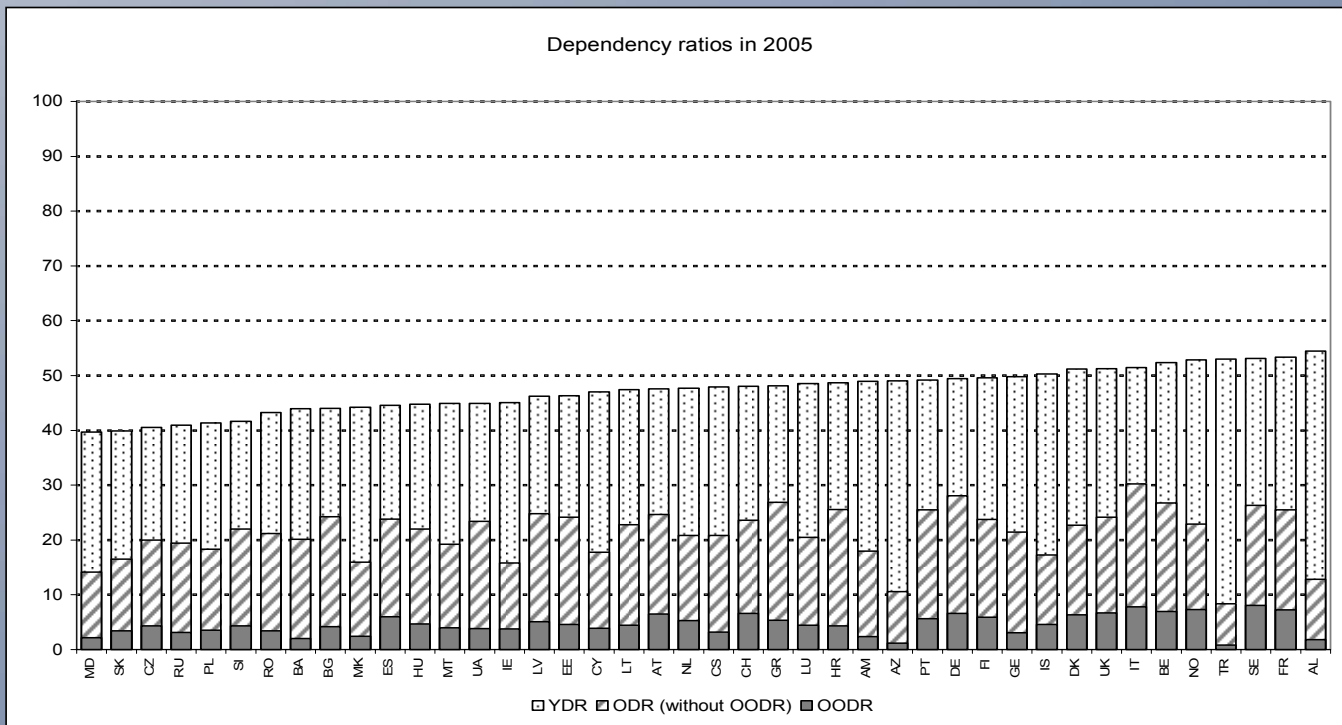


Population change and ODR growth (%), 2005–2050 in the member states of the Council of Europe



