

One pillar crumbling, the others too short: Old-age provision in Germany

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Appendix A.1: Demographic projections

Demographic projections for the simulations included in this paper have been prepared using the population module of SIM.13 (Werdning 2013). They are based on data for total population (differentiated by gender and single years of age) provided by the Federal Office of Statistics and on cohort-wise, year-by-year projections using the following assumptions for the “baseline” scenario.

- The total fertility rate remains constant at 1.4 (children per woman) over the entire projection period (as this has been the case, in West-Germany, since 1975)
- Life expectancy at birth goes up to 90.4 years for females and to 86.7 years for males until 2060 (current figures are 82.8 and 77.7 years, respectively)
- Net immigration is 150,000 individuals per year starting from 2020 (when current, higher figures have been phased out) throughout the projection period

Results for total population and old-age dependency (population aged 65 and over per 100 individuals in the population aged 15 to 64) under these assumptions are shown in Figures A.1 and A.2 below.

Given the uncertainties about the determinants of future demographic trends, alternative scenarios are also considered, using the following variations of baseline assumptions.

- Total fertility rate: ± 0.2 children until 2060 (in a continuous process)
- Life expectancy at birth: ± 2 years for both females and males in 2060
- Net immigration: $\pm 100,000$ per year throughout the projection period

Combining any of these assumptions yields 27 variants, of which two are considered to be particularly interesting. The “old population” scenario is based on assumptions implying declining fertility, a strong increase in life expectancy, and relatively low net migration. The “young population” scenario is based on assumptions implying increasing fertility, a weak increase in life expectancy, and relatively high net migration. Results for total population and old-age dependency for all these scenarios are included in Figures A.1 and A.2.

These projections do not reflect the unexpectedly high number of refugees which are currently arriving in Germany and may have added up to a total of 1 million individuals seeking asylum in the course of 2015. Thus far, too little is known about who these people are, how long they are going to stay and, if so, how they will integrate into the labour market. To deal with this issue in a very preliminary fashion, we add another projection. Here, the assumption is that 1 million refugees arrive in 2015 (instead of 250,000, as expected beforehand) and stay indefinitely, while further unexpected immigrants in subsequent years are neglected. The figures show that this has a visible effect for total population, but next to no impact on the time path of old-age dependency. If anything, the old-age dependency ratio is reduced by a small margin until 2040 and increased by a little bit towards the end of the projection period. This is a typical result of the assumption that the extra-immigration comes as a temporary wave, not as a permanent flow.

Figure A.1: Total population (2000–2060)

