

Mizuho Economic Outlook & Analysis

Medium-term Economic Outlook on the Japanese Economy

- The Japanese economy will sustain 1% growth in the 2020s in the course of 3 mega-trends and by overcoming 3 major challenges -

June 28, 2018

Mizuho Research Institute

I. Mega-trends surrounding the Japanese economy

Three mega-trends surrounding the Japanese economy

1. Geopolitical conditions

<US-China global power contest>

In the G2 (US and China) global order, Japan is shifting from a US-centric to a more balanced stance

2. Asia

<Asia's population bonus>

Asia's growing middle class is leading to expectations toward the expansion of the consumer market

3. Wages and inflation

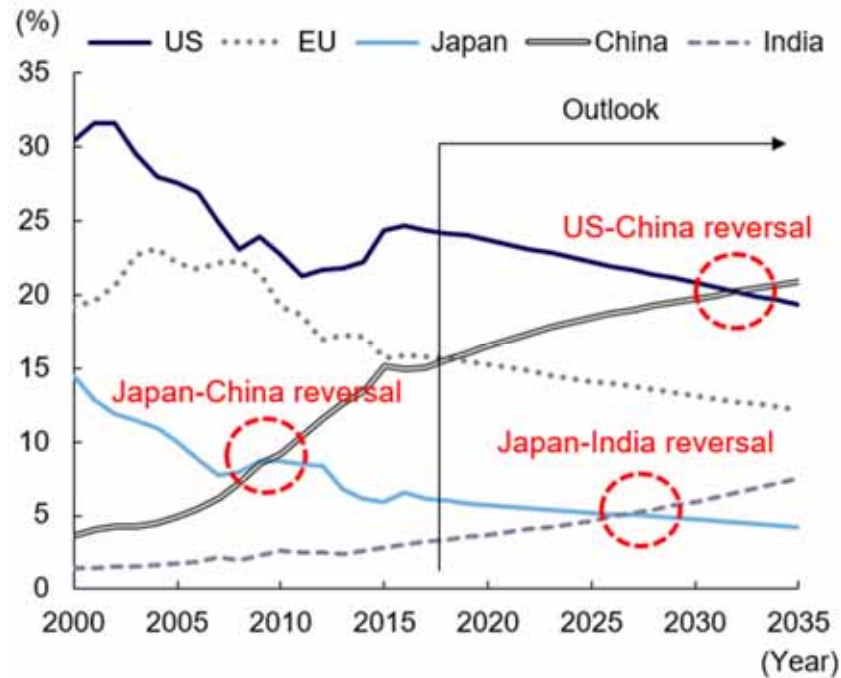
<Normalization of low wages and low inflation>

Given that Japan's low inflation is a structural problem, monetary easing should shift to a game of endurance

1. Given China's rising political and economic presence, the contest for global power between the US and China will likely persist

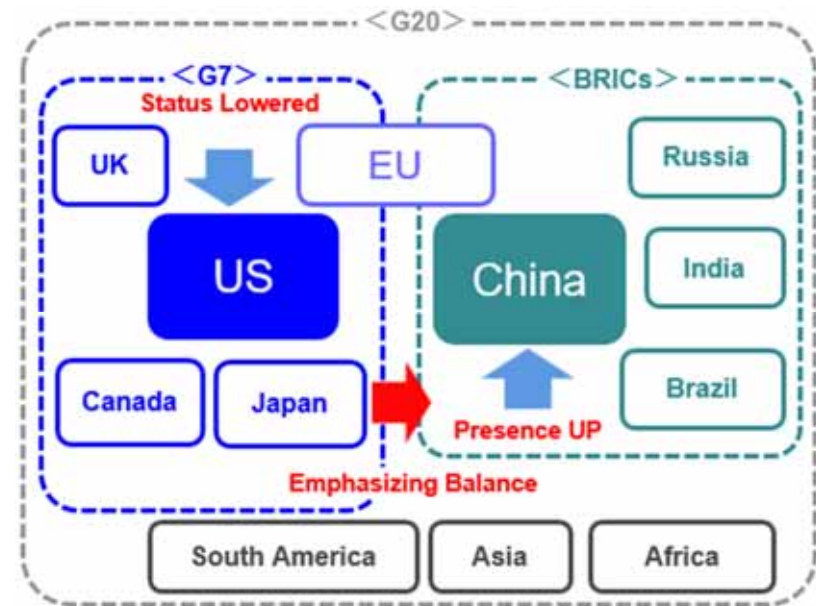
- The global power structure is shifting from a unipolar US-centered global order to a “G2” order centered around the US and China.
 - In the G2 global world order of the US and China, China is set to become the world's No.1 economic power in the 2030s, which also entails its rise of political presence.
 - Europe is gradually coping with the change in power balance, and Japan is also shifting from an US-centric to a more balanced stance.
 - As side-effects of the US-China global power contest, it will be necessary to keep a close eye upon excessive protectionism and rise of geopolitical risks.

[Outlook on nominal GDP share of major countries and regions]



Note: Data based on the US dollar
 Source: Made by MHRI based upon IMF, the UN, and statistics of relevant countries and regions

[The global world order in the 2030s (image)]



Source: Made by MHRI

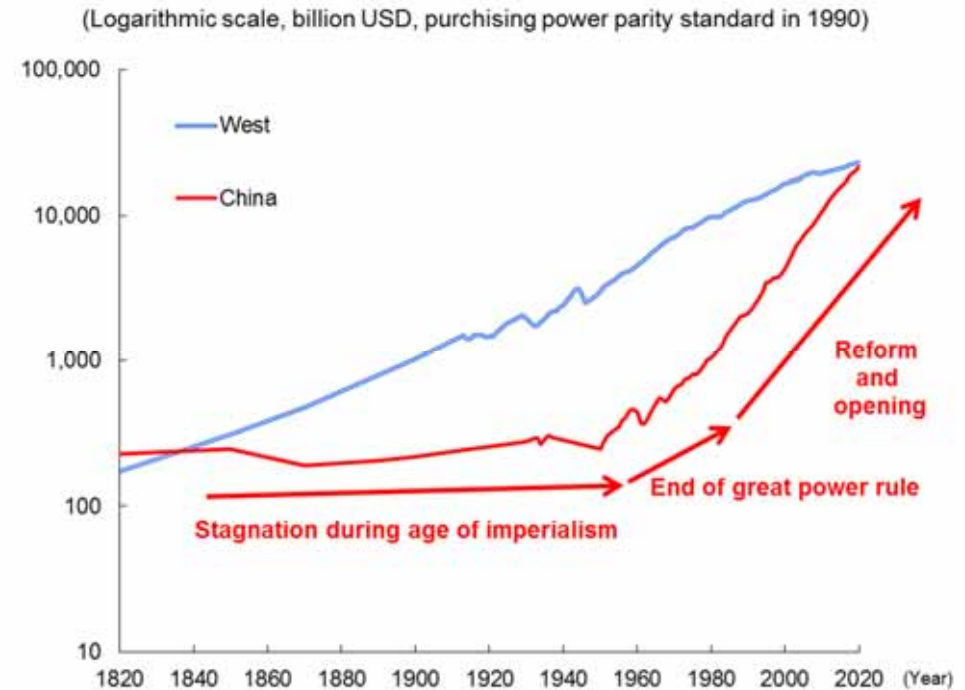
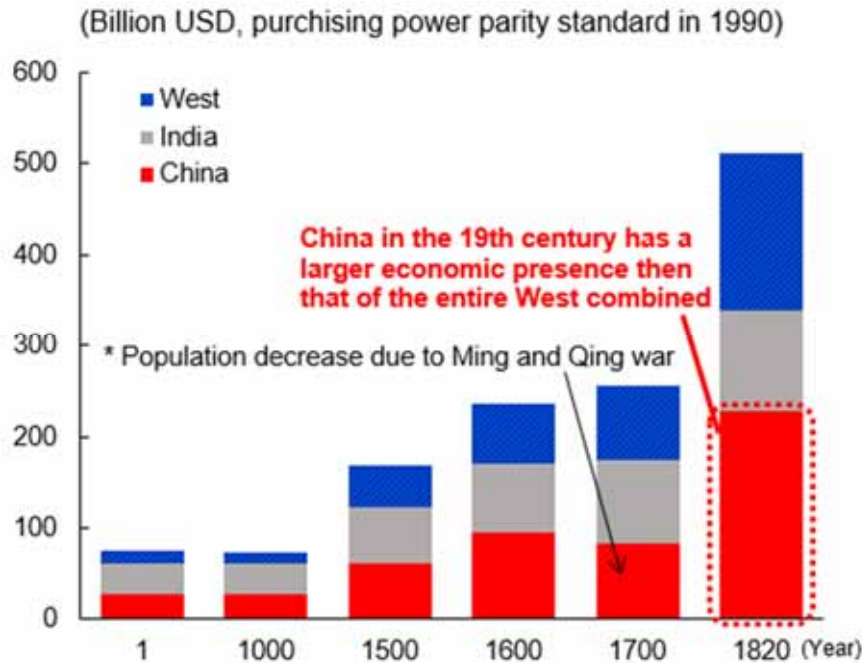
History of global hegemony: China awakening from a 200-year slumber, “Thucydides Trap”

- ❑ From a historical perspective, the rise of the Chinese economy is a product of the orient’s revival process.
- ❑ History is a repeating story of unwanted conflicts between rising powers and global powers (“Thucydides Trap” Sparta vs. Athens, etc.). Will it be possible to avoid a major conflict between the US and China? Furthermore, will the US accept China’s rise as a rival global power? This is the key geopolitical issue of this century.

[Long-term trends of real GDP in the West and China (and India)]

AD 1 to 1820

Since 1820 (logarithmic scale)



Note: 1. Based on Angus Maddison (2010) "Historical Statistics of the World Economy: 1-2008 AD", extension by IMF data after 2009 (Estimated by IMF after 2017).

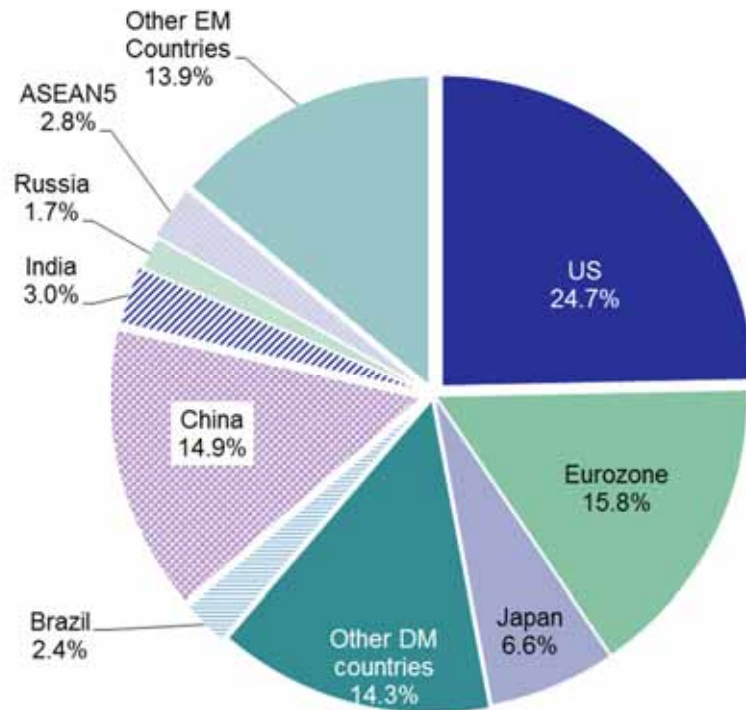
2. West refers to a total of 30 western European countries, Australia, New Zealand, Canada, and the US.

Source: Made by MHRI based upon Angus Maddison(2010) and IMF

The US maintains a large presence in terms of the size of economic growth despite its low growth rate

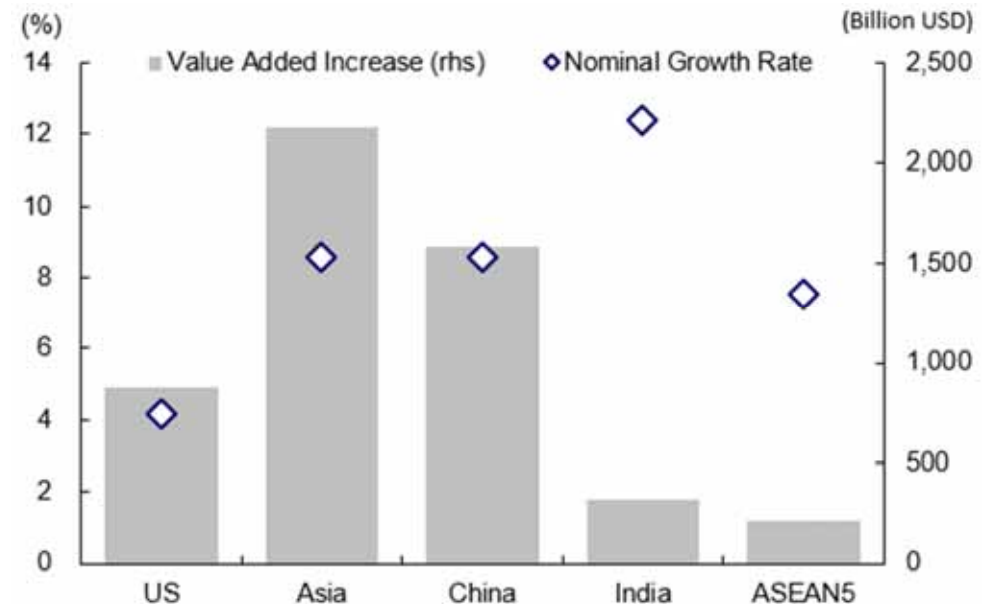
- ❑ The largest economic superpower in the world is the US.
 - The US accounts for almost a quarter of the global economy. Although the Chinese economy is expanding rapidly, the US is still more than 1.6x larger.
 - What is important for the corporate sector is not the growth rate, but the amount increased (the amount indicated by the pie graph). Note that the growth rate (= amount increased \div size of domestic economy \times 100) is influenced by the size of the domestic economy.
 - When comparing the amount of increase in the added value on a dollar-basis, the US ranks below China but still holds a certain scale.

