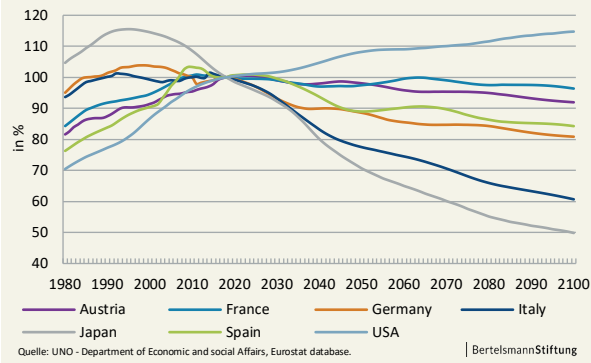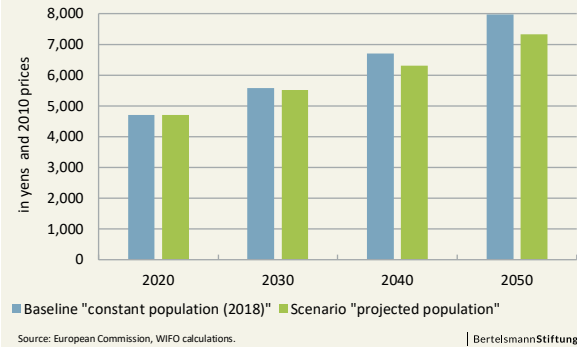# Macroeconomic effects of demographic aging in Japan

Figure 1 **Historic and expected development of working-age population (aged between 15-64 years), 1980- 2100**

Quelle: UNO - Department of Economic and social Affairs, Eurostat database.

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FIGURE 2 **Productivity per hour worked**

Source: European Commission, WIFO calculations.

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FIGURE 3 **Potential output**

Source: European Commission, WIFO calculations.

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FIGURE 4 **Potential output per capita**

Source: European Commission, WIFO calculations.
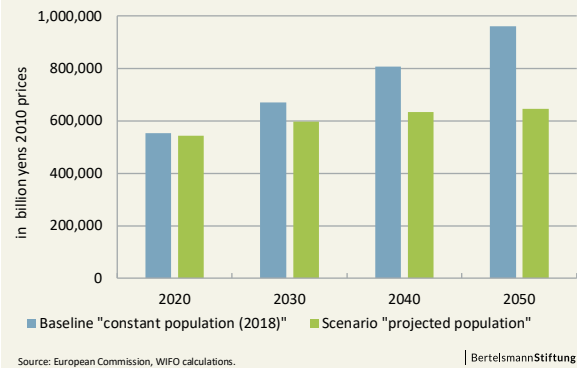
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The working-age population in Japan has been shrinking since the mid-1990s. Projections suggest that this process will continue for the next three decades. The labor force is expected to age significantly between 2018 and 2050 and to shrink by about 29% (see Fig. 1). This will attenuate the country's overall economic productivity and will have considerable consequences for overall economic development. This overview shows how demographic aging (the scenario "projected population") in Japan until 2050 will affect key macroeconomic indicators, compared to a scenario in which the population remains constant at the level of 2018 (the baseline scenario "constant population (2018)").
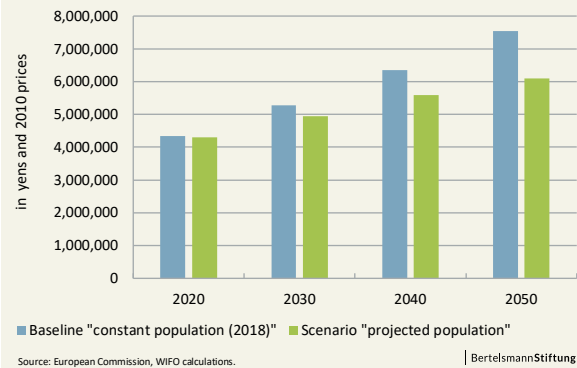
The negative effects of demographic aging are expected to attenuate labor productivity growth until 2050. The difference between the scenario "projected population" and the baseline scenario should increase from around 69 yens per hour worked in 2030 to 378 yens in 2040 and 645 yens in 2050 (in 2010 prices) (see Fig. 2).

The growth of the real gross domestic product (GDP) ought to be significantly attenuated by demographic aging in the next few decades (see Fig. 3). In comparison to the baseline scenario, the increase is expected to be 11% lower in 2030, about 21% lower in 2040 and nearly 33% lower in 2050. In absolute terms, demographic aging and its negative effects are anticipated to attenuate GDP by around 173 trillion yens by 2040 and by 315 trillion yens by 2050 (in 2010 prices).
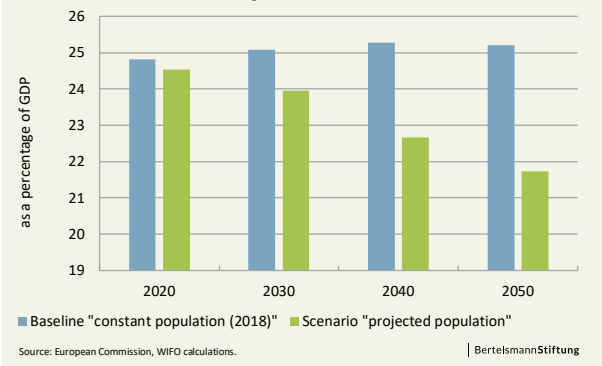
With respect to real GDP per capita, which is in effect the average material prosperity per inhabitant, this is expected to result in the following. In 2030 it will amount to nearly 330,500 yens lower than if the demographic aging of the coming decades had not taken place. In 2040 it will be lower by about 753,000 yens and in 2050 by almost 1,500,000 yens (in 2010 prices) (see Fig. 4).

