April 2014
The 40th Medium-Term Economic Forecast (2013FY—2025FY)

Scenario for Achieving Both Economic Growth and Fiscal Consolidation

— Verifying Japan’s Economic Fundamentals

JCER Medium-Term Economic Forecast Team

<Summary>

The Japan Center for Economic Research released its 40th Medium-Term Economic Forecast for 2013FY through 2025FY. The Japanese economy currently faces concern that not only the population but also capital stock is declining and aging. In this economic situation, fiscal consolidation has become a burning issue. Although a decision to raise the consumption tax rate from this April has been made, and a second increase in 2015 is also on the horizon, further consumption tax hikes are unavoidable in view of projections of population decline and population aging. This medium-term economic forecast verifies Japan’s economic fundamentals, assuming consumption tax is increased further to achieve fiscal consolidation.

The consumption tax rate needs to be raised in annual increments of 1% from FY2017 (reaching 19% in 2025).

If the consumption tax rate is increased in annual increments of 1% from FY2017, economic growth of around 0.9% will be achieved from FY2013 to FY2025, and it will be possible to turn the central and local governments’ primary balance positive in FY2025. On the other hand, under a consumption tax rate not exceeding 10%, economic growth of around 1.1% would be achieved from FY2013 to FY2025, but the primary balance would remain in negative territory, showing a deficit of around 3% of nominal GDP, and the sovereign default risk would rise.
Further consumption tax hikes will add to the household burden, and the decline in the household savings rate is expected to steepen. Consequently, it will be difficult for consumption to grow.

Because consumption will be restrained, upward pressure on prices will remain weak, making it difficult for the Bank of Japan to achieve its 2% price stability target, even with the projected consumption tax hikes. It is not easy to achieve the Bank of Japan’s price stability target.

The national savings rate, which was in a downward trend, will stabilize due to the reduction in the fiscal deficit. The increase in national savings makes it possible to sustain the correction of the strong yen and low real interest rates brought about by Abenomics for medium-to-long-term and it will support growth in exports and investment.

The recent fall of the current account surplus is largely due to the increase of imports to fill the last-minute demand before the consumption tax hike.

In the main scenario, where the consumption tax rate is raised to 19%, fiscal consolidation will support the national savings, and as a result, current account deficit is put off for the time being. In the scenario where the consumption tax rate stays 10%, the current account will turn deficit in late 2010s.

Due to the shift of production site to overseas and a hollowing-out of the consumer electronics equipment production, structural changes may be occurring that curb exports and increase imports. If the current account turns negative, the ratio of government securities holding by foreign investors increases and it may destabilize the market.
Private capital stock, which forms the foundation for production capacity, will be maintained at a level commensurate with the size of the economy because private investment will grow.

Although demand for replacement investment will increase significantly in the future, public capital stock will generally remain at a stable level compared with the size of the economy until FY2025, provided the level of government fixed capital formation recorded in FY2010 is maintained. However, there will be regional differences, necessitating selection of the public capital to be maintained.

The Survey of Adult Skills of the Organization for Economic Co-operation and Development (OECD) published in October 2013 showed that Japan boasts the highest quality adults among the participating countries. On the other hand, considering there is no difference between men and women in adult skills, opportunities for women in Japanese society are limited, and the high level of adult skills is not being translated into economic outcome. There remains much room for improvement.

Conclusion of the Trans-Pacific Partnership (TPP) will not only improve the export environment, it will also encourage investment in Japan. Corporate tax cuts are also needed to bring about expansion of investment in Japan and the introduction of more superior technologies.

While Japan’s hosting of the Tokyo Olympics and Paralympics is also expected to bring economic benefits, due to the large overlap with the existing social infrastructure development plans of the Tokyo Metropolitan Government, production inducement effect, including the years running up to the games and beyond, will be around 3.9 trillion yen, which is limited given that Japan’s annual gross domestic product (GDP) is around 500 trillion yen. Benefits such as the promotion of sport and the improvement in people’s mental and physical health, social connections and international friendship achieved through sport will not necessarily be reflected directly in GDP, but it is hoped that, in the long-term, the games will have the effect of raising levels of welfare and also productivity.
Global Economy & Energy

Largely due to the shale revolution, the energy price outlook is slightly more soothing. Further power savings will be made, and this forecast expects that, in 2030, power consumption will be 20% lower than the 2010 level.