[Percentage of the global economy by country and region]



Note: Results of 2016.
Source: Made by MHRI based upon IMF

[Average nominal growth for the next 5 years and the US dollar equivalent added value increase]

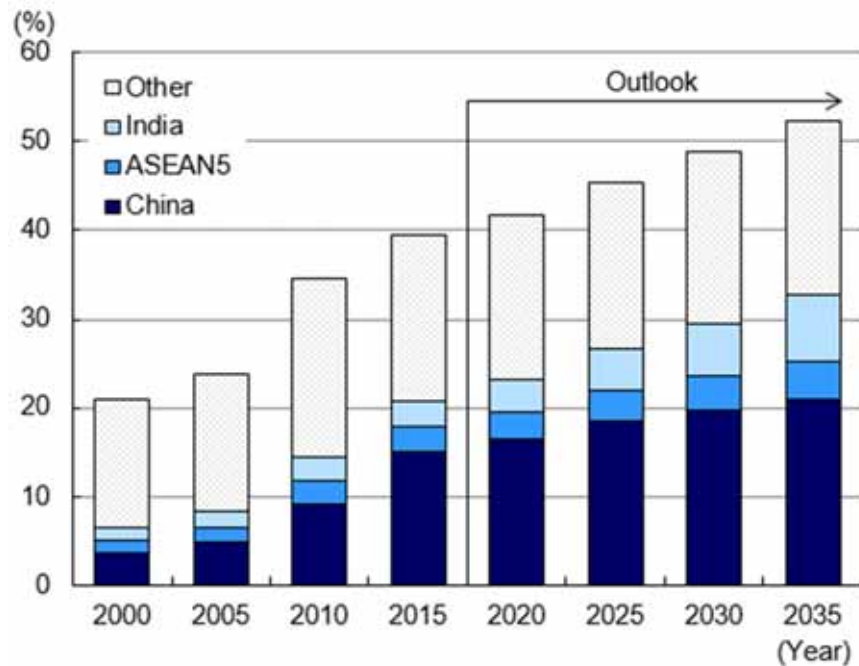


Note: Asia, including China, India, and ASEAN5, is developing Asian countries based on IMF.
Source: Made by MHRI based upon IMF

2. Rising presence of the EM economies mainly of Asia. India will possess the world's largest population

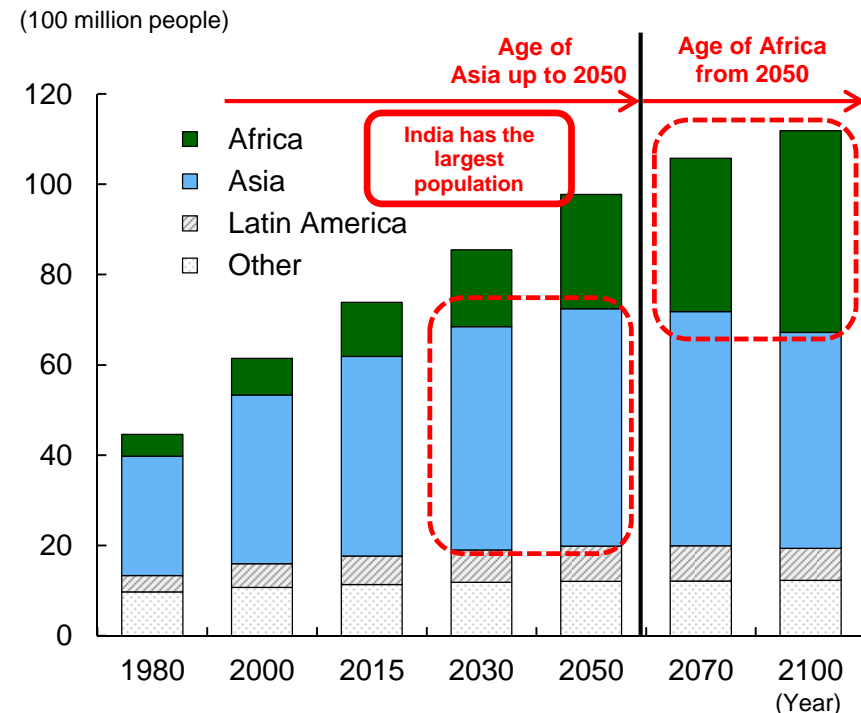
- By the early 2030s, the size of emerging market (EM) economies, of which more than 60% are centered in Asia, will exceed that of developed market (DM) economies.
 - In terms of demographics, Asia's population will continue to increase until around 2050, and Africa attracts attention on a more long-term perspective.
 - By the mid-2020s India will possess the world's largest population, surpassing China.
 - In addition to the total population, the rise of the middle class will be a source of demand creation in Asia.

[Nominal GDP share of EM and developing countries of the world]



Note: The grouping of EM and DM economies based upon the the IMF standard as of April 2018. Data denominated in US dollar.
 Source: Made by MHRI based upon IMF, the UN, and statistics of relevant countries and regions

[Population outlook by regions of the world]

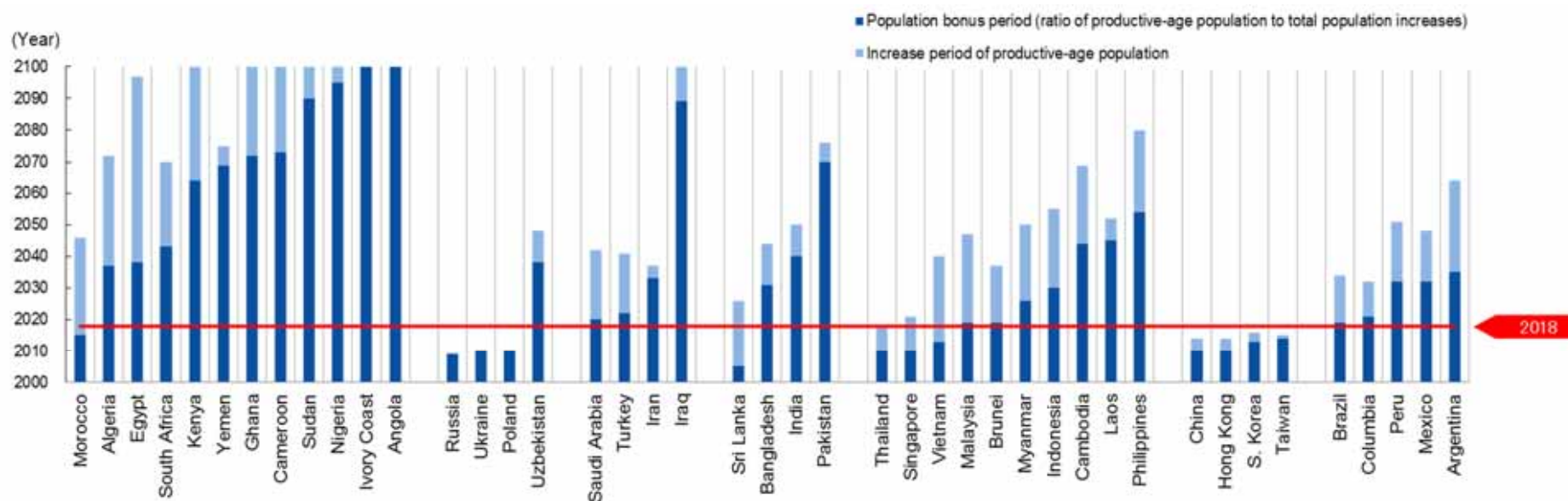


Note: Total population. The outlook is based upon the UN
 Source: Made by MHRI based upon the UN

Focus of Asia's population bonus, centering in South Asia and the ASEAN

- The population bonus period, during which the ratio of the productive-age population/total population increases, serves as tailwinds upon economic development.
 - In addition to the increase of labor input, the rise of the savings rate stemming from the increase in percentage of the productive-age generation has potential investment opportunity.
- In Asia, the population bonus is expected to continue for some time in South Asia and the ASEAN, apart from certain exceptions such as Singapore and Thailand.
 - Over the long term from 2050 and beyond, the population bonus will continue to serve as tailwinds mainly in the Middle East and Africa.

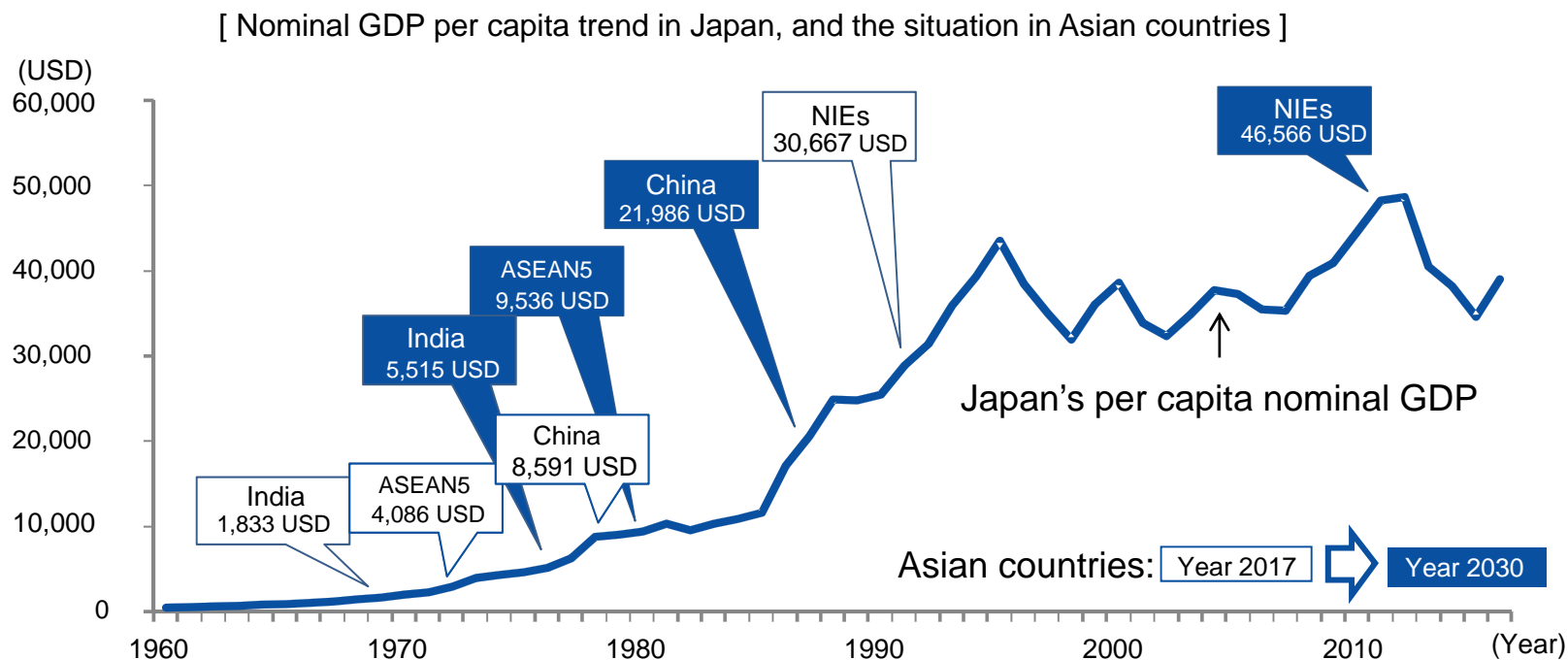
[Demographic trends of upper and lower middle-income bracket countries]



Source: Made by MHRl based upon the UN

Increase of per capita income within Asia, and the rise of the middle class

- ❑ In Asia, the continuation of a higher rate of economic growth than that of DM economies will lead to the rise of per capita nominal GDP.
 - Income levels in the ASEAN5 and India are currently on par with Japan around the beginning of the 1970s. In 2030, the level will reach that of the 1980s.
 - China's income level has grown from the Japan's income level around the end of the 1970s to that of the bubble period.
- ❑ Centering around the EM economies of Asia with large populations, the middle class and above will expand significantly and become the volume zone, and serve as the driver of consumer spending.
 - Forecast on the middle and upper income bracket (2018→2030): China (1.2 billion→1.4 billion), India (700 million→1.3 billion), ASEAN5 (400 million → 600 million).

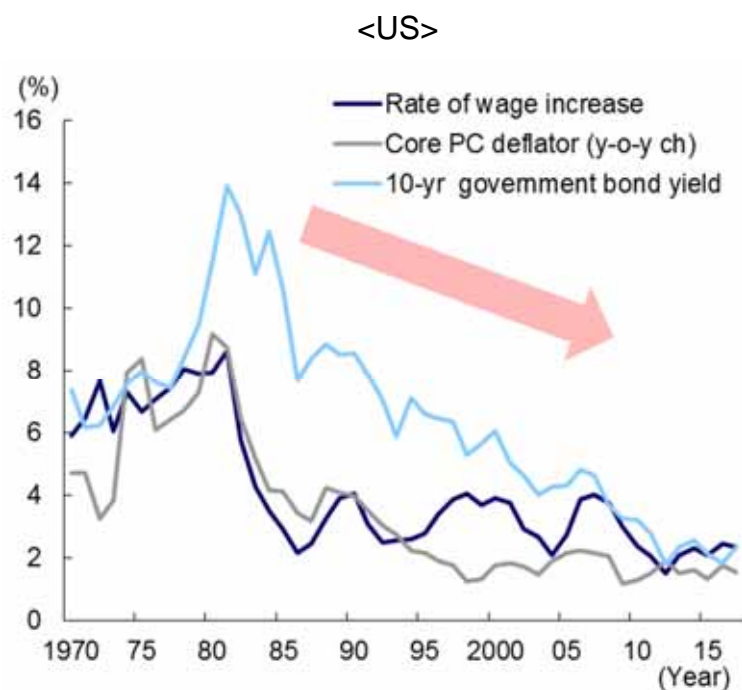


Source: Made by MHRI based upon the World Bank, IMF

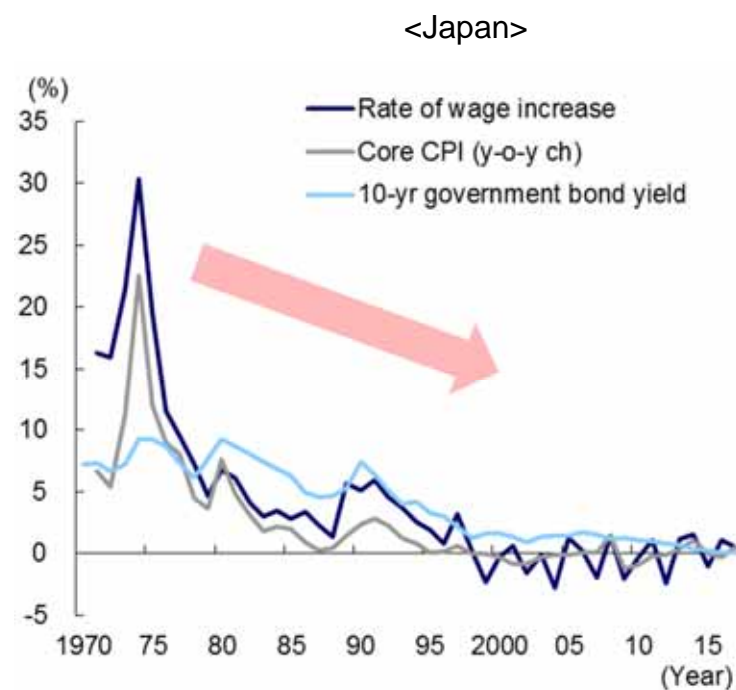
3. Since the 1980s, long-term interest rates have been falling both in Japan and the US, reflecting low wages and low inflation

- Long-term interest rates in Japan and the US have been following a downtrend after peaking in the mid-1970s and early 1980s.
 - In the background is the fall of interest rates to a historical low, reflecting the decline of the rate of wage increase and expected inflation.
 - Looking forward to the next 10 years, our main scenario outlook is that the rise of all three indicators will remain subdued, even though the fall will be limited.

