Impact of Aging Population on Fiscal Sustainability — the Case of Japan —

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Actual and Projected Population of Japan: Medium-, High-, and Low-fertility (medium-mortality) Projections

Source: National Institute of Population and Social Security Research in Japan
Trends in Proportion of Elderly (aged 65 and over):
Medium-, High-, and Low-fertility (medium-mortality) Projections

Note: Previous projections are shown in broken lines.

Source: National Institute of Population and Social Security Research in Japan
Trends in Population of Three Major Age Groups: Medium-fertility (medium-mortality) Projections

Note: Previous medium-variant projections are shown in broken lines.

Source: National Institute of Population and Social Security Research in Japan
Ballooning Government Debt to GDP

FY1944

FY1945
The Final Year of WWII
(Lack of GDP data make calculation impossible.)

Source: Ministry of Finance Japan
Trends in General Account Expenditures and Tax Revenues
Trends in Major Expenditures in the General Account

Source: Ministry of Finance Japan
Economic and Fiscal Projections for Medium- to Long-term Analysis, 2014

It is assumed that the consumption tax rate (central and local) will be raised to 8% in April 2014 and then to 10% in October 2015, and that certain new expenditures will be added along with enforcing the reform of the social security system, etc.

Source: Cabinet Office, Government of Japan (as of January 20, 2014)
Long-term Estimation of the Prudent Scenario by Cabinet Office (2014)
Government’s Deficit Gamble is Too High-risk

\[ \triangle \text{Debt} / \text{GDP} = - \text{Primary Balance} / \text{GDP} + (\text{Interest rate on GB} - \text{Growth rate}) \times \text{Debt} / \text{GDP} \]

→ In the case of Deficit of PB=3% and Current Net Debt=150%, the condition with LHS=0
→ Interest rate on GB−Growth rate of GDP ≤ −2%
→ According to the following probability distribution, the possibility of the above is 7.6%.
Total Social Security Benefits Have More Than Doubled Over the Past 20 Years

(Note 1) Expenses for social security benefits shall refer to the total amount paid through the public social security system.
(Note 2) Before FY2000, the expenses for FY2009 social security benefits (National Institute of Population and Social Security Research)
(Note 3) The difference between the total amount provided by the financial source for social security and the actual expenses for social security benefits each fiscal year is caused by differences in income and pension expenditures (accumulated pension reserve), etc.
Rate of Consumption Tax Required to Achieve Fiscal Sustainability in Cases Maintaining Social Security Cost

Q. How to control increasing social security cost?

• **Braun and Joines (2011)**
  
  【Baseline】 If Japan is to achieve fiscal stability with a one-time permanent tax increase in 2017, consumption tax rate would have to be raised to 33%.
  
  【Delay Scenario】 If the tax hike is postponed by five years to 2022, consumption tax rate would have to be raised to 37.5%.
  
  【2% inflation Scenario】 Consumption tax rate would have to be raised to 25.5%.

• **Sakuragawa and Hosono (2011)**
  
  To achieve fiscal sustainability, consumption tax rate would have to be raised from 5% to 16% in 2021, and to 21% in 2031.

• **Oguro and Shimasawa (2011)**
  
  According to analyses of the OLG model, in order to achieve fiscal sustainability, the consumption tax rate would have to be raised to a peak of 33.5%.
Braun and Joines (2011): Revised

• Alternative policy instruments

① Achieve moderate inflation (2% inflation).
② Remove floor on public pension benefits.
③ Reduce government purchases by 1% of GDP.
④ Increase medical copayment for individuals over 74 to 20%.

⇒ In order to ensure fiscal stability under this scenario, this study suggests that the consumption tax rate would have to be raised to as high as 32% even if the country successfully pulls out of deflation and achieves its 2% inflation target. This scenario is predicated on the implementation of drastic spending cuts, including a reduction in public pension benefits.
Braun and Joines (2011): Revised

Consumption tax rate trajectory

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2010 2021 2032 2043 2054 2065 2076 2087 2098 2109 2120 2131 2142 2153 2164 2175 2186 2197 2208 2219 2230

0 0.05 0.1 0.15 0.2 0.25 0.3 0.35

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Hansen and Imrohoroglu (2012)
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Effect of QQE and its Risk

• BOJ introduced “Quantitative and Qualitative Monetary Easing” (QQE) by doubling its monetary base, aggressively increasing long-term government bond purchases, etc.

• Under QQE, the monetary base will grow from about ¥138 trillion to around ¥270 trillion by the end of 2014. Monthly government bond purchases will continue at a pace of around ¥50 trillion yen, including 40-year bonds.

→ **Benefits**: Lower interest rate on government bonds

  Stimulate economic activities (e.g., investment)

**Costs**: QQE exit will became more difficult

Possibility that BOJ can’t control future inflation
Relationship between Long-term Interest Rate and Monetary Base

Interest rate on 10-year Government Bond

\[ y = 9E-05x^2 - 0.0314x + 3.4173 \]

\[ R^2 = 0.5287 \]

Monetary Base (Trillion yen)
Monetary Base and Nominal GDP (1970-2010)

Quantity Theory of Money

\[ MV = PY \]
\[ M = m \times H \]

\[ \rightarrow PY = mV \times H \]

M: Money Stock, H: Monetary Base, P: Price, Y: Real GDP
V: Velocity of Money, m: money multiplier

Source: Bank of Japan, Federal Reserve Board
Trends in Asset / GDP of Central Banks in Major Developed Countries

Projection
Conclusions

• Although future social security cost is very high, no one, including policymakers, can accurately recognize the true cost of social security. Therefore, the government has to estimate and publish long-term fiscal projections until the year 2050.

• If the government cannot cut social security expenditure, in order to achieve fiscal stability, the consumption tax rate would have to be raised to over 30%.

• The government must carry out further fiscal consolidation. The strategy of QQE exit depends completely on fiscal and social security reforms.