The Chinese economy will end the phase of high-growth led by the investment, and just as Japan 40 years ago and South Korea 20 years ago, its pace of growth is expected to slow in the future and will probably be around 3% from 2020 onwards.

Global growth will be around 3% over the period of the forecast, about the same with the 2000s. Global growth weighted by the shares of Japan’s export destinations will be 4% in the early 2010s, 3.7% in the late 2010s, and 3.1% in the early 2020s, maintaining a high level of growth due to the comparatively high growth of Asian markets and other main export destinations.

Due to factors such as improvement in the export environment and low growth in imports as a result of restrained consumption, a current account deficit will be only small in 2025.

Policy Proposals

Without further consumption tax hikes, sovereign default cannot be avoided.

In the event of further consumption tax hikes, it is advisable that wages are raised and the strain of increased tax payments on households is reduced. Wage increases are important because they will ensure that Japan escapes from deflation.

Utilization of human capital through greater support for female labor force participation, the efficient selection of public capital stock and development of ways to maintain and manage it are also essential to support growth.

Market access and improvement of the export environment through the conclusion of the TPP is a prerequisite for economic growth. Corporate tax cuts are also necessary to increase investment in Japan.

The restriction of growth by energy concerns should be avoided through measures such as more efficient use of energy through the promotion of power saving and clarification of the positioning of nuclear power generation.
Medium-Term Forecast: 2013-2025

Figure: Outlook for the Primary Balance and Current Account

Table: Medium-Term Forecast of the Japanese Economy (2013FY-2025FY)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Unit</th>
<th>2006</th>
<th>2011</th>
<th>2016</th>
<th>2021</th>
<th>2025</th>
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<tr>
<td>Real GDP</td>
<td>growth rate, %</td>
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<td>Private final consumption expenditure</td>
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<tr>
<td>Private Non-Resi. Investment</td>
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<td>2.8</td>
<td>2.8</td>
<td>2.6</td>
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<tr>
<td>Exports of Goods &amp; Services</td>
<td>growth rate, %</td>
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<td>2.1</td>
<td>3.8</td>
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<tr>
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<td>4.5</td>
<td>2.3</td>
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<tr>
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<td>1.4</td>
<td>1.2</td>
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<td>Capital–output ratio (Public capital)</td>
<td>ratio to GDP</td>
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<td>1.5</td>
<td>1.5</td>
<td>1.4</td>
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<tr>
<td>Capital–output ratio (Private capital)</td>
<td>ratio to GDP</td>
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<td>2.6</td>
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<td>Consumer Price Index</td>
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<tr>
<td>Compensation of employee per capita</td>
<td>growth rate, %</td>
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<td>1.1</td>
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<td>Household savings rate</td>
<td>%</td>
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<td>Primary balance</td>
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<td>Unemployment rate</td>
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<td>Crude oil price (WTI)</td>
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<td>Vs. 1990, %</td>
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<td>10.0</td>
<td>6.5</td>
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<td></td>
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</table>

Notes: 1. Capital–output ratio (Public capital) = Real public capital stock (Gross)/Real GDP.
2. Capital–output ratio (Private capital) = Real private capital stock (Gross)/Real GDP.
3. Primary balance of central and local governments.
4. Outstanding debt of central and local governments.
5. World real GDP is an average weighted by exports from Japan.
6. All figures with ※ are those of the end year, the others are period average (growth rates are annualized).

1. Issues Facing Japan’s Economy

As is widely known, the Japanese economy is beleaguered by an aging population but, as though in concert with this, the economy is also aging. This means a shrinking labor force due to population aging and a rise in the average age of private and public capital stock.