[Trend of wage growth rate, rate of inflation, and long-term interest rates]



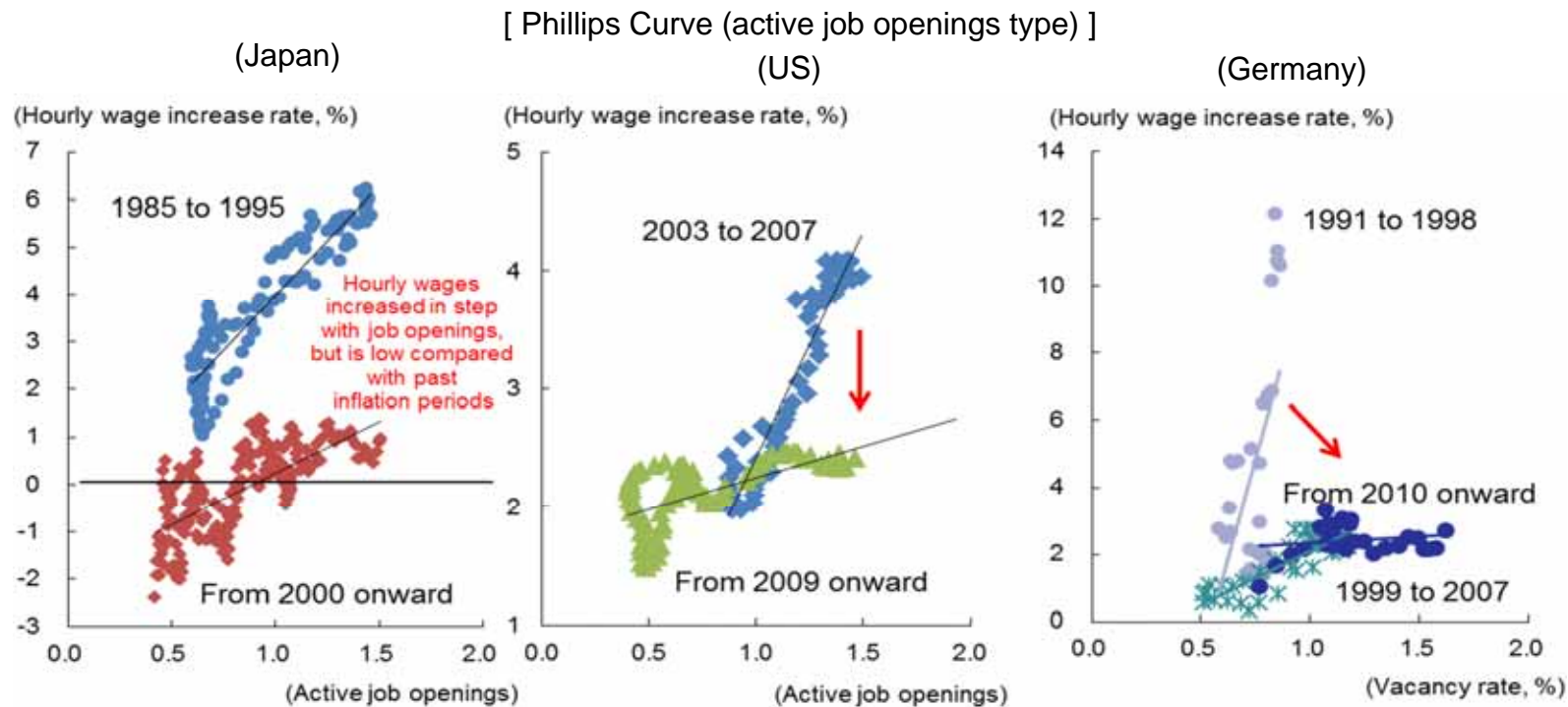
Note: The wage growth rate refers to the year-on-year change of hourly wages. The core PCE deflator refers to the personal consumption expenditure deflator (ex energy and food).
 Source: Made by MHRI based upon the US Department of Labor, FRB



Note: The wage growth rate refers to the year-on-year change of total cash earnings of total workers/total hours worked. Core CPI is the consumer price index (general, ex fresh food) excluding the impact of the consumption tax.
 Source: Made by MHRI based upon The Ministry of Health, Labor and Welfare, The Ministry of Internal Affairs and Communications Statistics Bureau, Japan Bond Trading Co., Ltd.

Wages will not rise much on a global scale

- In major countries, there is a change in relationship between the growth rate of wages and the supply and demand of labor, creating a structure that makes it difficult for wages to rise compared to the past.
 - The Philips Curve (active job openings type) is leveling out in Japan, the US and Germany, indicating a decline in upward pressure on wages with regard to the improvement of labor supply and demand
 - Japan has undergone structural changes due to the collapse of the bubble in the 1990s. The US and Germany have undergone structural changes due to the financial crisis that occurred in the second half of the 2000s



Note: Japan: Hourly wage refers to the 12-mo moving average of the y-o-y change of total cash earnings of total workers/total hours worked (more than 30 people). The time lag from the active job openings to hourly wages is set around 9 months (the lag time is set at the highest correlated value).

US: Hourly wage refers to production and managed workers. Based on the backward 12-mo moving average of the y-o-y rate of increase. 2003 to 2007 has a 12 month lag, 2009 to the most recent plot has a 24 month lag. The active job openings is the current month value of MHRI estimates (no lag or lead).

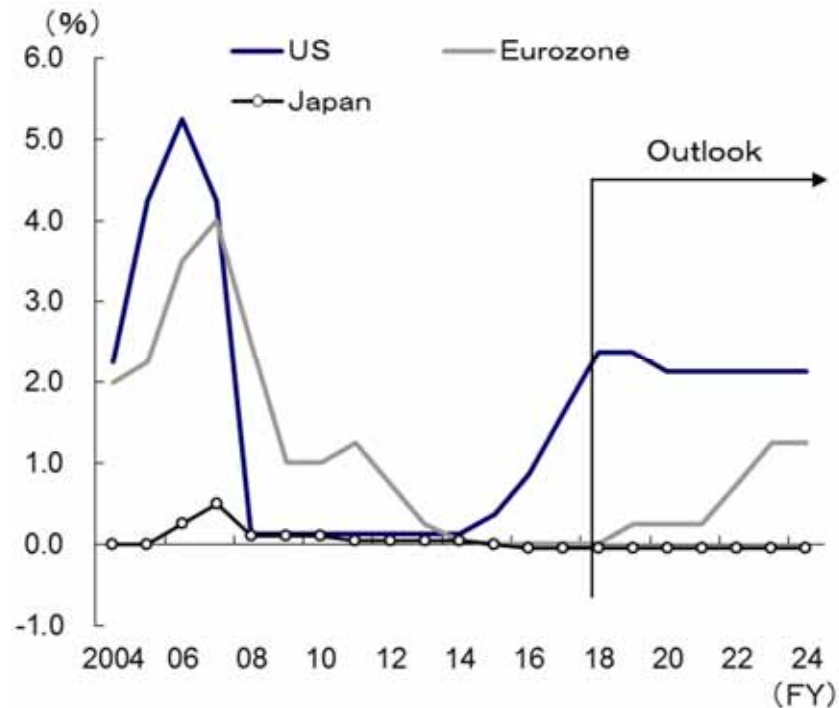
Germany: Hourly wage is basic pay not including allowances, 4 quarters lag in regards to the vacancy rate.

Source: Made by MHRI based upon the Ministry of Health, Labour and Welfare of Japan, the US Department of Labor, the Deutsche Bundesbank

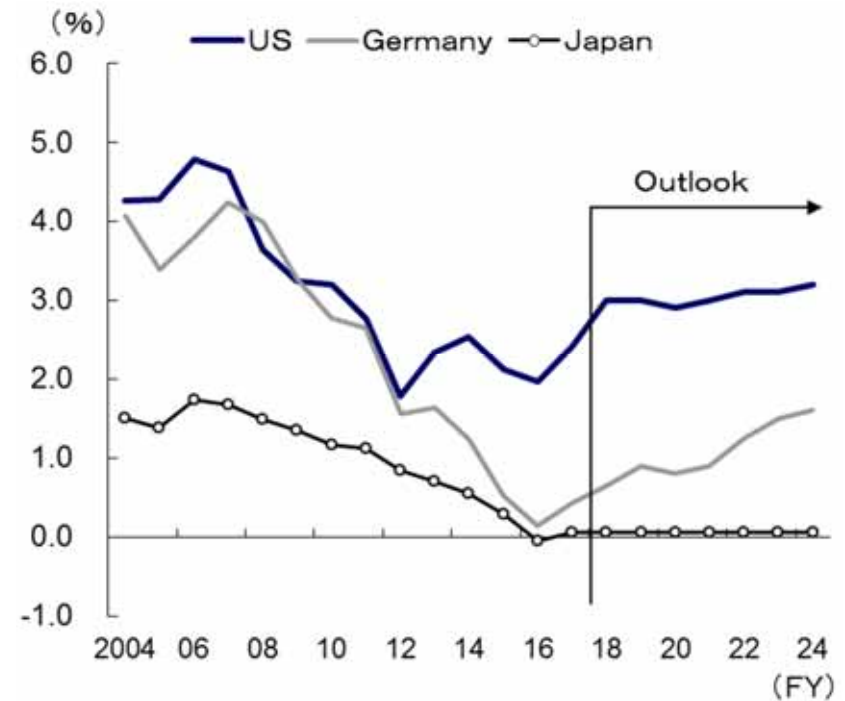
Although the US and the Eurozone may hike, Japan would not be able to do so

- Even though the US and the Eurozone make hike, interest rate levels would remain lower than it was in the past because of low inflation. Japan would be unable to move.
 - Even though the level of long-term interest rates in the Eurozone and the US would remain around 1% to 3%, long-term interest rates in Japan could remain around 0%.

[Policy interest rates (Japan, the US, and the Eurozone)]



[Long-term interest rates (Japan, the US and Germany)]



Source: Made by MHRI based upon Bloomberg

Note: Japan, the US, and Germany's 10-year government bond yields.
Source: Made by MHRI based upon Bloomberg

The timing for the BOJ's policy adjustment is limited. The period up to mid-2019 holds the key

- ❑ The earliest timing in which the BOJ is able to adjust its monetary policy is when concerns regarding US trade policy eases and the risk of yen appreciation subsides around the time of the US midterm elections in November. In 2019, hurdles for policy adjustment may rise due to the consumption tax hike and Upper House election, etc.
- ❑ The BOJ will have difficulty normalizing after 2020, when the US ceases to hike the policy rate and shift toward interest rate cuts. The next timing will be after the 2020s when the US goes on a rate hike cycle again. It will not be easy for BOJ Governor Kuroda to normalize monetary policy during his term in office.

[Political schedule and timing of the BOJ's policy shift]

(FY)

| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|--------------------|---|--|---|---|---|---|---|---|---------------|---|---------------|---|
| Political schedule | | <ul style="list-style-type: none"> •LDP's presidential election •US midterm election | <ul style="list-style-type: none"> •Enthronement of new emperor •Nation-wide local government elections •Upper House election •Consumption tax hike | <ul style="list-style-type: none"> •US presidential election •Tokyo Olympic Games | <ul style="list-style-type: none"> •End of term of LDP President | <ul style="list-style-type: none"> •US midterm elections | <ul style="list-style-type: none"> •End of term of BOJ Governor Kuroda's | <ul style="list-style-type: none"> •US presidential election | | <ul style="list-style-type: none"> •US midterm elections | | <ul style="list-style-type: none"> •US presidential election |
| Economy and prices | GDP growth (Japan, %) | 1.2 | 0.8 | 0.6 | 0.9 | 1.1 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 0.8 |
| | GDP growth (US, calendar year %) | 2.8 | 2.6 | 1.4 | 1.5 | 1.8 | 1.8 | 1.7 | 1.5 | 1.6 | 1.7 | 1.5 |
| | US policy interest rate (%) | 2.25 ~2.50 | 2.25 ~2.50 | 2.00 ~2.25 | 2.00 ~2.25 | 2.00 ~2.25 | 2.00 ~2.25 | 2.00 ~2.25 | 2.00 ~2.25 | 2.00 ~2.25 | 2.00 ~2.25 | 2.00 ~2.25 |
| | CPI (Ex tax hike and fresh food) (Japan, %) | 1.2 | 0.7 | 0.4 | 0.3 | 0.2 | 0.4 | 0.5 | 0.6 | 0.7 | 0.7 | 0.7 |

If the BOJ were to make policy adjustments, it would do so some time during the period from around the time of the US midterm elections in November to the monetary policy meeting next spring

Source: Made by MHRl

[Reference] Global economic outlook

[Outlook on the global economy]

| | 2015 CY | 2016 | 2017 | 2018 | 2019 | 2020 | (Y-o-y % change) | | (Y-o-y % change) | | Year 2025 to 2028 Average |
|------------------------|------------|------|------|------|------|------|------------------|------|------------------|------|------------------------------|
| | | | | | | | 2021 | 2022 | 2023 | 2024 | |
| Global real GDP growth | 3.5 | 3.2 | 3.8 | 3.8 | 3.8 | 3.6 | 3.6 | 3.7 | 3.7 | 3.6 | 3.6 |
| Total of forecast area | 3.6 | 3.4 | 3.9 | 4.1 | 4.0 | 3.7 | 3.6 | 3.7 | 3.7 | 3.7 | 3.6 |
| Japan, US, Eurozone | 2.4 | 1.5 | 2.3 | 2.4 | 2.1 | 1.4 | 1.4 | 1.6 | 1.6 | 1.5 | 1.4 |
| US | 2.9 | 1.5 | 2.3 | 2.8 | 2.6 | 1.4 | 1.5 | 1.8 | 1.8 | 1.7 | 1.6 |
| Eurozone | 2.1 | 1.8 | 2.4 | 2.2 | 1.8 | 1.6 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| Japan | 1.4 | 1.0 | 1.7 | 1.1 | 1.1 | 0.5 | 0.9 | 1.2 | 1.1 | 1.2 | 1.0 |
| Asia | 6.2 | 6.2 | 6.1 | 6.2 | 6.0 | 6.0 | 5.8 | 5.8 | 5.6 | 5.6 | 5.3 |
| China | 6.9 | 6.7 | 6.9 | 6.5 | 6.4 | 6.3 | 5.8 | 5.5 | 5.2 | 5.0 | 4.4 |
| NIEs | 2.1 | 2.3 | 3.2 | 2.8 | 2.5 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 |
| ASEAN5 | 4.9 | 4.9 | 5.3 | 5.3 | 5.1 | 4.9 | 5.0 | 5.3 | 5.3 | 5.3 | 5.3 |
| India | 7.6 | 7.9 | 6.2 | 7.4 | 7.4 | 7.4 | 7.7 | 8.0 | 8.0 | 8.0 | 8.1 |
| Australia | 2.5 | 2.6 | 2.3 | 3.0 | 2.7 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 |
| Brazil | -3.5 | -3.5 | 1.0 | 2.0 | 2.5 | 2.3 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Mexico | 3.3 | 2.9 | 2.0 | 1.9 | 2.3 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 |
| Russia | -2.5 | -0.2 | 1.5 | 1.6 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| Japan (FY) | 1.4 | 1.2 | 1.6 | 1.2 | 0.8 | 0.6 | 0.9 | 1.1 | 1.1 | 1.1 | 0.9 |

Note: Figures in the shaded areas are forecasts. The total of the forecast area is calculated based upon the 2016 GDP share (PPP) by the IMF. The readings on Japan are based upon the assumption of a consumption tax hike in October 2019 (8% → 10%).