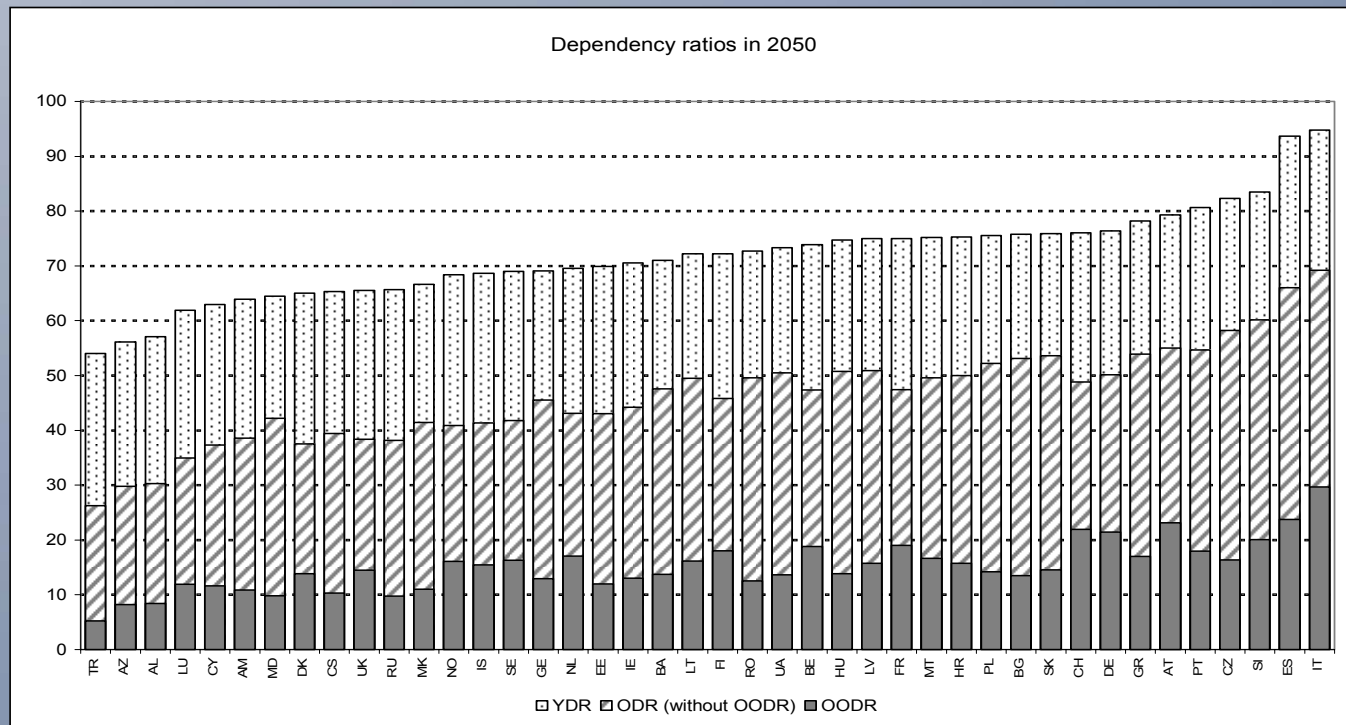


Proportions of particular dependency ratios in country-specific TDRs, 2005





Proportions of particular dependency ratios in country-specific TDRs, 2050





A very simple example: Italy

- 2005 – each 100 in the age of economic activity support 30 retired and pays 10 units (income $100 \times 10 = 1000$; payment per retired $1000/30 = 33$)
- 2050 – each 100 in the age of economic activity support 70 retired and pays 10 units (income $100 \times 10 = 1000$; payment per retired $1000/70 = 14$)

Changes in absolute sizes of particular functional groups, 2005–2050 (%)

Country	Pre-school (0–5)	Primary education	Secondary education	Tertiary education	Prod. Age (24–64)	Elderly (65–79)	Oldest-old (80+)
Albania	-25.1	-30.7	-37.1	-29.7	23.8	115.2	411.1
Armenia	-23.6	-38.9	-59.4	-59.5	-11.0	33.5	245.8
Austria	-5.2	-15.1	-23.5	-21.7	-18.4	42.2	190.3
Azerbaijan	-11.0	-26.2	-43.2	-34.3	28.0	150.5	678.5
Belgium	-7.4	-10.7	-13.7	-11.0	-13.7	25.2	134.1
Bosnia and Herzegovina	-23.9	-36.6	-43.2	-44.9	-28.6	27.2	377.4
Bulgaria	-36.1	-35.8	-53.3	-58.3	-43.8	6.4	70.6
Croatia	-15.7	-27.1	-35.5	-41.5	-29.7	10.9	148.1
Cyprus	25.7	10.0	-4.0	-2.6	34.4	134.2	269.6
Czech Republic	-17.2	-23.7	-41.8	-44.8	-34.7	70.4	142.0
Denmark	-2.4	-7.0	4.5	24.5	-4.9	42.7	117.3
Estonia	-8.0	-5.6	-39.6	-46.2	-22.3	14.6	88.1
Finland	-2.7	-11.8	-14.5	-11.1	-11.8	37.3	169.6
France	-12.9	-8.1	-8.7	-11.7	-8.0	42.6	140.0
Georgia	-43.9	-50.9	-62.5	-60.2	-34.9	5.1	150.0
Germany	10.2	-4.7	-16.0	-15.2	-19.8	7.7	162.9
Greece	-4.8	-8.5	-16.2	-31.8	-18.4	37.5	153.7
Hungary	-21.6	-29.4	-38.4	-38.6	-30.9	44.2	101.5
Iceland	-5.2	-10.6	-11.3	-1.3	16.6	128.0	277.8
Ireland	-2.8	14.5	4.6	-14.8	24.5	205.2	313.1
Italy	-18.9	-16.8	-18.2	-23.7	-33.5	20.0	159.8