If we examine capital first, the average age of the capital stock of private enterprises in Japan has reached 16 years, while the average age of public capital stock is close to 20 years (Fig. 1-1). If maintenance is neglected and nothing is done about the aging of capital stock, this will lead to a decline in competitiveness and a decline in productivity. Additionally, new investment in existing stock has decreased in relative terms and the growth rate of capital stock has also slowed, and the level of capital could pose potential problems in the future.

**Figure 1-1 The average age of public and private capital stock**

Turning to the labor force, unless the labor force participation rate of the elderly improves, population aging will lead directly to contraction of the labor force (Fig. 1-2). Contrary to expectations, the labor force participation rate of people aged 65 and over has, if anything, fallen in the past 20 years.
Add to this the problem of the fiscal deficit. Prime Minister Shinzo Abe decided on October 1, 2013 to raise the consumption tax in April 2014, in accordance with legislation related to the Comprehensive Reform of Social Security and Tax. However, this is literally just the first step along the road to fiscal reconstruction, and consumption tax hikes that go beyond the legislation related to the Comprehensive Reform of Social Security and Tax need to be sought. Based on the initial budget, in FY2013, national and local government tax revenues (43.1 trillion yen) will at last – for the first time in four years- exceed income from issuing public bonds (42.9 trillion yen). This amount of public deficit is equal to around 9% of nominal GDP. At the current consumption tax rate of 5%, the consumption tax revenue/nominal GDP ratio is 2.7% (FY2011) and even if the consumption tax rate increases to 10% as planned, tax revenues will, at best, still account for only around 5% of GDP. By simple calculation, only when the tax rate reaches at least three times its current level will it at last be possible to reduce the new issuance of public bonds to zero, and to improve the fiscal balance so that the balance of debt stabilizes, a considerable public burden will be required in the future.

In this forecast, JCER verifies the strength of Japan’s economic fundamentals, and extracts issues to be addressed in order to achieve both growth and fiscal reconstruction. More specifically, our examination focuses on the following points:

- If additional consumption tax hikes are made until fiscal default becomes avoidable, what level will the consumption tax rate reach and what kind of changes will occur in the national economy as a whole?
- Are Japan’s economic fundamentals strong enough to withstand further tax hikes? How will the labor force, capital stock and productivity change?
- Will a bold change in monetary policy by the BOJ lead to an exit from deflation in the medium term?
- How will major changes in energy market trends such as energy saving and the shale revolution affect the economy?
2. Assumptions of Forecast

We estimated global economic trends using labor productivity growth trend and for China, we used projections that took into account a transition of growth phase into consideration. We used macroeconomic models and input-output analysis to make simultaneous predictions about industry and the economy, and we based our forecast for total factor productivity on the assumption of annual growth of 0.53%, a trend obtained from data for 1994-2007. Details are as follows.

(1) Global economy and exchange rates

Doubts have started to spread about the high growth of emerging countries, which were previously the engines of global economic growth. Japan has made the transition from a high economic growth phase to a stable growth phase and a low growth phase, and China, where per capita income has reached around 10,000 dollars in real terms, will also inevitably enter a low growth phase. It will be difficult to maintain high growth through the accumulation of capital as in the past, and China’s growth is expected to start to slow in the near future, like Japan 40 years ago and South Korea 20 years ago (Fig. 2-1).

Figure 2-1 The economic growth rate of Japan and Korea, and the assumption of growth rate of China

Note: The boxes in the figure above show the year t where the slowdown in growth from (t−7) through t average to t through (t+7) average was the biggest, and the difference in growth.
However, due to economic recovery in the United States and expansion of the shares in the world economy of emerging countries that achieve relatively high growth such as India and China, global economic growth is likely to hover at around 3%, slightly higher than the 2000s’ average, when it was hit by the Lehman crisis and ranged from 2.5% - 2.9%. Furthermore, Japan’s main export destinations include a comparatively large number of emerging countries, especially Asian countries, and Japan-export-weighted-world GDP growth is likely to be around 1% higher than world GDP growth for the time being (Fig. 2-2).

Figure 2-2 The outlook of world economic growth rate

On the other hand, Japan’s economic growth rate will be around 1%, as explained later, and Japan’s share in the world economy will continue the downward trend that began in the late 1990s (Fig. 2-3).