Sources: Made by MHRI based upon IMF and statistics of relevant countries and regions

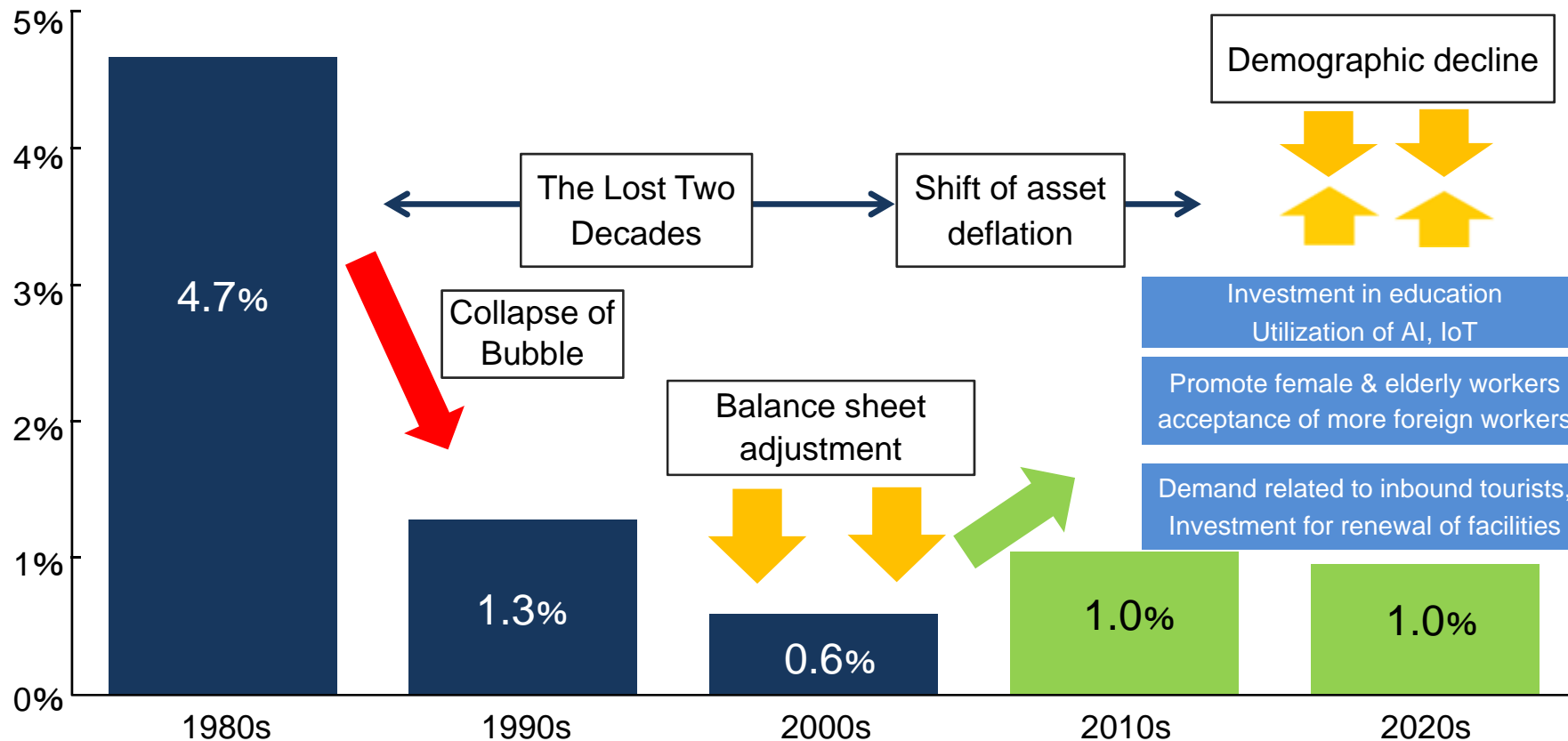
II. Medium-term outlook on the Japanese Economy

- Sustaining 1% growth by overcoming 3 challenges -

Japan: sustain 1% growth by shifting from balance sheet adjustment mode after the collapse of the bubble and by overcoming 3 major challenges

- Japan will sustain economic growth even under demographic decline by securing Japan's labor force by promoting the acceptance of female and elderly workers, the acceptance of more foreign workers and productivity expansion through investment in education and utilization of AI and IoT, while capturing demand related to inbound tourists and investment for renewal of facilities.

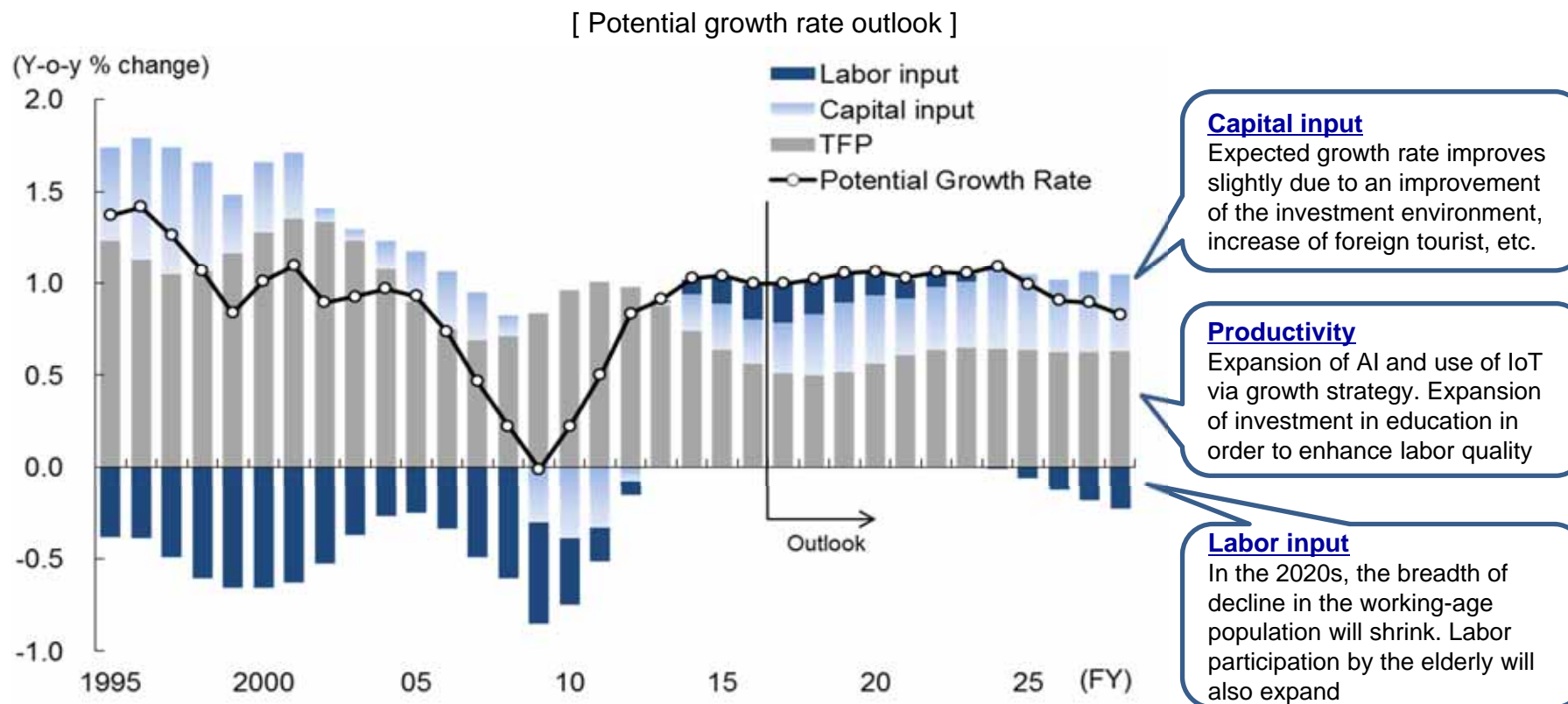
[Diagrammatic representation of Japan's annual average real GDP growth (calendar year basis)]



Source: Made by MHRI based upon the Cabinet Office, etc.

Japan: demographic decline will not lead directly to economic stagnation Japan's potential growth rate will be sustained around 1% for some time

- Despite Japan's demographic decline, it should be able to sustain its potential growth rate around 1%, as a result of a pause in decline of the productive-age population and an increase of the labor force population due to the expansion of the employment rate, and the increase of investments.
 - Toward the end of the forecast period, Japan's potential growth rate will gradually slow down as labor input peaks out.

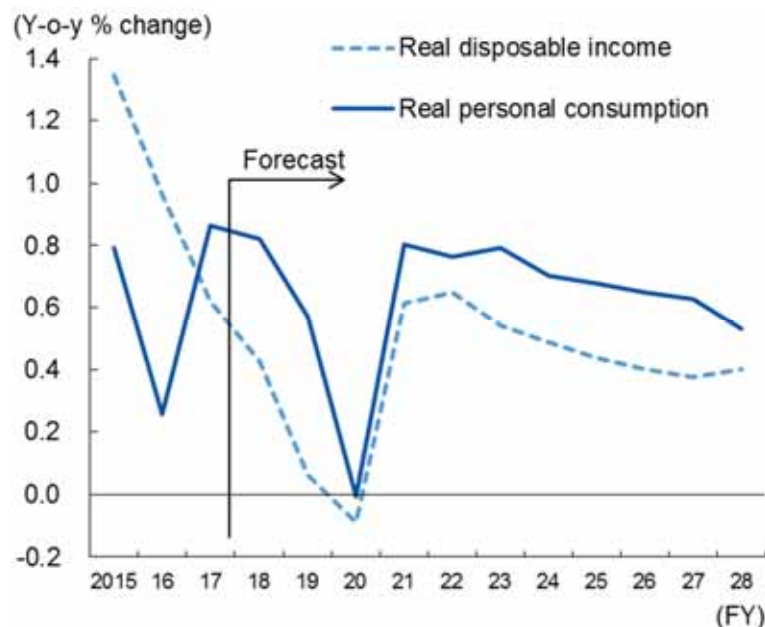


Source: Made by MHRI based upon the Cabinet Office, etc.

Japan: even though a mild rise of consumer spending is expected, the decrease of two-or-more-person households will gradually serve as downward pressures

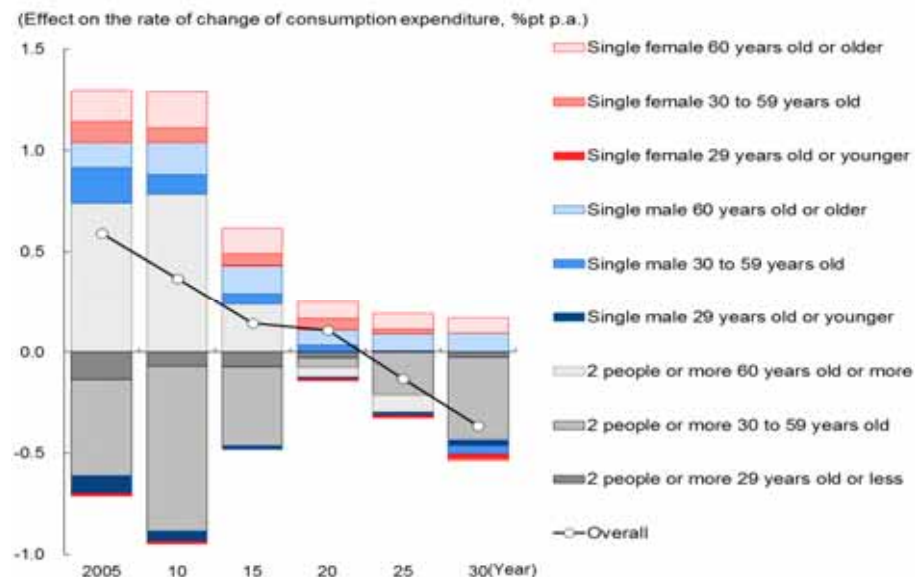
- ❑ Despite a gradual slowdown in growth of disposable income, personal consumption should gradually increase along with the decline of the savings rate (expansion of consumption propensity).
- ❑ Looking forward, changes in the number of households (decrease of two-or-more-person households and the increase of elderly one-person households) will serve as a drag upon both income and consumer spending.
 - According to simple estimations, the change in households in 2030 would drag down personal consumption by approximately -0.36% y-o-y.
 - This estimation may vary slightly as it is based upon consumption propensity as of 2015.

[Outlook for disposable income and personal consumption]



Source: Made by MHRI based upon the Cabinet Office, *Annual Report on National Accounts*

[The impact that change in the number of households has on personal consumption expenditure]



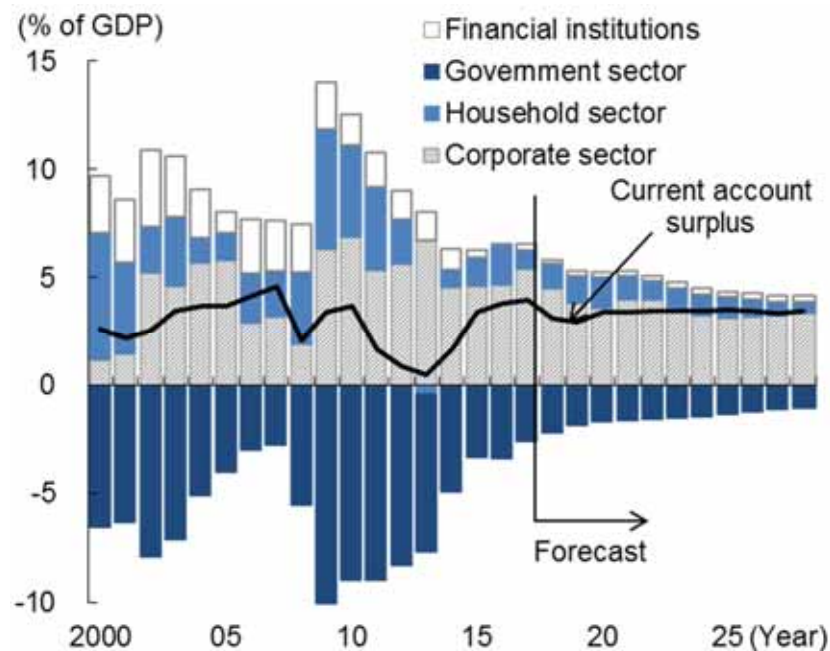
Note: The amount of consumption of each household is fixed at 2015 in order to reflect the change in the number of households.

Source: Made by MHRI based upon the National Institute of Population and Social Security Research, *Household Projections for Japan (2018)*, *Population Statistics*, Ministry of Internal Affairs and Communications, *2014 National Survey of Family Income and Expenditure*

Japan: the current account surplus of approximately 20 trillion yen will persist

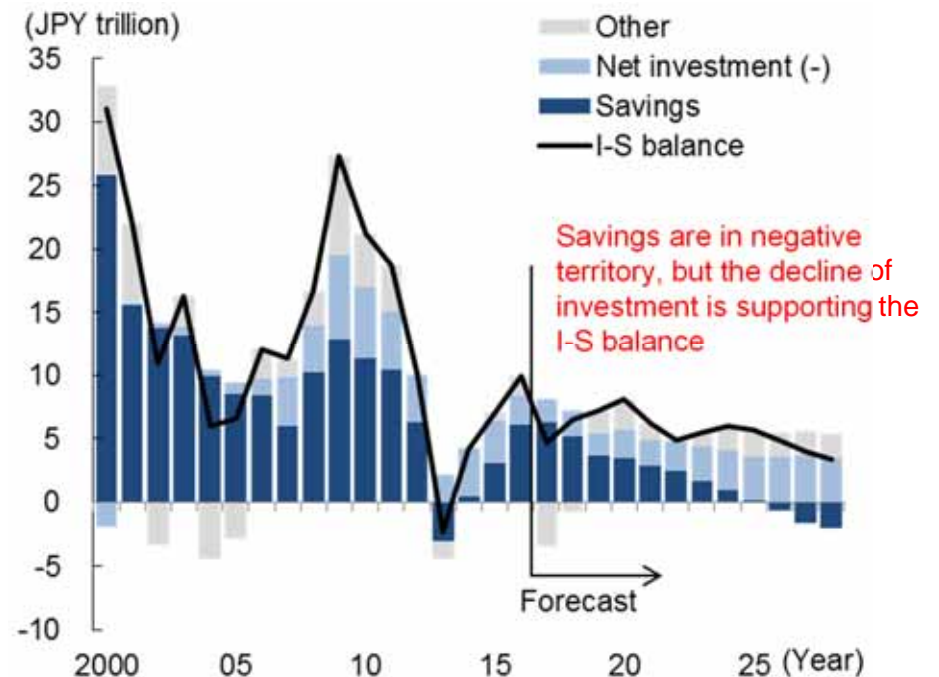
- The domestic savings-investment (I-S) balance remains to record a savings surplus. The current account surplus will continue to be around 3.5% of GDP (over 20 trillion yen)
 - The surplus in the corporate sector is expected to remain high. Although the government sector deficit will improve, the improvement will be limited from 2020 onward.
 - Even though the savings rate of the household sector will turn negative toward the end of the forecast period, the I-S balance will remain positive, reflecting factors such as the decline of net investment (gross investment – depletion) accompanying the demographic aging.

[The I-S balance by sector]



Source: Made by MHRI based upon the Cabinet Office, etc.