In the baseline scenario, the savings rate shows only slight fluctuations until 2050 (see Fig. 5). The expected sharp rise of people of retirement age while the working-age population simultaneously shrinks, ought to lead to a significant decline in the savings rate in the coming decades: between 2018 and 2040 by 2.2 percentage points – or nearly 9 percent – by 2050 by about 3 percentage points – or 12.6 percent. By 2040, the savings rate is expected to be 2.6 percentage points lower than
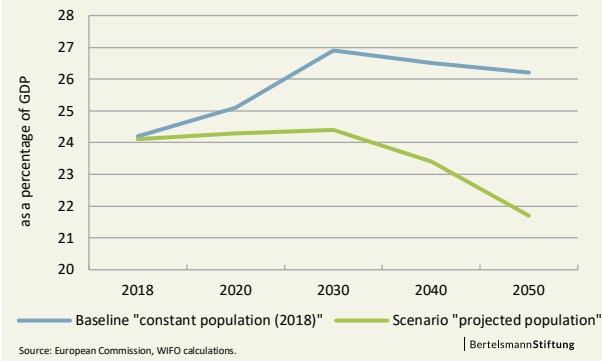
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FIGURE 5 **Gross domestic saving**

as a percentage of GDP

■ Baseline "constant population (2018)" ■ Scenario "projected population"

Source: European Commission, WIFO calculations.

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FIGURE 6 **Gross fixed capital formation**

as a percentage of GDP

— Baseline "constant population (2018)" — Scenario "projected population"

Source: European Commission, WIFO calculations.

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FIGURE 7 **Consumer price inflation rate**

in %

— Baseline "constant population (2018)" — Scenario "projected population"

Source: European Commission, WIFO calculations.

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FIGURE 8 **Current account balance**

as a percentage of GDP

— Baseline "constant population (2018)" — Scenario "projected population"

Source: European Commission, WIFO calculations.

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it would be without demographic aging. In 2050, this difference is expected to be 3.5 percentage points.
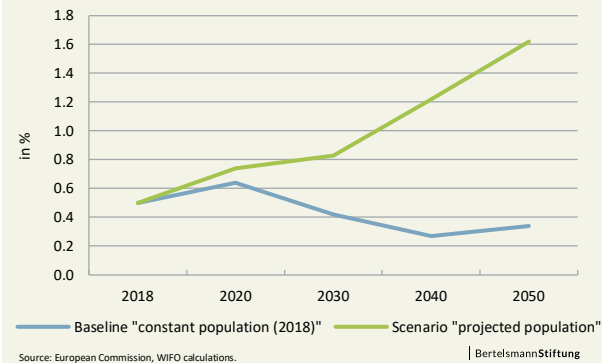
This will also reduce the supply of domestic capital and thus the scope for domestic investment (see Fig. 6). The investment ratio is expected to fall by almost 1 percentage point (or 3.3%) from 2018 to 2040, and by 2.5 percentage points (or about 10%) from 2018 to 2050. In 2040, the investment ratio is therefore expected to be about 3 percentage points lower than in the baseline scenario; and in 2050 by about 4.5 percentage points. However, in an open economy, the domestic supply can be supplemented by capital inflows from abroad.
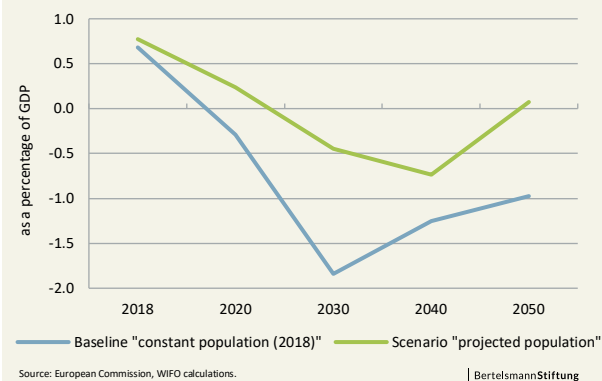
The simulation calculations also confirm the theoretical assumption of rising inflationary pressure due to demographic aging (see Fig. 7). In 2040, the inflation rate in the scenario "projected population" is expected to be almost 1 percentage point higher than in the baseline scenario; and in 2050, by 1.3 percentage points.

The Japanese current account balance is expected to show a deficit from the early 2020s on. The deficit is expected to be somewhat lower due to aging. This surprising result – demographic aging should generally increase an existing current account deficit – can be explained as follows: The current account balance reflects the difference between gross domestic saving and gross fixed capital formation. If the investment rate drops more sharply than the savings rate due to the age structure (see Figs. 5 and 6: the investment ratio is expected to fall below the baseline scenario by around 4.5 percentage points in 2050, while the difference in the savings ratio is only expected to be 3.5 percentage points) the current account deficit will decrease (see Fig. 8).

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