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Population Ageing and Its Effects on the German Economy

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The latest long-term projection of Germany's population implies a clear trend: even though slight growth is expected over the next decade, a decline in the future is almost inevitable. Furthermore, an ageing society combined with a low fertility rate will lead to massive shrinkage of the working-age population. What are the social and economic consequences of these developments? Is a decline in economic growth unavoidable? We present the results of the long-term population projection and summarize the various effects population ageing may have on Germany.

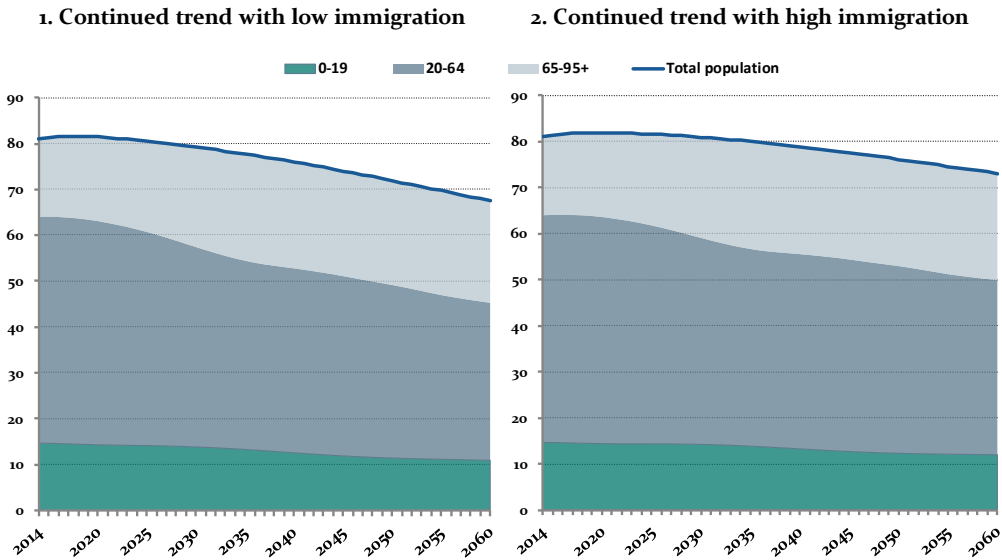
Germany's population will decline and age

On April 24, 2015, the German Federal Statistical Office published their [13th long term projection](#) of the German population. Even though a slight growth is expected over the next decade, it will be followed by a gradual decrease, reaching a total population size of 67.6 to 73.1 million in 2060. Figure 1 shows the corresponding projections in more detail. The Federal Statistical Office uses a set of assumptions concerning the fertility rate, life expectancy and the level of immigration, thus creating a number of different variants. To make general assertions about the further development of Germany's population, two benchmark variants are used: one based on lower immigration (Variant 1) and one based on higher immigration (Variant 2). Both immigration variants assume a high initial level of net annual immigration of 500,000, which will decline until 2021 and stay at an annual level of 100,000 in the first and 200,000 in the second variant. Further assumptions - based on trend continuation - include an average annual fertility rate of 1.4 children per woman, a rise in mothers' average age at birth (up to 31.8 years until 2028, constant thereafter) and an increase in average life expectancy by seven years for men (84.8 in 2060) and six years for women (88.8 in 2060). Compared to the [12th long term projection](#) published in 2009, the benchmark variants remained mostly unchanged, with the major difference being a higher initial level of immigration in the 13th version resulting in an overall more optimistic projection.

As illustrated by Figure 1 and 2, not only will the German population shrink, it will also gradually become older. The younger generation aged under 20 will decrease from 18 percent in 2015 to 16 percent of the total population in 2060, while the share of people aged 65 and older will increase from 21 to more than 30 percent. Furthermore, population ageing will lead to a massive shrinkage of the working-age population, with the share of people aged from 20 to 64 declining from 61 percent to slightly more than 50 percent. The most pronounced decrease in the working-age population is to be expected between 2025 and 2035, when the baby boomer generation retires.

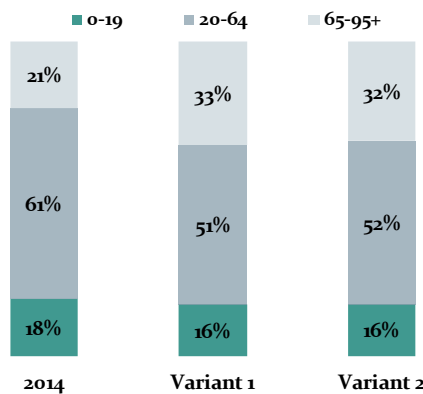
Population ageing can only be slowed down, not reversed: even an increased fertility rate would have little or no impact, as the number of women in the fertile age has already decreased substantially. However, long-lasting net immigration at a rate of 300,000 a year could lead to consolidation of the population ([Weber, 2015](#)). It is inevitable that the ongoing demographic changes will significantly affect the German society and its economy.