[I-S balance of the household sector]



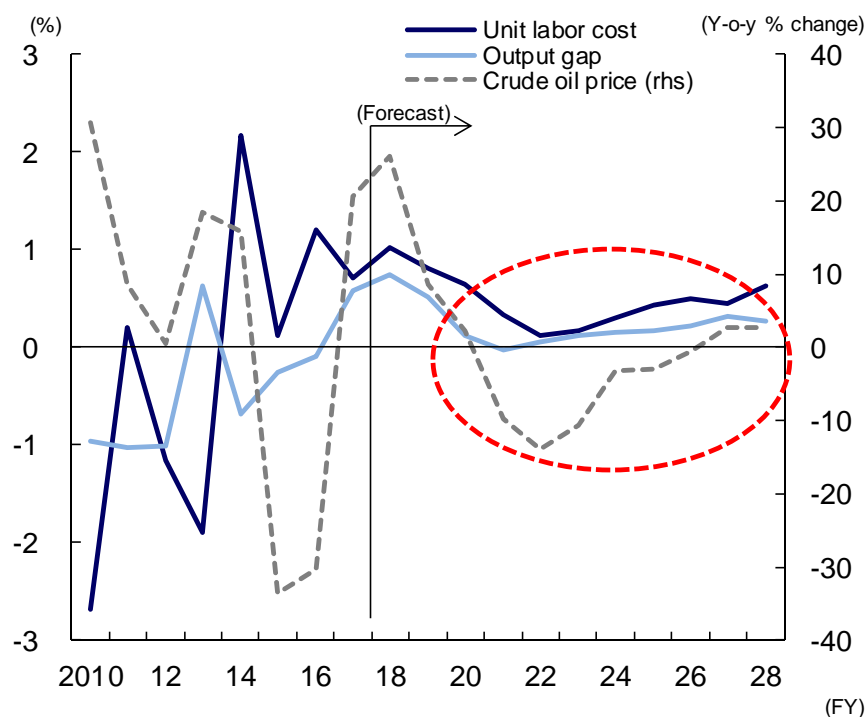
Note: Net investment = gross capital formation - depreciation of fixed capital. "Other" refers to capital transfers and land purchases.

Source: Made by MHRI based upon the Cabinet Office, etc.

Japan: inflation will rise to the upper half of the 0%-level

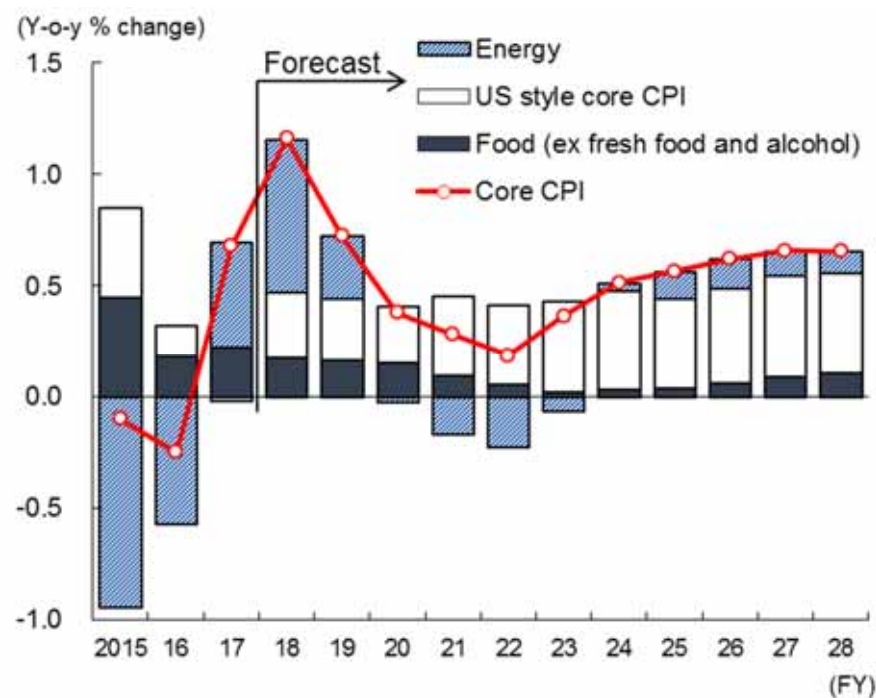
- Inflation will trend around the upper half of the 0%-level over the medium-term horizon.
 - In the first half of the 2020s, inflation will temporarily decline, reflecting the contraction of the output gap after the consumption tax hike and decline of crude oil prices.
 - Subsequently, inflation will rise to the upper half of the 0%-level and flatten out thereafter.

[Outlook on key factors affecting price]



Note: Excluding the impact of the consumption tax hike
 Source: Made by MHRI based upon the Ministry of Internal Affairs and Communications, etc.

[Outlook on core CPI (contribution analysis)]

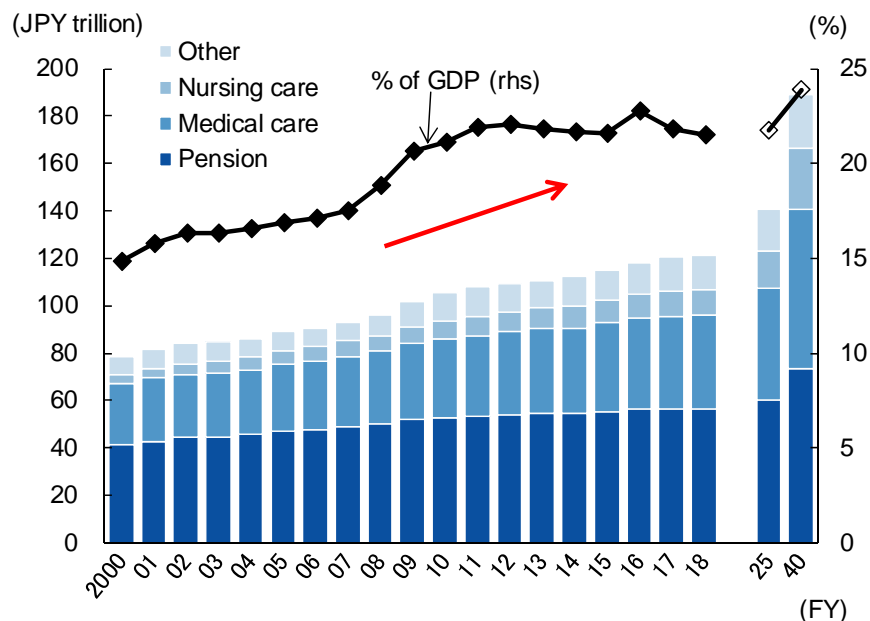


Note: Excluding the impact of the consumption tax hike.
 Source: Made by MHRI based upon the Ministry of Internal Affairs and Communications, etc.

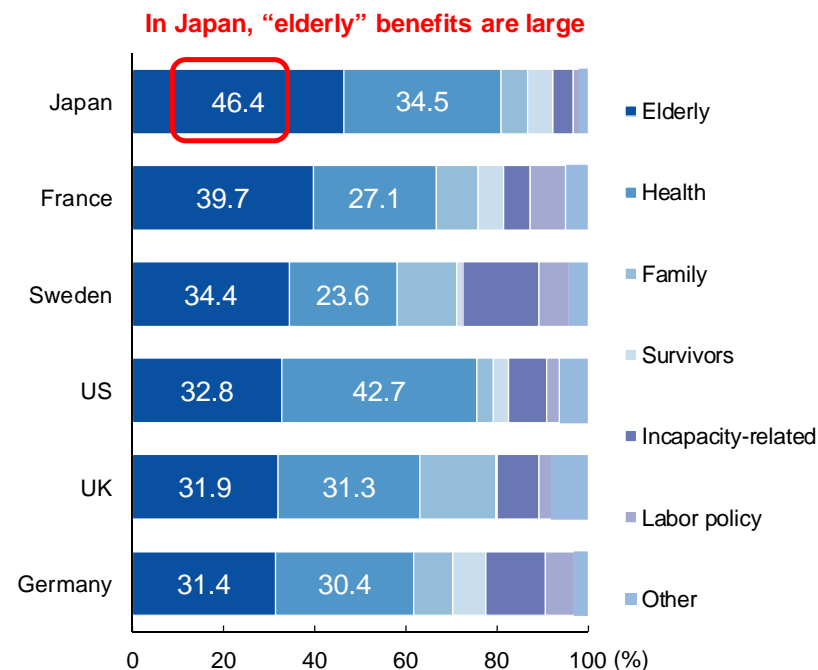
Japan: social security benefits are soaring due to demographic aging, with “elderly” benefits reaching 46% of social expenditures

- ❑ Social security benefits are soaring, reflecting Japan’s rapid demographic aging.
 - The cost for social security benefits for FY2018 is projected to reach 121.3 trillion yen. It is expected to increase further to about 140 trillion yen in FY2025 and about 190 trillion yen in FY2040.
- ❑ When looking at the percentage of social expenditure by policy sector, “elderly” benefits are the highest at 46.4%. This is the highest compared to the US and other major countries of Europe.

[Trend in the cost of social security benefits] [International comparison of percentage of social expenditure by policy area]



Note: Cost of social security benefits for 2016 to 18 is based on the initial budget. FY2025, FY2040 are projections.
 Source: Made by MHRI based upon the National Institute of Population and Social Security Research, *The Financial Statistics of Social Security in Japan (FY2015)*, materials released at the meeting of the Council on Economic and Fiscal Policy (May 21, 2018)

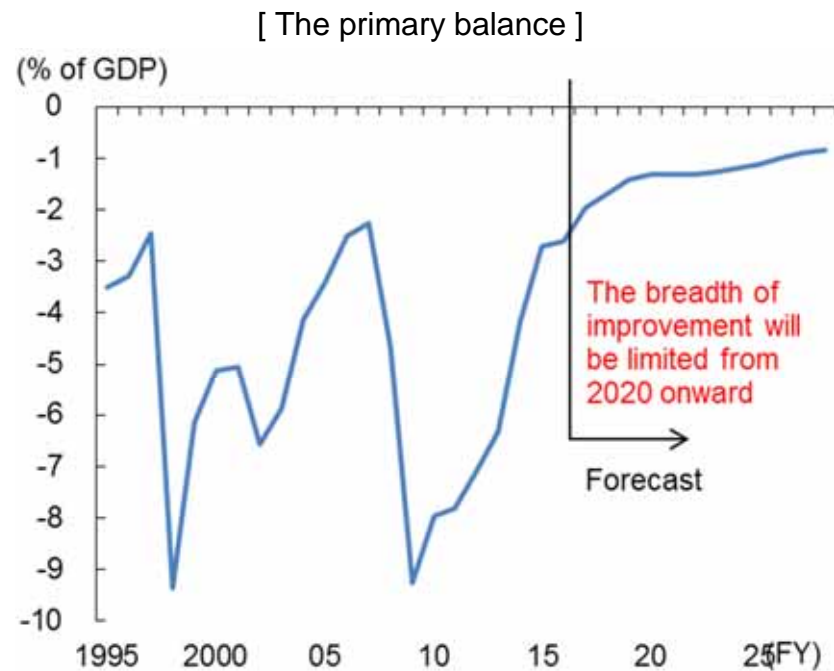


Note: 1. In addition to the cost of social security benefits, social expenditure includes expenditure not attributable to individuals such as facility expenses, etc.
 2. Japan is FY2015, others are FY2013.
 3. Labor policy is the total active labor market programmes and unemployment.
 Source: Made by MHRI based upon the National Institute of Population and Social Security Research, *The Financial Statistics of Social Security in Japan (FY2015)*

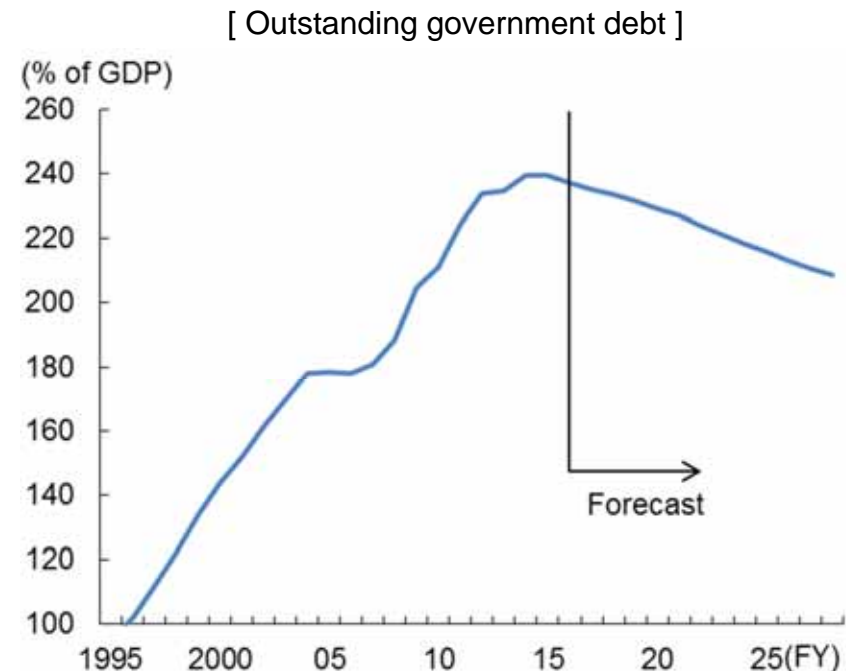
Japan: despite improvements, hurdles run high to achieve a primary account surplus

Effective fiscal reform is necessary

- ❑ Even though the primary balance will continue to improve until around 2020 due to the consumption tax hike and other factors, the improvement of the fiscal deficit (as a % of GDP) will be limited from then onward, given the rise of medical care and nursing care expenditures (increase of government consumption) due to demographic aging.
- ❑ Outstanding government debt (as a % of GDP) will gradually decline, given the rise of nominal GDP growth and low interest rates during the forecast period. Even so, the level of outstanding debt will remain extremely high. Effective measures for fiscal reform are essential.



Note: Based on general government SNA including social security funds.
Source: Made by MHRI based upon Cabinet Office, *National Accounts*, etc.



Note: Based on general government SNA including social security funds.
Source: Made by MHRI based upon Cabinet Office, *National Accounts*, etc.

Japan: Japan will achieve 1% GDP growth by overcoming 3 major challenges for sustained growth

Issue (1) How will the Japanese economy fare after the 2020 Tokyo Olympic Games

- ✓ There is **potential for further inbound tourist demand** after the Olympics. Demand for the renewal of facilities will support construction investment.
- ✓ It is the supply-side that poses a challenge. **Both efforts to secure labor and improve productivity are necessary.**

Issue (2) How to address the labor shortage

- ✓ In addition to **incorporating the underutilized labor force which is skewed towards** youths, women, and the elderly, **it is also necessary to promote additional labor participation.**
- ✓ The improvement and addition of nurseries is not enough to address the labor shortage. **Teleworking should be promoted, with the Olympic Games serving as a key juncture, thereby improving the infrastructure for expansion of work opportunities.**

Issue (3) How to improve productivity

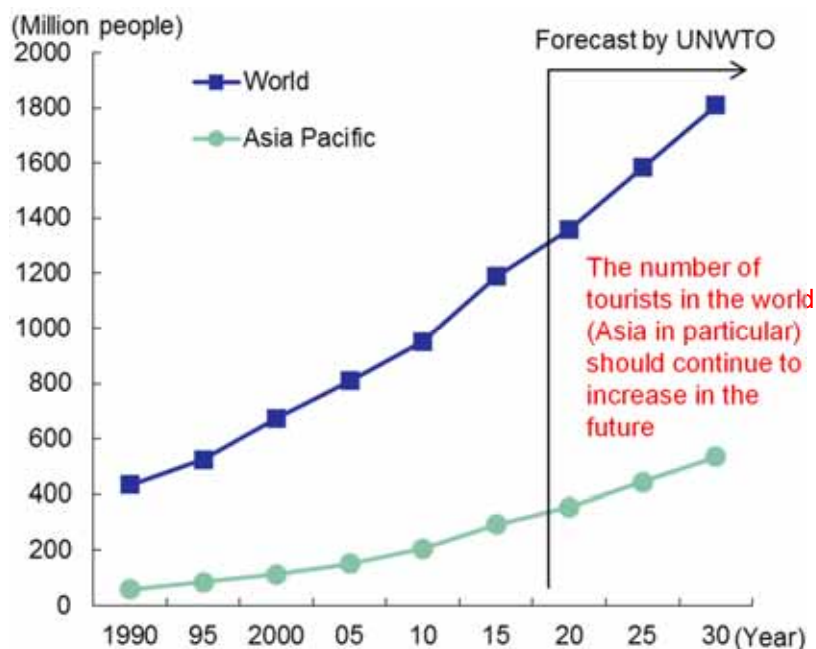
- ✓ The quality of labor and productivity have positive correlations. **The expansion of investment in education is necessary for the improvement of quality of labor as well as the resolution of mismatches in the labor market.**
- ✓ Efforts **to encourage productivity improvements** not only in the ICT manufacturing sector but also **in sectors that are using ICT** by utilizing AI and IoT, as well as supplementary investments.