Decrease %



Increase %



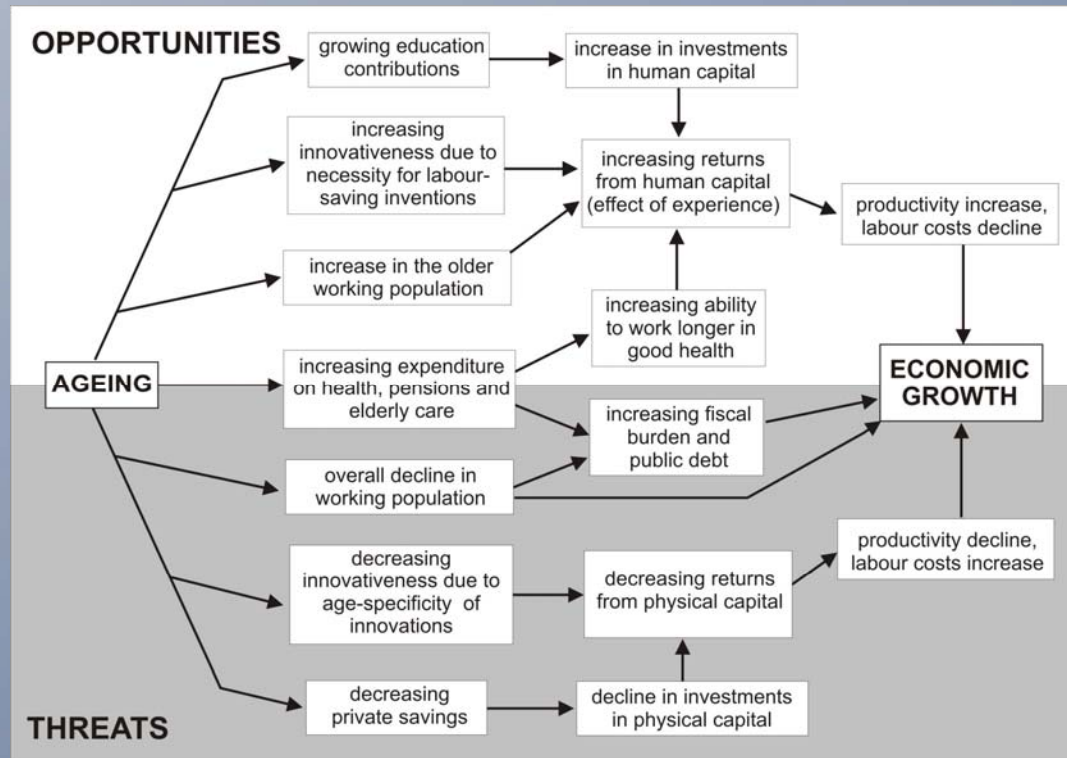
Increase %



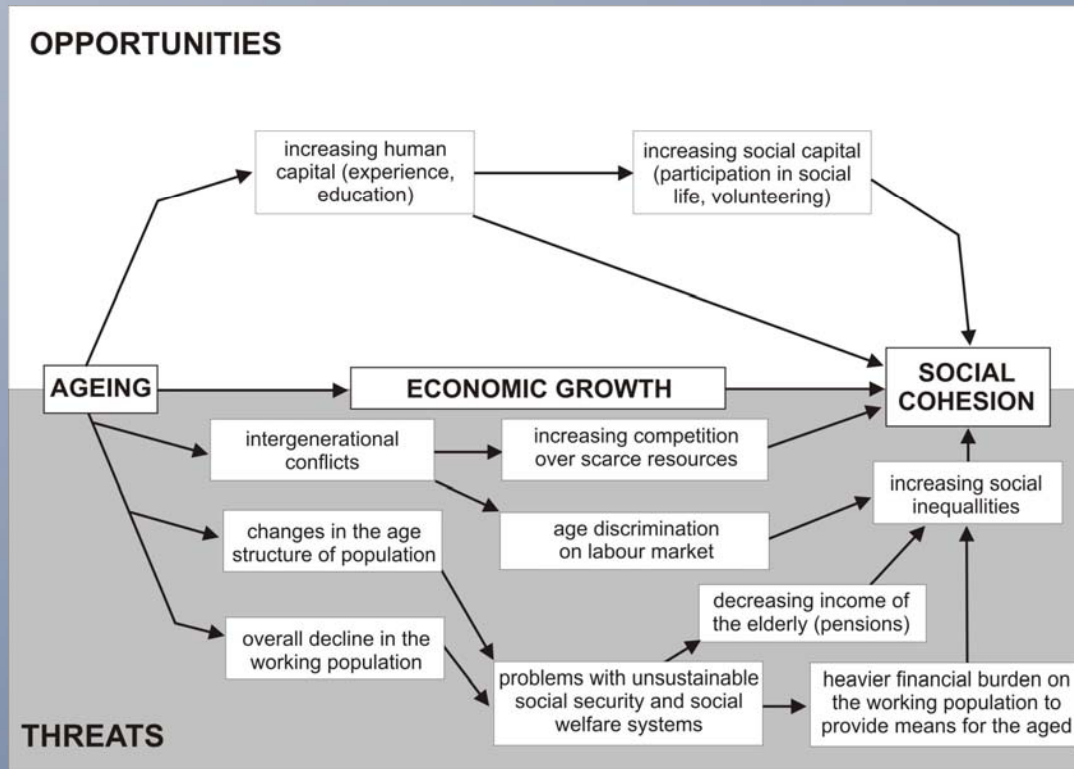
Changes in absolute sizes of particular functional groups, 2005–2050 (%)