Figure 1: Long-term Projection of Germany's Population (in million)



Source: 13th long-term population projection by the Federal Statistical Office. Own calculations.

Figure 2: Composition of the German population today and in 2060



Source: 13th long-term population projection by the Federal Statistical Office. Own calculations.

Effects on Germany

Population ageing is a global phenomenon found in many industrial and developing countries, differing only in speed and extent. Not surprisingly, therefore, is the large number of studies covering a broad range of micro- and macroeconomic implications of population ageing that have emerged in the last 20 years. A comprehensive overview of the German case is presented in a book by [Hamm et al.](#)

(2008), who address the major impacts on economic growth, the labor and capital market, housing, fiscal policy, pensions, and health care.

The most common issue addressed in the studies is that the current level of growth is not sustainable given a shrinking working age population. For example, the neoclassical Solow model links growth to labor supply, capital and technological progress. Consequently, a shrinking labor force will reduce potential output. Moreover, a decreasing share of the working age populace will negatively affect the per capita income. [Hamm et al. \(2008\)](#) and [Prskawetz et al. \(2007\)](#) largely agree, additionally pointing out that other factors may counteract the decline in workforce. For example, quality of labor could improve as an increase in life expectancy stimulates a higher level of investment in education, thus leading to higher labor productivity ([Loichinger, 2015](#)).

The effect of population ageing on capital markets is likewise ambiguous. Pessimists fear the so-called asset meltdown: as the baby boomer generation retires, assets are sold to finance retirement consumption. With the share of younger people shrinking, more people will want to sell assets than there is demand, resulting in lower yields. On the other hand, optimists argue that the need for more capital, as it is a substitute for labor in an ageing society, stimulates the demand and increases the return on investment. However, [Börsch-Supan \(2008\)](#) does not find any clear evidence for either of those effects. Furthermore, the nearly perfect capital mobility in developed countries should balance out the rates of return as capital will naturally flow from the ageing countries (such as Germany and Italy) to younger and growing countries (most notable the USA).

The impact on the housing market appears to be more coherent. The accumulated effect on the demand side will be positive at least until 2020: despite a decline in population, the size of German households tends to become smaller, thus stimulating the demand for new dwellings. On the supply side, however, new construction activity may fall behind the existing demand, resulting in a further increase of housing prices ([Dick and Westerheide, 2010](#)).

Interest is also attached to topics in public finances. Population ageing will impose a heavier fiscal burden on each working individual as the age dependency ratio continues to grow (compare to Figure 2). This is a particularly pressing issue in countries with a pay-as-you-go system, where pensions are directly financed through social contributions of the working age population. The public pension scheme and the health insurance system will be responsible for a large part of future public debt that will drastically increase until 2050 ([Werding, 2008](#)). To assure the sustainability of the social insurance system, a gradual increase in the statutory retirement age might be inevitable. If growth rates do not change, it is a matter of redistribution.

A steadily growing older population is bound to increase the demand for nursing professions. [Maier and Afentakis \(2013\)](#) show that a shortage of fully qualified nursing professionals is already given. Counting fully-qualified and semi-skilled nursing professionals together and assuming an unchanged employment structure, the demand for nurses will be only met through 2025.

Another implication of an ageing society is the growing need to adapt infrastructure. An elder-friendly community should ensure the affordability and accessibility of public transportation, housing, safety and community involvement opportunities for the elderly, while also involving them more effectively into the planning process ([Alley et al. 2008](#)).

Nevertheless, population ageing does have a bright side. Not only will longevity increase, but the share of lifetime spend in good health will also rise due to progress in technology and health care: the average man (woman) in 2050 will have spent 80

(70) percent of their lifetime in good health compared to 63 (60) percent today (Kluge et al, 2014). Overall better health also means smaller expenditures for health care, which may partly compensate for the overall increased fiscal burden. Studies such as Zaghani (2011) and O'Neill et. al. (2010) investigate the effects of demographic change on carbon dioxide (CO₂) emissions. It is reasonable to assume that CO₂ emissions over the life cycle follow an inverted-U-shaped curve: as individuals reach adulthood, consumption and traveling tend to increase, leading to a higher emission level. This trend reverses as individuals retire and grow older. Thus, population ageing may positively impact the environment in the long run.

Conclusion

The overall effect of population ageing on the German economy is unclear, but with a slight tendency to be negative. As most studies are forced to make many assumptions, the resulting scenarios can be easily altered by unforeseen social and economic developments. However, ageing is something that happens gradually and is not necessarily an obstacle for the growth perspective of the economy. It is important to account for demographic changes to assure a stable growth path. The growing numbers of immigrants might provide an opportunity to counteract the declining labor force if integrated appropriately.

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