Figure 2-3 Share of world GDP by country and region

Note: GDP at market exchange rates
Source: IMF, “World Economic Outlook”
Also, this forecast reflects a difference in prices between Japan and the United States after sustained depreciation of the yen against the dollar due to bold monetary easing, and assumes that nominal rates will rise modestly, helping restore purchasing power parity (Fig. 2-4).

(2) Labor force

For population by age, we used the medium variant projections of the National Institute of Population and Social Security Research. For labor force participation rates, we assumed that the labor force participation rates for each age group would remain the same as the FY2012 level for men and would gradually increase for women. However, it is inevitable that the labor force participation rate will fall overall because the elderly, who have a low labor force participation rate, will come to account for a larger share of the population, and as a result, labor force growth will be -0.6% in the early 2010s, -0.4% in the late 2010s, and -0.6% in the early 2020s.

(3) Energy supply

We assumed that nuclear power plants would be decommissioned after 40 years in operation, and we anticipate that nuclear power plants with less than 10 years’ lifetime remaining as of FY2013 will not be brought back into operation. Also Fukushima Daiichi Nuclear Power Plant and Fukushima Daini Power Plant operated by Tokyo Electric Power Company are expected to be decommissioned. It is assumed that other nuclear power plants will gradually be brought back into operation from now through FY2016 and will be taken offline as soon as 40 years have passed.

(4) Fiscal policy

(i) Tax system and social insurance

Our forecast is based on assumptions such as the following:

- Consumption tax rate: Raised to 8% in April 2014 and to 10% in October 2015. The rate will then be raised in annual increments of 1% from FY2017, reaching 19% in FY2025. (Details are explained in “3. The need for further tax increases.”)
- Welfare pension insurance premiums: Raised in annual increments of 0.354%, reaching 18.3% from FY2017
- Welfare pension income replacement rates: Expected to fall by around 0.6% points a year on average, due to macroeconomic slide, etc., from 65% in FY2009 to around 55% in FY2025.
- Insurance share of payment of medical care and nursing care expenses: Unchanged (the residual is borne by national/local government)
- Corporate tax rate (effective tax rate): 36.1% (From FY2014)

(ii) Government investment

- The National Resilience Plan states that investment of around 200 trillion yen should be made over the coming 10 years, but this includes private-sector investment and, judging from the budget bill that reflects this plan, it may not expand current government investment including reconstruction cost much further. Although expansion in replacement costs is anticipated in the future, there is likely to be a lack of finance for expanding government investment further and we expect that, from FY2017, government investment will remain at the same level as FY2010 in real terms because reconstruction demand will settle temporarily.
3. **The need for further tax increases**

(1) **Increasing burden of medical and nursing care expenses, and tax hikes**

As mentioned earlier, Japan’s fiscal situation is already serious and it is expected to deteriorate further in the future. Let us try to forecast trends in medical care expenses and nursing care expenses, which are one of the main causes of this situation.

We forecast the spending based on demographic changes by age group, having extended the upward trend line of medical care expenses and nursing care expenses per capita by age group seen in the past 5 years (excluding 2011 when the Great East Japan Earthquake occurred). The results showed significant increases in both national medical care expenses and national nursing care expenses with national medical care expenses rising from 38.6 trillion yen in FY2011 to 59.2 trillion yen in FY2025 and national nursing care expenses climbing from 7.9 trillion yen in FY2011 to 14.2 trillion yen in FY2025 (Fig. 3-1, 3-2). While further rationalization is essential, improvement of wages in the nursing care labor market is also an issue, and there is no easy answer.

![Figure 3-1 National medical care expenditure](image1)

![Figure 3-2 National long-term care expenditure](image2)
(2) Changes in the primary balance and the size of tax hikes

Given Japan’s current economic growth capacity, substantial tax hikes are required to prevent the balance of government debt from rising and it will be impossible to turn the primary balance positive through the recently confirmed move of increasing the consumption tax rate to 10% alone.