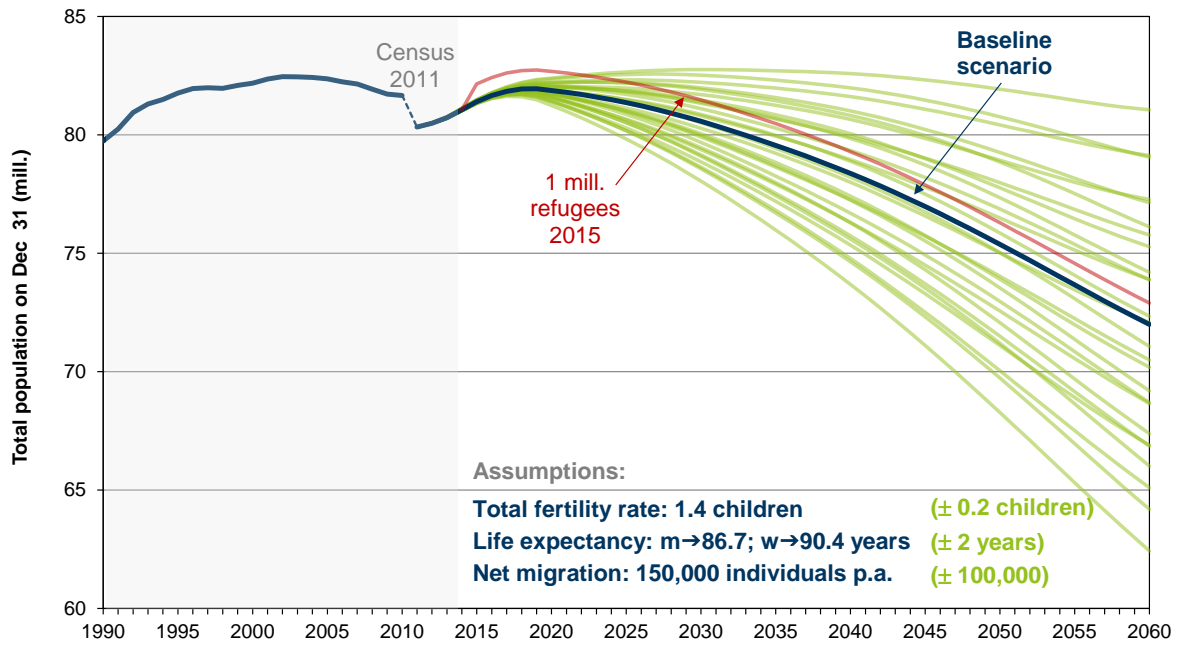
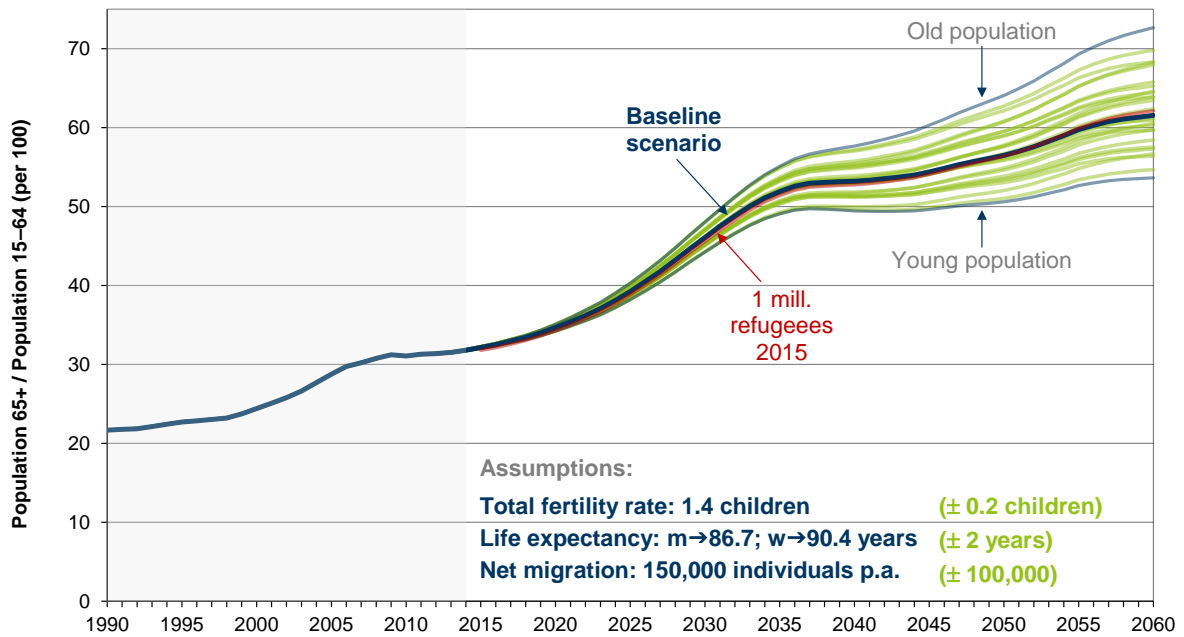


Figure A.2: Old-age dependency (2000–2060)



Sources: Federal Statistical Office; SIM.13.

Appendix A.2: Projections for the macro-economic background scenario

Table A.1: Selected results for the “baseline” scenario

	2000	2010	2020	2030	2040	2050	2060
<i>Demography:</i>							
Total population (mill.)	82.2	81.7	81.9	80.6	78.4	75.4	72.0
Old-age dependency ratio ^{a)}	24.4	31.1	34.7	46.1	53.2	56.5	61.5
<i>Labour market:</i>							
Participation rates (%)							
Females (15–64)	68.9	74.6	81.0	83.2	83.5	84.0	84.5
Males (15–64)	82.7	84.5	86.2	86.7	86.5	86.5	86.7
Labour force (mill.)	42.9	43.8	45.7	43.2	40.2	38.3	35.6
Employment (mill.)	39.9	41.0	43.9	41.3	37.9	35.6	32.8
Unemployment rate ^{b)} (%)	7.3	6.4	4.1	4.5	6.0	7.2	7.9
<i>Macro-economic development:</i>							
Labour productivity ^{c)} (%)	1.4	0.6	1.0	2.0	2.0	1.8	1.7
GDP ^{c)} (%)	1.7	0.9	1.6	1.4	1.1	1.1	1.0
GDP per capita ^{c)} (%)	1.4	0.9	1.6	1.6	1.4	1.5	1.4
Interest rate ^{d)} (%)	3.8	1.3	3.0	3.0	3.0	3.0	3.0
<i>Notes:</i>							
Year-2010 figures are actual values taken from official sources; results reported for the years from 2020 onwards are projections, based on many assumptions, never prognoses.							
a) Population aged 65 and older per 100 individuals in the population aged 15 to 64.							
b) Percentage of the total labour force (ILO definition).							
c) Annualized 10-year real growth rates.							
d) Real interest rate on domestic government bonds.							

Sources: Federal Statistical Office; Federal Employment Agency, Bundesbank; SIM.13.