Source: Made by MHRI

Issue (1) the Japanese economy after the 2020 Tokyo Olympic Games: there is potential for further inbound tourist demand even after the Olympics

- There is potential for further inbound tourist demand even after the 2020 Tokyo Olympic Games.
 - The number of tourists around the world should continue to increase. In past Olympic host countries, many countries saw an increase in number of inbound tourists after the games were held.
 - Japan's tourism competitiveness is highly regarded and ranks 4th highest in the world. There are also geographical advantages that can be used to attract tourists from countries of Asia such as China.
 - In order to reach the target of approximately 60 million people in 2030, it is necessary to raise the Japan selection rate (the number of inbound visitors as a percentage of departures) which is currently 3%.

[Outlook on the number of tourists in the world]



Source: Made by MHRI based upon UNWTO

[Ranking of the Tourism Competitiveness Index (2017)]

Japan ranks 2nd highest in tourism competitiveness following Europe

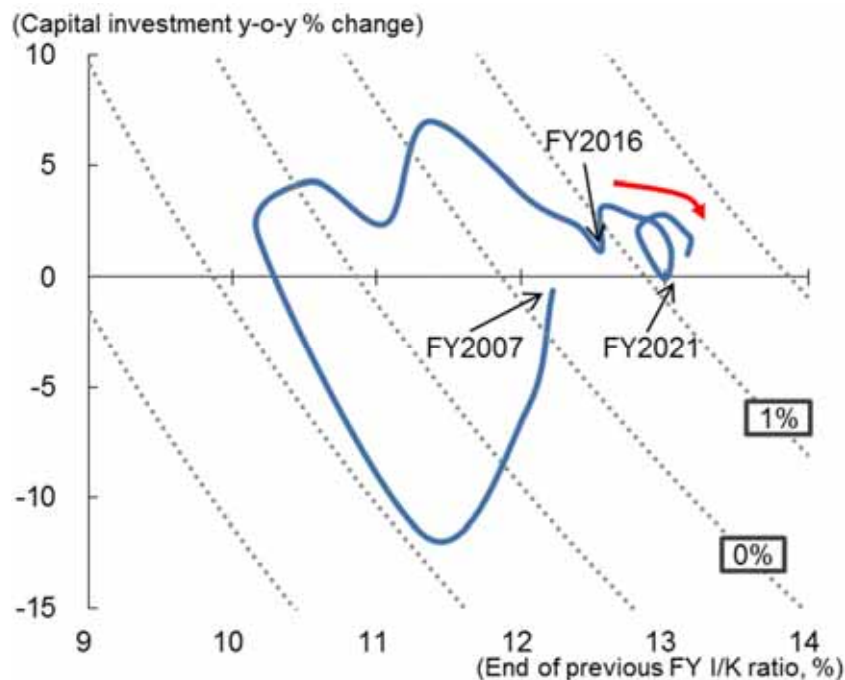
| Ranking | Country | Change from 2015 | Number of inbound visitors (10,000 people) |
|---------|--------------|------------------|--|
| 1 | Spain | 0 | 7,532 |
| 2 | France | 0 | 8,257 |
| 3 | Germany | 0 | 3,556 |
| 4 | Japan | 5 | 2,404 |
| 5 | UK | 0 | 3,581 |
| 6 | US | -2 | 7,561 |
| 7 | Australia | 0 | 826 |
| 8 | Italy | 0 | 5,237 |
| 9 | Canada | 1 | 1,982 |
| 10 | Switzerland | -4 | 1,040 |

Source: Made by MHRI based upon UNWTO, World Economic Forum

Issue (1) the Japanese economy after the 2020 Tokyo Olympic Games: despite a temporary adjustment of capital investment, legacy effects and demand for renewal of facilities will support the economy

- ❑ Subsequent to the Olympic Games, construction investment in the metropolitan area will run its course and capital investment will fall into a temporary adjustment phase.
 - Capital investment in the Tokyo metropolitan area is estimated to rise more than 10 trillion yen due to hosting of the Olympic Games.
- ❑ However, the post-Olympics backlash should remain subdued as a result of the progress of investments in areas other than the Tokyo metropolitan area due to legacy effects (uptick of the expected growth rate due to the increase in tourists, etc.) and construction demand for renewal of aging facilities.

[Capital stock cycle]



Note: The hyperbolic curves represents the expected growth rate calculated from the removal rate and the trends of the capital coefficient.
 Source: Made by MHRI based upon the Cabinet Office, etc.

[Construction investment in the areas surrounding Tokyo and other areas]

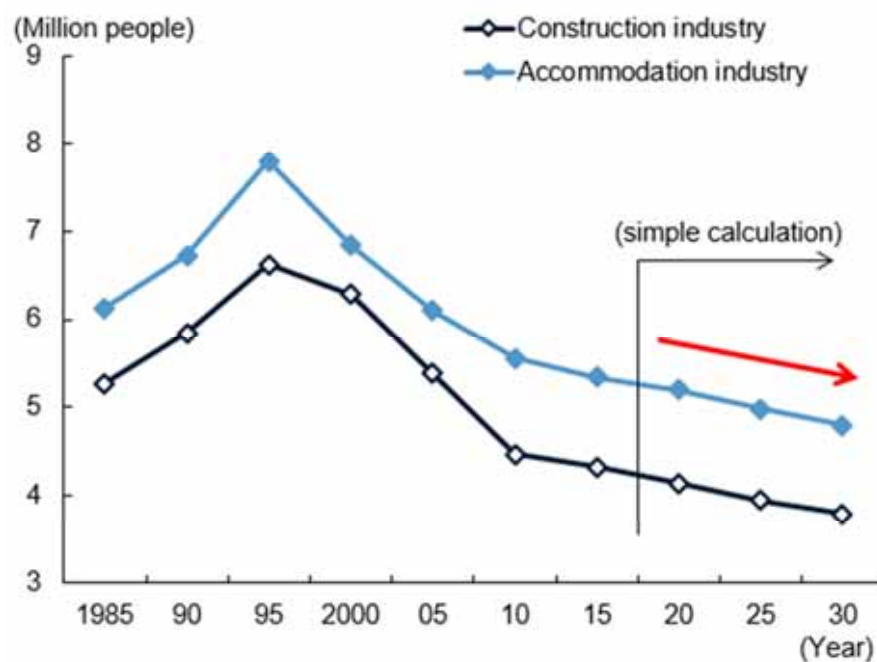


Note: Nominal value. Adjusted seasonally by MHRI.
 Source: Made by MHRI based upon the Ministry of Land, Infrastructure and Transport, *Current Survey on Construction Statistics*

Issue (1) the Japanese economy after the 2020 Tokyo Olympic Games: manpower shortage will serve as restraints upon construction investment and tourism demand

- ❑ On the other hand, based on simple calculations, the number of workers employed in the construction and accommodation industry is expected to continue to decrease in the future.
 - Securing workers for the construction and accommodation industry, as well as improving productivity are necessary for further expansion of construction investments and foreign visitors to Japan.

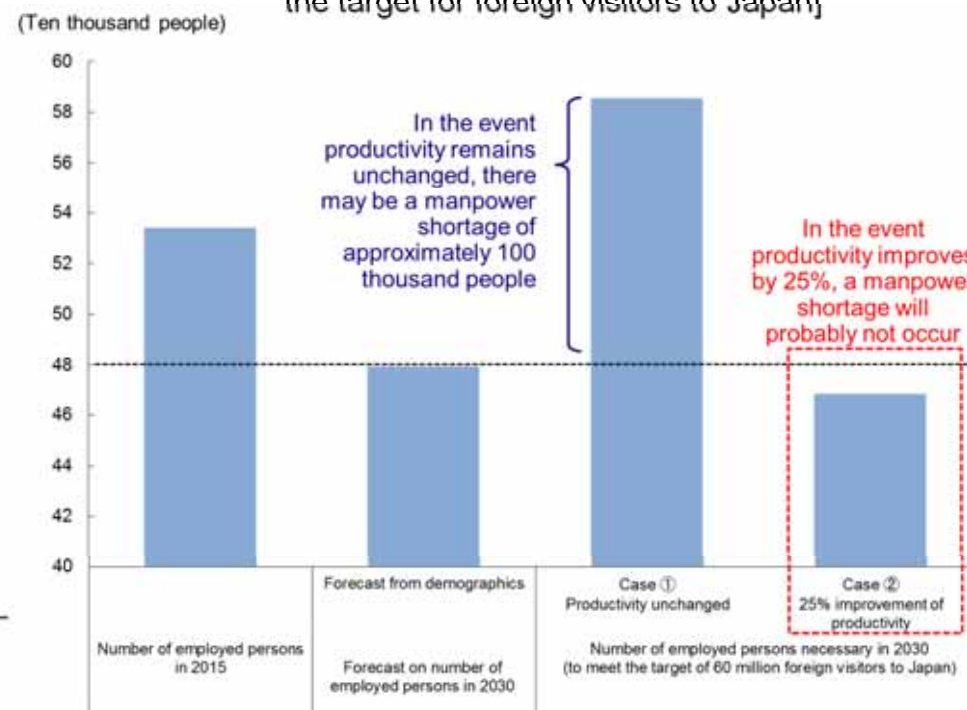
[Estimation of the number of workers in the construction and accommodation industries (simple calculation)]



Note: 1. Assuming that the breadth of change between 2010 to 2015 will continue for the labor participation rate and percentage of employment in the construction industry.
2. Readings for 2020 onward are estimations by MHRI.

Source: Made by MHRI based upon the Ministry of Internal Affairs and Communications, *Population Census*, National Institute of Population and Social Security Research, *Population Projections for Japan*, etc.

[Number of employed persons necessary to achieve the target for foreign visitors to Japan]

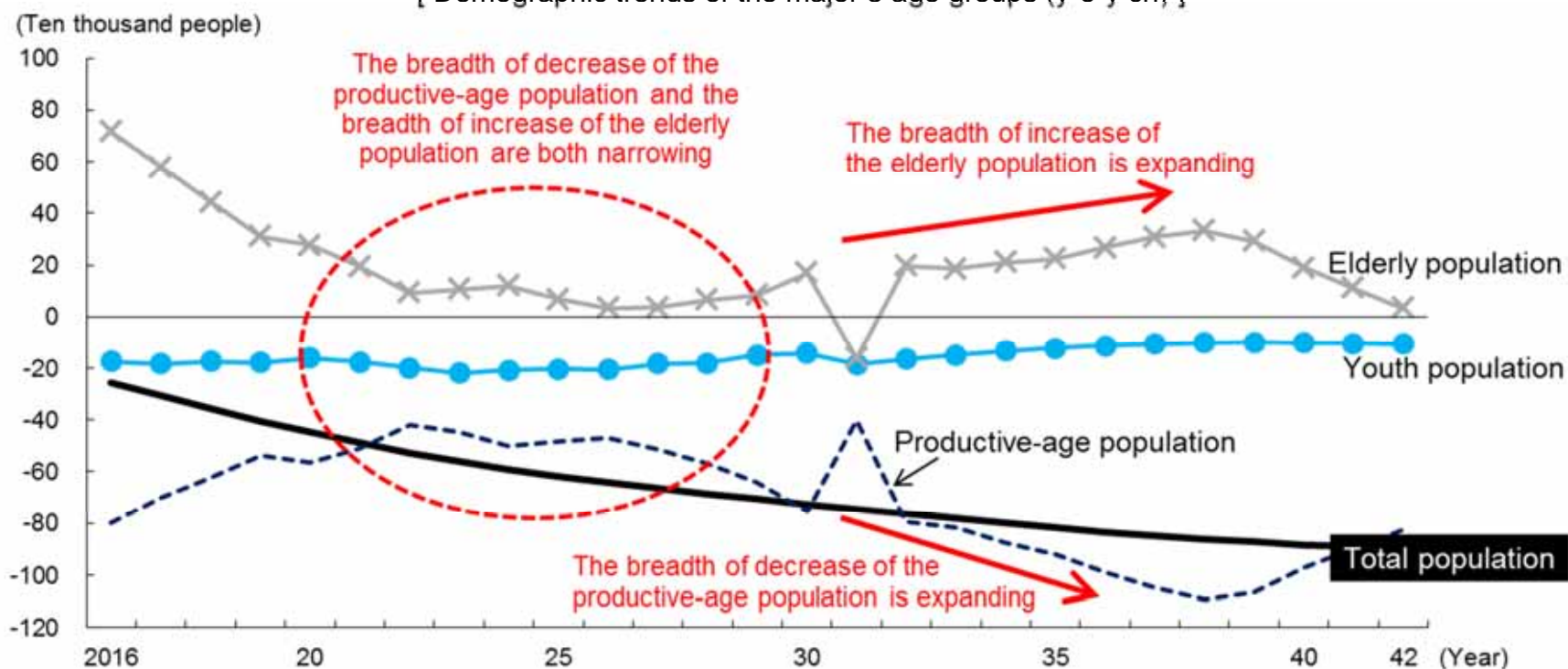


Source: Made by MHRI based upon Ministry of Internal Affairs and Communications, *Population Census*, Japan Tourism Agency, *Overnight Travel Statistics Survey*, etc..

Issue (2) How to address the labor shortage: given the relative stability of the population in the 2020s, this may be the last chance

- Changes in age-based population are relatively slow in the 2020s compared to that of the latter half of the 2010s
 - The breadth of decrease of the productive-age (15 to 64) population and the breadth of increase of the elderly (65 years +) population are both narrowing.
 - The key is the period up to the latter half of the 2030s when the baby-boomer junior generation (born 1971 to 74) joins the elderly population bracket. During this time, it will be necessary to prepare for future population declines, progression of the declining birthrate and aging through measures such as social security reform and utilization of the elderly population (particularly those aged up to 74).

[Demographic trends of the major 3 age groups (y-o-y ch)]



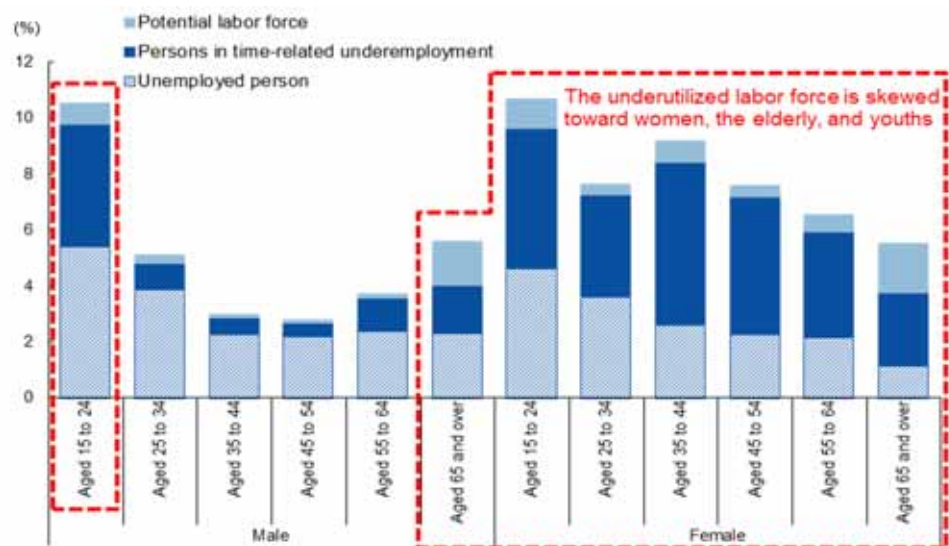
Note: Estimated based upon medium-fertility assumption and medium-mortality assumption up to 2042, the peak of the elderly population.
 Source: Made by MHRI based upon the National Institute of Population and Social Security Research, *Population Projections for Japan (April, 2017)*

Issue (2) How to address the labor shortage: labor underutilization is skewed toward “youths, women and elderly”

- According to the newly-released labor underutilization indicator 4 (LU4), labor underutilization in Japan is skewed toward (1) women, (2) elderly, and (3) youths.
 - Employment reform is necessary in order to promote the labor force participation by women, the elderly and youths.
- However, international comparisons reveal that Japan’s underutilized labor force is not necessarily large, and that it would not be enough just by encouraging the labor force participation of the underutilized labor force.