Country	Pre-school (0–5)	Primary education	Secondary education	Tertiary education	Prod. Age (24–64)	Elderly (65–79)	Oldest-old (80+)
Latvia	-23.6	-27.6	-56.2	-58.8	-34.1	8.0	86.4
Lithuania	-24.5	-43.1	-60.0	-56.6	-29.9	16.4	131.7
Luxembourg	37.5	34.5	44.0	57.2	39.7	106.0	271.4
Malta	2.9	-16.0	-26.1	-24.0	-7.8	97.6	241.7
Moldova	-29.5	-43.1	-60.9	-62.5	-23.5	80.4	204.7
Netherlands	-10.3	-9.9	-5.9	3.3	-10.0	53.2	197.4
Norway	2.3	-5.1	0.8	17.2	5.7	69.2	137.6
Poland	-22.6	-33.7	-49.1	-56.7	-27.8	72.6	164.7
Portugal	-11.1	-6.3	-4.5	-20.7	-15.8	56.4	166.9
Romania	-30.5	-31.9	-49.9	-52.6	-31.5	33.8	134.6
Russian Federation	-16.5	-7.1	-40.8	-52.1	-28.9	15.8	108.2
Serbia and Montenegro	-20.7	-23.0	-30.9	-34.9	-16.2	32.9	156.3
Slovakia	-25.0	-36.8	-49.6	-53.5	-27.0	103.6	188.5
Slovenia	-21.1	-24.9	-39.1	-48.0	-33.8	45.7	196.7
Spain	-10.4	5.5	-4.9	-32.3	-26.7	74.9	192.5
Sweden	12.0	3.8	-11.7	6.1	1.0	40.6	103.8
Switzerland	5.2	-10.4	-13.3	-5.8	-17.3	32.9	178.4
The FYROM	-20.2	-29.5	-39.2	-40.0	-14.5	81.2	267.6
Turkey	-16.7	-14.5	-6.9	-4.8	51.6	286.3	736.0
Ukraine	-41.7	-48.6	-65.6	-68.0	-48.5	-10.5	68.1
UK	10.3	0.3	-5.5	5.5	3.4	40.7	122.3

Possible ways of impact of population ageing on economic growth



Possible ways of impact of population ageing on social cohesion





Population scene in a nutshell

- Depopulation is selective and possibly can be contained
- Ageing is universal and irreversible



Population policy options are limited:

- Increase fertility
- Increasing migration is not an option

**MAIN POLICY SOLUTIONS SHOULD
TARGET ECONOMY AND LABOUR
MARKETS**



Selected policy issues

- Social security systems
- Productivity change
- Labour supply and demand
- Health care
- Economic growth
- Education provision
- Brain drain

- Supply of services
- Financial sector



Sustainability of pension systems and labour supply

$$r = P_{ea} / P_r \cdot LF_{ea} / (1 - LF_r) \cdot W_{ea} / P$$

where:

P_{ea} – population at the age of economic activity;

LF_{ea} – labour force participation rate for population at the age of economic activity

W_{ea} – average wage for population at the age of economic activity

r – contribution rate

P_r – population at the retirement age

LF_r – labour force participation rate for population at the retirement age

P – average pension



Proposed solutions

- Increase labour force participation
- Increase retirement ages
- Reduce cost of labour to reduce unemployment and grey/black market
- Introduce employer-friendly forms of employment

- Problem: will there be demand for more labour?



Productivity

- Age-related productivity decline is due to reductions in cognitive abilities across the life span.
- In particular older workers are likely to have difficulties in adjusting to new ways of working
- However, older individuals have longer experience (Skirbekk)



Health care and care services

- Disability may be curbed, despite ageing of population
- Cost of health service is not driven primarily by ageing (Fuchs hypothesis), simulations show that reasonable GDP growth allows to keep it under control
- Main cost-growth drivers are cost of pharmaceuticals and diagnostic procedures



Education

- In sparsely populated areas there will be a need to close schools due to falling number of pupils, resulting in deteriorating access to education for children
- Depopulation and decrease in number of children have strong regional dimension



International migration and brain drain

- Plenty of evidence of brain drain, especially in medical professions
- Need to keep emigration of the highly-skilled within reasonable levels



Research

- Serious research on the consequences of ageing have been made in Australia and, to lesser extent, in the USA and Canada
- Europe is lagging behind