Fig. 3-3 shows how the primary balance would change assuming that the tax system as currently planned remains in place. The primary balance would still not have moved into positive territory by 2020, and there would be no narrowing of the deficit thereafter. This is because the population in their prime working ages will decline while the number of elderly will continue to increase and so tax revenues will show slow growth as expenditures keep on rising.

Fiscal reconstruction also has the effect of stopping the current account deficit from becoming serious. Under the main scenario where Japan aims for fiscal reconstruction, the current account deficit is only small in FY2025. Under the scenario where Japan does not pursue fiscal reconstruction, the current account balance turns negative in the late 2010s and the deficit continues to widen, reaching 3% of GDP in FY2015 (Fig. 3-4). In this case, Japan’s position would no longer be sustainable in the context of external, as well as internal economy.

Figure 3-3 The primary balance of central and local government

Figure 3-4 Current account balance of Japan’s economy
Consequently, the consumption tax rate needs to be raised further and, in this medium-term forecast, we assumed that the tax rate would be increased in annual increments of 1% from FY2017 at least throughout the period of the forecast (until FY2025), reaching 19% in FY2025. However, such tax hikes would put enormous strain on household budgets. If we look at household budgets according to the system of national accounts, the savings rate is already on the verge of turning negative and this is bound to bring uncertainty to the consumption outlook. In the following sections, we check whether demand side GDP which is composed of consumption, investment, government expenditure and net exports could withstand further tax increases and grow and if so, what conditions would be required for this.

(3) Sovereign default and the cost of Greece default

The strain of further tax increases is, of course, something everyone - especially the entities that will be taxed - would like to avoid but, now that Japan’s government debt has ballooned to a level way surpassing that of other advanced countries, fiscal reconstruction to avert a crisis is a cost that must be shouldered in view of the enormity of the cost should Japan fall into fiscal crisis. Under the main scenario of raising the consumption tax rate to 19% by FY2025, a rise in the total government debt/GDP ratio can be prevented. Under the scenario of keeping the consumption tax rate at 10%, total government debt will continue to expand further to over double GDP (Fig. 3-5).

Let us try comparing the data of Greece, which fell into a severe fiscal crisis, with OECD average data and Japan data. In all three cases (Japan, OECD average data and Greece), real GDP per capita peaked in 2008 around the Lehman shock and then fell (Fig. 3-6). While it had almost recovered by 2012 in the case of the OECD average and Japan, in Greece’s case it was still 20% below the peak level. If we look at unemployment data, the situation is even more severe, as Greece’s unemployment rate more than tripled, rising from 7.7% in 2008 to 24% in 2012 (Fig. 3-7). This level is almost the same as the unemployment rate in the United States at the time of the Great Depression (23.4% in 1933). Japan needs to pursue fiscal reconstruction so that it does not put such an intense strain on future generations.

Figure 3-5 Economic indicators in an alternative scenario where consumption tax remains 10%

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<tr>
<th></th>
<th>Real GDP growth rate</th>
<th>Nominal GDP growth rate</th>
<th>Real consumption</th>
<th>CPI(All items)</th>
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<td></td>
<td>Main Scenario</td>
<td>No tax hike</td>
<td>Main Scenario</td>
<td>No tax hike</td>
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<tr>
<td>2011–15</td>
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<td>0.71</td>
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<td>2021–25</td>
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<th>Household savings rate*</th>
<th>Primary balance(% of GDP)*</th>
<th>Government debt(% of GDP)*</th>
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<td>Main Scenario</td>
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<td>2011–15</td>
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Note: Growth rate are annualized averages. * are those of the end year.
Figure 3-6 Real GDP per capita (Greece, Japan and OECD average)

Note: Constant PPPs
Source: OECD, “Economic Outlook”

Figure 3-7 Unemployment rates (Greece, Japan and OECD average)

Source: OECD, “Economic Outlook”
4. **Strength of fundamentals on the demand side**

   (1) **Wages, prices and interest rates**

   Corporate profits that influence wages are at a high level.