[Definition of LU4 and categorization by sex and age groups]

$$LU4 = \frac{\text{Unemployed person} + \text{persons in time-related underemployment} + \text{potential labor force}}{\text{labor force} + \text{potential labor force}} \times 100$$

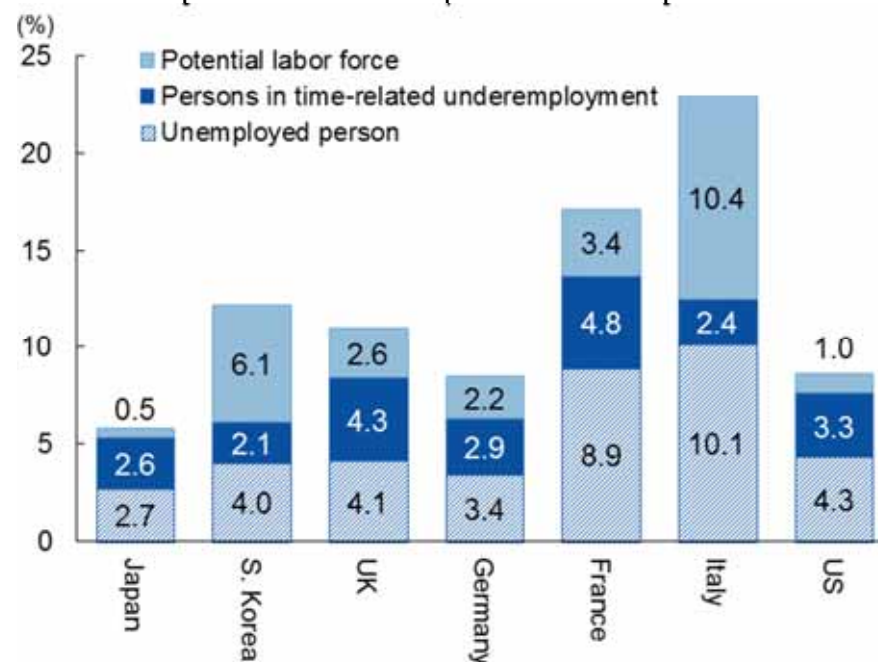


Note: 1. “Persons in time-related underemployment” refer to persons working short hours and who wish to work additional hours. “Potential labor force” refers to those who did not do any job seeking activity within one month and are able to work if work is available, and persons who did any job seeking activity within one month, and not ready to work currently but would be within two weeks.

2. Ratio to “labor force + potential labor force”. Jan-Mar quarter of 2018

Source: Made by MHRI based upon the Ministry of Internal Affairs and Communications, *Labour Force Survey*

[International comparison of LU4]



Note: For the US, we have substituted “persons employed part time for economic reasons” for “persons in time-related underemployment”, and “persons marginally attached to the labor force” for the “potential labor force”.

Source: Made by MHRI based upon the Ministry of Internal Affairs and Communications, *Labour Force Survey (Detailed Tabulation) Quarterly Average Results – Jan-Mar. 2018 (Preliminary Report)*

Issue (2) How to address the labor shortage:

promote telework and improve infrastructure for expansion of employment of women and elderly

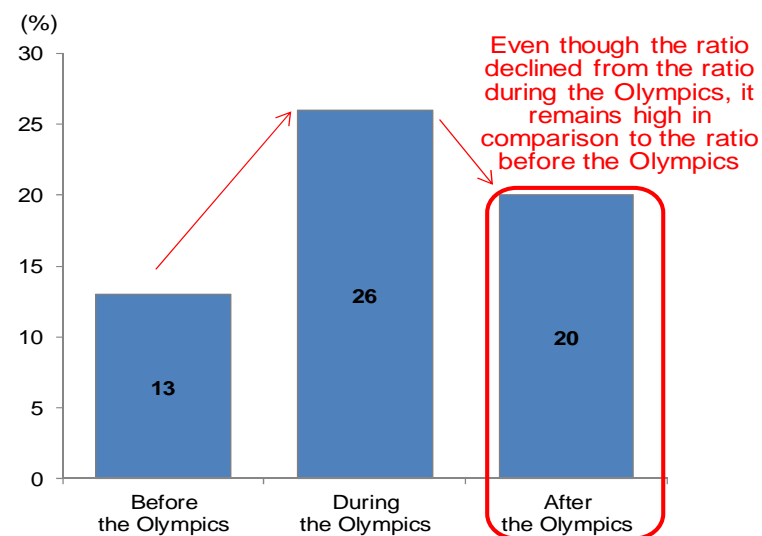
- ❑ The continuation of labor market reform is necessary in order to promote the employment of women and elderly.
 - In addition to childcare support such as nursery improvements and the promotion of male parental leave, mechanisms to ensure diversity of work place and time should be established.
- ❑ London should serve as an example, for the spread of telework in and around the Kanto region triggered by the Olympic Games. Infrastructure improvements such as telework are necessary for the expansion of employment of women and elderly.
 - The London Bureau of Transportation urged companies to take measures such as telework in order to avoid congestion when the Olympics were held.
 - 80% of companies introduced telework before the Olympics were held. The ratio of teleworking workers in the city of London rose from 13% before the Olympics to 20% after the Olympics.

[Policy mix for the promotion of active roles by women and elderly]

| | Policy mix |
|------------------------------------|---|
| Secure diversity of work places | <ul style="list-style-type: none"> • Promote the expansion of telework • Promote the expansion of satellite offices |
| Secure diversity of working hours | <ul style="list-style-type: none"> • Promote the expansion of part-time work systems, etc. |
| Support for women's child rearing | <ul style="list-style-type: none"> • Improvement of nurseries • Promote male parental leave |
| Promotion of employment of elderly | <ul style="list-style-type: none"> • Improvement of vocational ability evaluation systems • Promote the expansion of career changing and the re-employment market |

Source: Made by MHRI

[Percentage of workers teleworking at least 1 day a week in London]



Note: Before the Olympics in July 2012, during the Olympics in August 2012, and after the Olympics in November 2012.

Source: Made by MHRI based upon the Mayor of London, *Transport for London (2013), London 2012 Games Transport – Performance, Funding and Legacy*

Issue (2) How to address the labor shortage: push up the rate of economic growth by 0.1% through the acceptance of 100,000 foreign workers (per year)

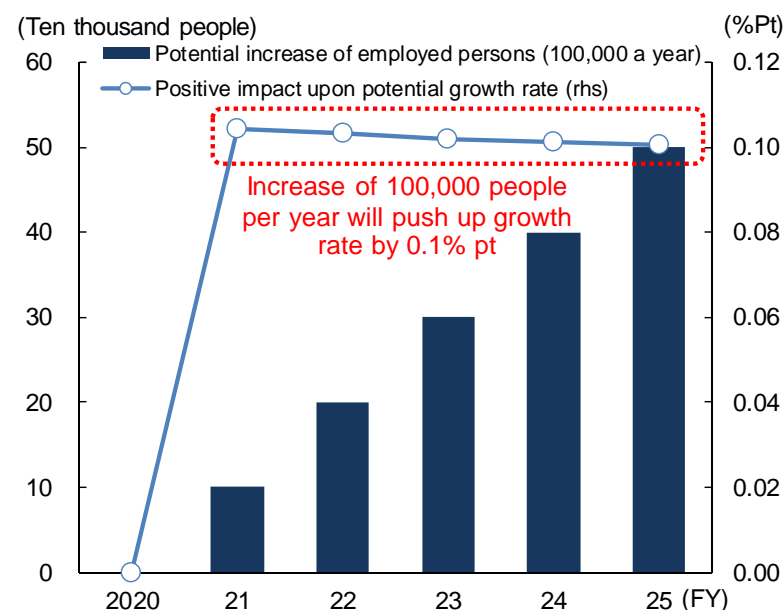
- ❑ The “Basic Policy” stipulates the acceptance of new foreigners (creation of a new status of residence, and plan to increase foreigners by 500,000 by 2025).
 - Assuming that the number of workers increases by 100,000 per year from 2021 to 2025, the potential rate of economic growth would rise by 0.1% pt.
- ❑ On the other hand, Japan may not be able to secure the human resources it seeks due to competition with other countries of the world.
 - If Japan cannot secure highly skilled human resources, there are concerns that it will lead to a decline in productivity and fail to achieve the expected boost to economic growth.

[Acceptance of new foreign human resources in the Basic Policy
(creation of a new status of residence)]

| | Overview |
|---|--|
| Background | A mechanism to accept a broad range of foreign human resources is necessary amid the deepening labor shortage |
| Industries accepting foreign human resources | Industries which need foreign human resources even upon implementation of measures to improve productivity and secure domestic human resources (agriculture, nursing care, construction, accommodation, and shipbuilding) |
| Level of skill and Japanese language ability | Skill levels shall be confirmed by the relevant government ministries/agencies supervising the industry and Japanese language abilities shall be tested to confirm that they suffice for daily life |
| Foreign human resource support and management | A host company or a support organization shall provide support for foreign human resources and confirm that the compensation for secured foreign human resources is equal to or better than Japanese counterparts. |
| Period of stay Accompanying family members | The maximum period of stay is 5 years. Accompaniment of family members is not allowed as a general rule. However, if a high level of professional expertise is acknowledged during the period of stay, the upper limit may be eliminated and the accompaniment of family members may be allowed. |

Note: The target industry may be changed.
Source: Made by MHRI based upon the Cabinet Office, *Basic Policy on Economic and Fiscal Management and Reform 2018 (Basic Policy)*

[Rise of economic growth rate due to the increase of employed persons by introducing 100,000 workers per year]

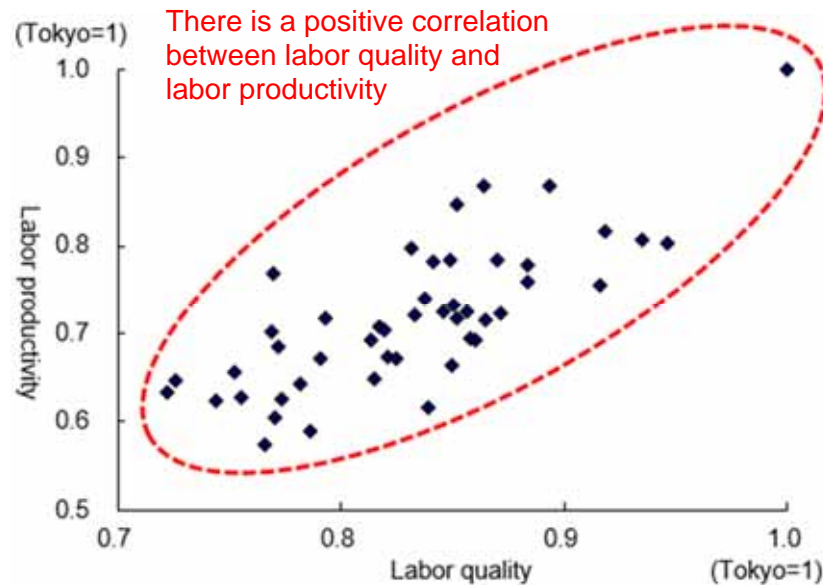


Note: The increase of the potential growth rate when other conditions are fixed and the number of potential employed persons increases by 100,000 people per year. Given the possibility that productivity, working hours, etc. may be affected, the results need to be used only as a reference
Source: Made by MHRI based upon the Cabinet Office, etc.

Issue (3) How to improve productivity: investment in education is important for improvement of labor quality

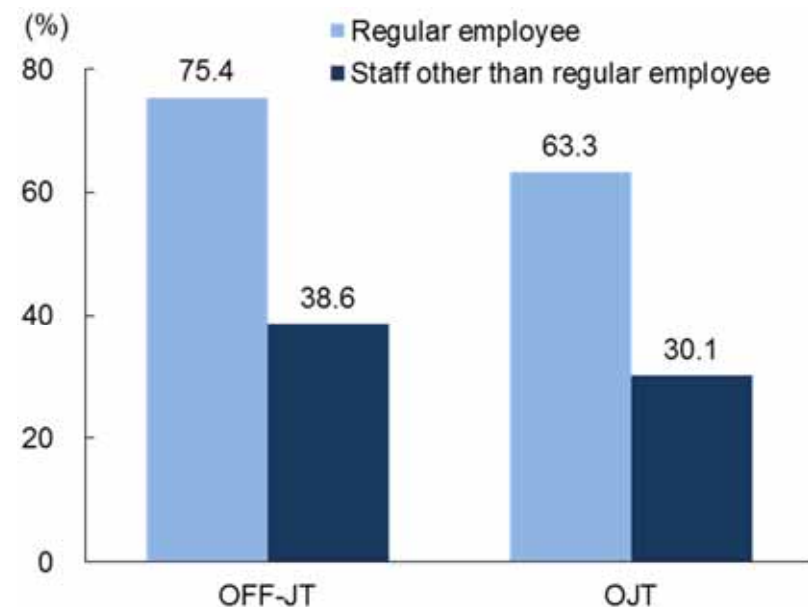
- There is a positive correlation between labor quality and labor productivity. Investment in education for the improvement labor quality will possess greater importance.
 - In reality, there are disparities in education investment, such as the differences in the implementation of OJT and Off-JT between regular and non-regular employees.
 - In order to improve the overall quality of labor in Japan, investment in education for non-regular and part-time workers is essential.
 - In view of the limit to what can be achieved solely by corporations, policy measures are necessary (there is room for improvement, given the low percentage of public spending on vocational training around the world).

[Labor quality and labor productivity]



Note: Cross section data by prefecture as of 2010. Relative level when Tokyo is 1.
 Source: Made by MHRI based upon RIETI, *R-JIP2017*

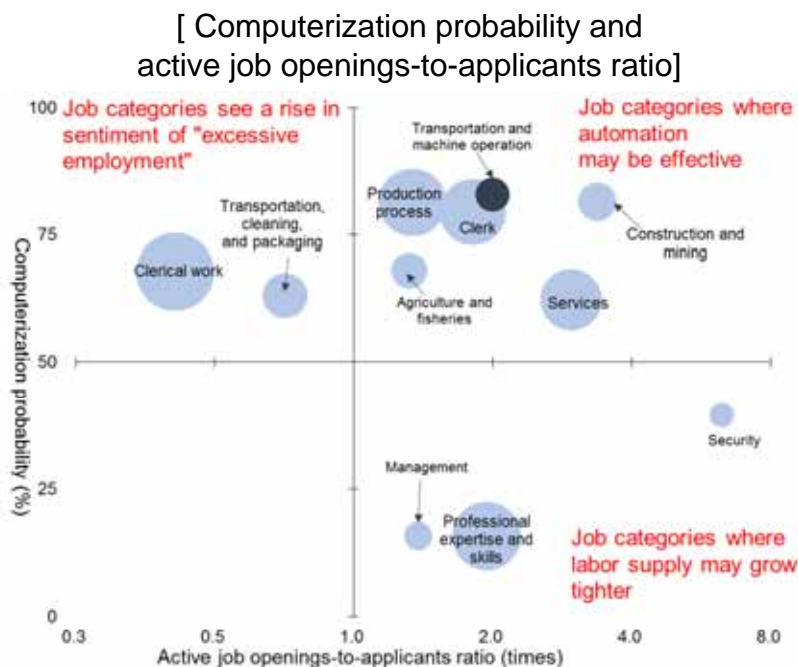
[State of implementation of Off-JT and planned OJT]



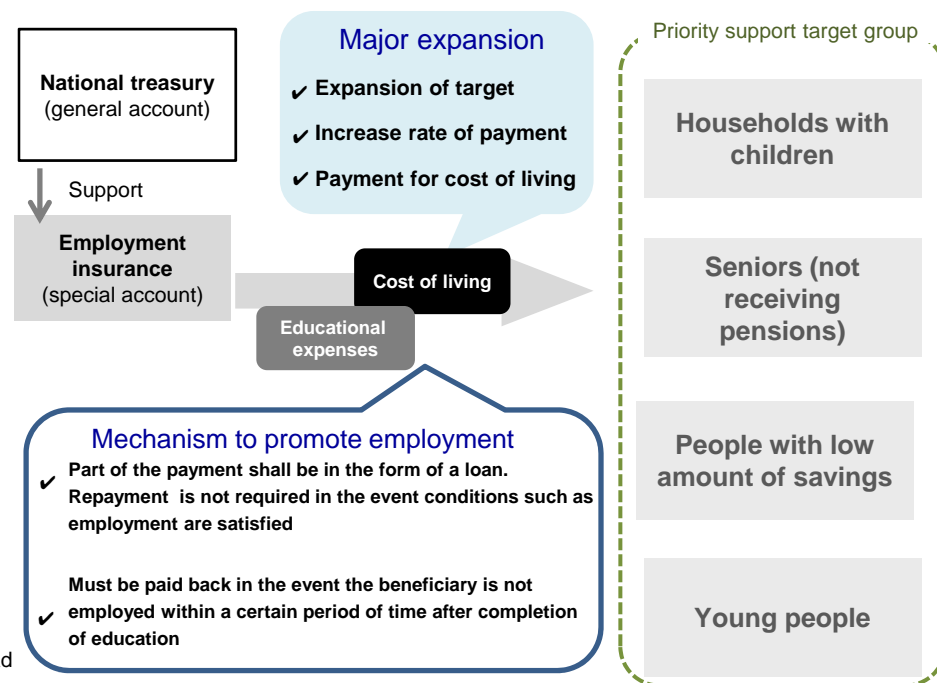
Note: Percentage of business establishments regarding OFF-JT and planned implementation of OJT.
 Source: Made by MHRI based upon the Ministry of Health, Labour and Welfare, *Basic Survey of Human Resources Development*

Issue (3) How to improve productivity: promotion of recurrent education is effective from the perspective of resolving the mismatch in the labor market

- ❑ The mismatch in the labor market will rise further in the event automation due to AI and robots continues to progress.
 - In contrast to the rise of sentiment of “excessive employment” in job categories such as clerical work, labor supply in job categories such as technical professions will grow tighter.
- ❑ It is effective to promote investment in recurrent education and upgrade individual value (quality of labor) and resolve the mismatch in the labor market.
 - In addition to a significant expansion of recurrent education (for example, education and training benefits), the establishment of a mechanism to encourage employment is also a possible measure.



[Expansion of safety net in order to support recurrent education]



Note: “Computerization probability” refers to the probability of replacement by a computer in the broad meaning including AI, in the next 10 to 20 years. Note that this does not include employment creation generated by new technology such as AI, etc. The size of the bubble indicates the number of employed persons.

Source: Made by MHRI based upon Frey and Osborne (2017), Hamaguchi and Kondo (2017), the Ministry of Internal Affairs and Communications, *Census*, the Ministry of Health, Labour and Welfare, *Employment Referrals for General Workers*

Note: The contents shown in this chart represent significant enhancements of the current education and training benefit systems that supports the development and careers of working people.

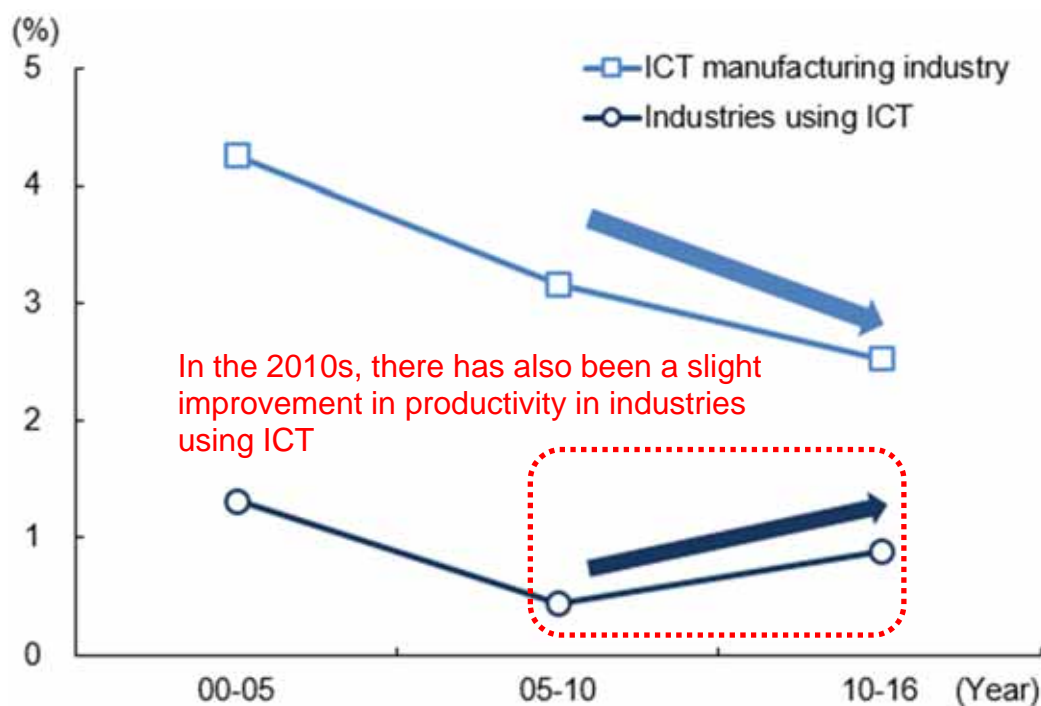
Source: Made by MHRI

Issue (3) How to improve productivity:

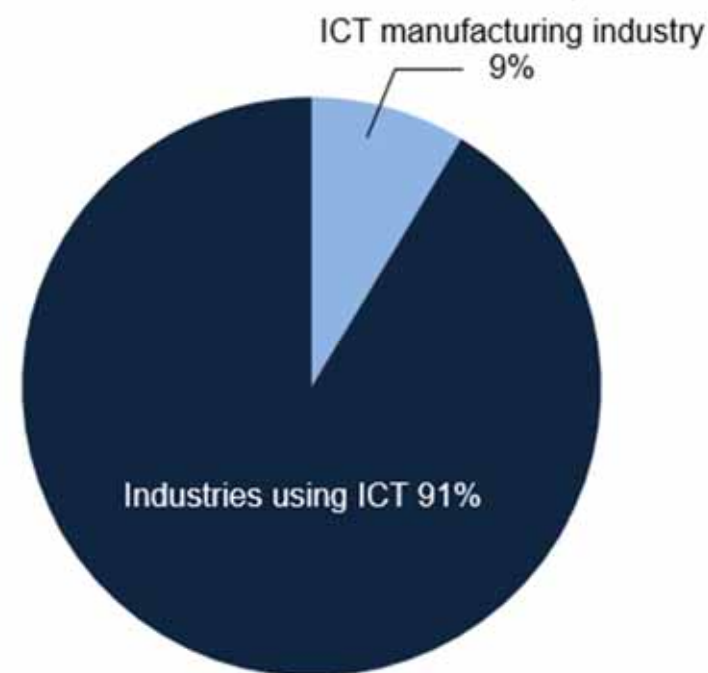
improve productivity of industries using ICT by utilizing AI and IoT in addition to supplementary investments

- The ICT manufacturing industry is the driver of labor productivity in Japan. In the 2010s, there has also been a slight improvement in productivity of industries using ICT.
 - In order to raise the overall productivity of Japan, it is necessary to raise the productivity of industries using ICT which have a large weight in GDP through organizational reforms and supplementary investment for human resources development, etc., in addition to investing in AI and IoT.

[Labor productivity (real, annual average growth rate)]



[(Reference) Weight in GDP (2016)]



Note: 1. Labor productivity per person and hour. Actual results.
 2. There are 4 ICT manufacturing industries: electronic parts & devices, electrical machinery, information and communication equipment, and the information and communications industry. Industries using ICT refers to other industries.
 Source: Made by MHRI based upon the Cabinet Office, *National Accounts*

Note: There are 4 ICT manufacturing industries: electronic parts & devices, electrical machinery, information and communication equipment, and the information and communications industry. Industries using ICT refers to other industries.
 Source: Made by MHRI based upon the Cabinet Office, *National Accounts*

[Reference] Medium-term outlook on the Japanese economy (1)

[Outlook on the Japanese economy]

| | | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|--------------------------|--------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | FY | | | | | | | | | | | | | |
| GDP (real) | Y-o-y % ch | 1.4 | 1.2 | 1.6 | 1.2 | 0.8 | 0.6 | 0.9 | 1.1 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 0.8 |
| Personal consumption | Y-o-y % ch | 0.8 | 0.3 | 0.9 | 0.8 | 0.6 | -0.0 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.6 | 0.6 | 0.5 |
| Housing investment | Y-o-y % ch | 3.7 | 6.2 | -0.3 | -3.0 | -0.0 | -5.2 | 0.3 | -2.1 | -4.2 | -4.4 | -4.3 | -3.7 | -2.6 | -1.2 |
| Capital investment | Y-o-y % ch | 2.3 | 1.2 | 3.2 | 2.8 | 2.4 | 1.2 | -0.1 | 1.9 | 2.6 | 2.8 | 2.0 | 1.8 | 1.6 | 1.0 |
| Government consumption | Y-o-y % ch | 1.9 | 0.5 | 0.7 | 0.7 | 0.9 | 1.0 | 1.3 | 1.3 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Public investment | Y-o-y % ch | -1.6 | 0.9 | 1.4 | -1.0 | 1.3 | 1.9 | -0.0 | 0.5 | 0.6 | 0.4 | 0.3 | 0.1 | -0.0 | -0.0 |
| External demand | Y-o-y contribution, % pt | (0.1) | (0.8) | (0.4) | (0.2) | (-0.0) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) |
| Exports | Y-o-y % ch | 0.8 | 3.6 | 6.2 | 3.9 | 2.4 | 2.1 | 1.8 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 |
| Imports | Y-o-y % ch | 0.4 | -0.8 | 4.0 | 2.8 | 2.7 | 1.6 | 1.5 | 1.4 | 1.5 | 1.4 | 1.4 | 1.5 | 1.5 | 1.5 |
| GDP (nominal) | Y-o-y % ch | 3.0 | 1.0 | 1.7 | 1.2 | 1.3 | 1.4 | 1.3 | 1.7 | 1.6 | 1.5 | 1.4 | 1.4 | 1.3 | 1.2 |
| GDP deflator | Y-o-y % ch | -0.2 | 0.1 | 0.1 | 0.0 | 0.5 | 0.8 | 0.5 | 0.6 | 0.4 | 0.4 | 0.4 | 0.5 | 0.3 | 0.3 |
| Domestic demand deflator | Y-o-y % ch | -0.5 | 0.6 | 0.6 | 0.9 | 0.8 | 0.9 | 0.1 | 0.1 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 |
| Potential growth rate | Y-o-y % ch | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1.0 | 1.1 | 1.1 | 1.1 | 1.0 | 0.9 | 0.9 | 0.8 |
| Output gap | % of potential GDP | -0.3 | -0.1 | 0.5 | 0.7 | 0.5 | 0.1 | -0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 |

Note: Figures in the shaded areas are outlooks.

Source: Made by MHRI based upon Cabinet Office, etc.

[Reference] Medium-term outlook on the Japanese economy (2)

[Outlook on the Japanese economy (major economic indicators)]

| | | 2015 FY | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|--------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Household disposable income | Y-o-y % ch | 1.5 | 0.7 | 1.2 | 1.4 | 1.1 | 0.8 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.9 |
| Nominal wages | Y-o-y % ch | 0.2 | 0.4 | 0.7 | 0.7 | 0.8 | 0.6 | 0.5 | 0.6 | 0.7 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| Rate of savings | % | 1.0 | 2.1 | 2.1 | 1.7 | 1.2 | 1.1 | 0.9 | 0.8 | 0.5 | 0.3 | 0.1 | -0.2 | -0.5 | -0.6 |
| Unemployment rate | % | 3.3 | 3.0 | 2.7 | 2.6 | 2.7 | 2.7 | 2.7 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| Current account surplus | JPY trillion | 18.3 | 21.0 | 21.7 | 17.2 | 16.4 | 19.2 | 19.5 | 20.1 | 20.4 | 21.0 | 21.4 | 21.6 | 21.2 | 22.1 |
| Investment savings (IS) balance | % of GDP | 3.0 | 3.3 | 4.0 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.3 | 3.1 | 3.1 | 3.1 | 3.1 | 3.2 |
| Corporate sector | % of GDP | 4.6 | 4.7 | 5.5 | 4.5 | 3.8 | 3.6 | 4.0 | 4.0 | 3.6 | 3.3 | 3.2 | 3.2 | 3.3 | 3.4 |
| Household sector | % of GDP | 1.3 | 1.8 | 0.9 | 1.2 | 1.3 | 1.4 | 1.1 | 0.8 | 0.9 | 1.0 | 0.9 | 0.8 | 0.6 | 0.5 |
| Government sector | % of GDP | -3.3 | -3.4 | -2.6 | -2.2 | -1.8 | -1.6 | -1.6 | -1.6 | -1.5 | -1.4 | -1.3 | -1.2 | -1.1 | -1.0 |
| Primary balance | % of GDP | -2.7 | -2.6 | -2.0 | -1.7 | -1.4 | -1.3 | -1.3 | -1.3 | -1.3 | -1.2 | -1.1 | -1.0 | -0.9 | -0.8 |
| Outstanding government debt | % of GDP | 239.5 | 237.1 | 234.9 | 233.5 | 231.5 | 229.0 | 226.9 | 223.8 | 221.0 | 218.3 | 215.8 | 213.2 | 210.8 | 208.6 |
| Consumer price, ex fresh foods | Y-o-y % ch | 0.0 | -0.2 | 0.7 | 1.2 | 1.2 | 0.9 | 0.3 | 0.2 | 0.4 | 0.5 | 0.6 | 0.7 | 0.7 | 0.7 |
| " (ex consumption tax) | Y-o-y % ch | -0.1 | - | - | - | 0.7 | 0.4 | - | - | - | - | - | - | - | - |
| Consumer price, ex fresh foods and energy | Y-o-y % ch | 1.0 | 0.3 | 0.2 | 0.5 | 1.0 | 0.9 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 |
| " (ex consumption tax) | Y-o-y % ch | - | - | - | - | 0.5 | 0.5 | - | - | - | - | - | - | - | - |

Note: Figures in the shaded areas are outlooks. Total savings and investment balance includes financial institutions, as well as non-profit institutions serving households.
Outstanding government debt refers to the value of general government (central government/local government/social security fund) in SNA.

Source: Made by MHRI based upon relevant statistics

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