   Major factors in determining the consumption trend are trends in household income and consumer prices. First, let us look at corporate earning capacity, to examine wages, which account for a large portion of household income. The ordinary profit of Japanese corporations has returned to a high level (Fig. 4-1). Equity ratios are also high (Fig. 4-2) and Japanese corporations can currently be said to have a level of earning capacity comparable with pre-Lehman levels.

![Figure 4-1 Ordinary profits of enterprises (Seasonally adjusted series)](chart1)

Source: Ministry of Finance “Financial Statements Statistics of Corporations”

![Figure 4-2 Ratio of net worth of enterprises](chart2)

Note: Ratio of net worth = (Net assets – Subscription rights to shares) / (Liabilities and capital) × 100


**For workers to move to the nursing care sector, working conditions need to improve**

There will also be upward pressure on wages in the medium term. In the nursing care sector, the labor supply-demand balance is already tight and, for employment to expand in this sector in the future, new workers need to be attracted to the sector and held, and for this to happen, improvement in the level of wages and treatment is needed (Fig. 4-3). Also, this sector has always had a large proportion of female employees. Therefore, improvement of working conditions in the nursing care sector is likely to contribute
to raising the average wage for women.

The tight labor supply-demand balance in the nursing care sector is also an argument for demanding expansion in the immigrant labor force. The acceptance of immigrant labor is also expected to serve as a driving force promoting domestic globalization in Japan.

**Figure 4-3 The outlook for long-term care labor demand and supply**

Promotion of the use of women and the elderly will happen in parallel with improvement in wages

Elimination of the M-shaped curve that characterizes the labor force participation rate of women and continued employment of the elderly are expected to happen in parallel with improvement in the productivity and wages of women and the elderly. This is because, among women and the elderly, the level of the last academic institution attended is higher in the younger age groups. Research results have also been published showing that when elderly people work, their health improves\(^1\), and promoting the employment of elderly people is a policy with value above and beyond its effect on pension finance.

Prices will rise but will not reach the 2% target

Turning to the consumer price trend which may affect wages and consumption, consumer prices are also likely to start rising due to a narrowing of the supply-demand gap brought about by monetary policy and economic recovery, and the consumption tax hikes (Fig. 4-4). However, further consumption tax hikes will have the effect of suppressing consumer expenditure on the one hand and widening the supply-demand gap. Consequently, it is forecasted that consumer price inflation will be limited and, in the period from FY2015 to FY2025, inflation – even including the effect of the consumption tax hikes -will not exceed the BOJ’s price stability target of 2%.

The rise in nominal interest rates will be curbed and, as a result, real interest rates are expected to remain

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\(^{1}\) For example, Kuhn et al. (2010) “Fatal Attraction? Access to Early Retirement and Mortality,” IZA Discussion Paper No. 5160 reports the finding that in the case of Australian men, retiring one year early shortens life by 1.8 months. The cause in around one third of cases is an increase in smoking and alcohol intake.
at a low level. The fact that issuance amount of JGBs will decrease as fiscal reconstruction progresses is also likely to ease the upward pressure on long-term interest rates.

Figure 4-4 Inflation and nominal interest rate

Tax credit for salary growth
Wage increases are also being given a boost by policy measures. In October 2013, the government further extended the tax credit for salary growth, which it only introduced in April, and if a company raises the wages of regular employees by 2% or more, it is now eligible for a tax credit equal to a certain percentage of the wage increase.\(^2\) The sense of an employment shortage is also increasing and conditions conducive to wage increases are being created.

Regular pay hikes will not lead to increased wages
On the other hand, when we examined how the wage income of the household budget would change as a result of future changes in the demographic structure and changes in the industrial structure assuming that there will still be no change in wages for different sectors and for different genders and ages in the future, we found that although the wage income of the household budget would increase slightly overall (Fig. 4-5), largely because the percentage of women engaged in industries with higher wages would increase, the rate of increase would be less than 0.1% on an annualized basis. In the current situation, wage raises through regular pay hikes, where pay increases in line with age-based wages of each company, are not enough on their own to push up wages on a macroeconomic scale.

\(^2\) A tax credit of 10% of the pay increase is awarded, limited to 10% of the company’s corporate tax liability (20% in the case of SMEs).
Figure 4-5 The increase in estimated average earnings due to the industrial structure and demographic change when earnings by industry, gender and age are fixed

![Figure 4-5 Graph](image)

Ideally, wage hikes should be given to minimize the reduction in the real value of household income resulting from the consumption tax hikes. However, if we look back over the past 20 years, we see that, even in the mid-2000s, when the labor market was fairly tight, the per capita compensation of employees did not increase. It is predicted that, unless there is a change in corporate wage setting behavior or severe tightening of the labor supply-demand balance, wage growth is unlikely to exceed consumer price inflation (Fig. 4-6). We would like to see some effort on the part of labor and management.

Figure 4-6 Compensation of employees per capita

![Figure 4-6 Graph](image)

(2) Consumption and household savings – Household savings will move into negative territory

Due to aging, consumption tax hikes and per capita compensation growth that is lower than inflation, the household savings rate, which is already near to zero, is expected to move into negative territory in the future (Fig. 4-7). Measures for people with low incomes such as the introduction of the making work pay tax credit will no doubt become essential.
As explained above, inflation will exceed income growth, and it is difficult to imagine that household budgets, which are turning negative, will give a big boost to consumption. Consumption is, at best, expected to remain within the same range (Fig. 4-8).

Figure 4-8 Real private final consumption expenditure

(3) Investment – Private-sector investment will increase steadily

As explained above, corporate earnings have improved, and, on the funding (capital) side, conditions are becoming more conducive to investment. Since, in the Japanese economy as a whole, the savings rate will rise due to the consumption tax hikes, real interest rates will be kept down and the investment climate on the cost side will also improve. The export environment will also pick up and private sector investment is likely to increase steadily. However, since the amount of overseas investment will expand and growth in domestic private-sector consumption will be limited, there will also be a limitation on investment growth (Fig. 4-9, 4-10).
(4) Net exports – The export environment will improve due to the correction of the strong yen

If household consumption will, at best, stay within the same range and there are limitations on investment growth, as explained above, unless net exports expand to a considerable degree, economic growth cannot be expected due to constraints on the demand side. The world economy as a whole is expected to expand steadily compared with the 2000s when the Lehman collapse occurred, and the export environment in Japan can improve accordingly.

In particular, the correction of the strong yen will significantly improve the corporate earning environment, and recovery in price competitiveness is likely to bring about expansion in corporate exports. However, in the long term, forces that will restore purchasing price parity are likely to kick in (Fig. 2-4).

Meanwhile, on the imports side, changes in energy prices will play an important role. Although some nuclear power plants are expected to be brought back into operation, operations will not return to their former level and so the amount of imports of fossil fuels for power generation will increase and the deficit trend of the trade balance is likely to continue. Also, while the shale revolution that started in the United States spreads and fossil fuel supply capacity increases worldwide, global crude oil demand will grow due to factors such as global economic growth and the suspension of nuclear power generation in Japan (Fig.
The resource prices Japan has to contend are likely to rise in the medium term, with no major price collapse anticipated (Fig. 4-12). However, we believe that crude oil prices will be around 40 dollars a barrel cheaper in 2025 than forecasted last fiscal year (estimated at 197 dollars in 2025 last fiscal year). With regard to the shale revolution, forecasts vary widely and it is necessary to prepare for various scenarios and, in this forecast, we conduct simulations based on different crude oil price assumptions in the section called “7. Energy and CO2.”

The conclusion of the TPP being pushed by the Government may have a significant impact on the agriculture, forestry and fisheries industry. Although conditions are still under negotiation at the present time, according to the estimates published by the Cabinet Secretariat, over a 10-year period, real GDP is expected to improve 0.66% and exports and imports are expected to increase 2.6 trillion yen and 2.9 trillion yen respectively (Fig. 4-13).

While the impact on the growth rate will be limited, the effect of the TPP is a change of level, which when enjoyed over the long term will bring major economic benefits. At a time when Japan must urgently develop new export industries and improve the competitiveness of existing industries to maintain growth potential, participation in the TPP is undoubtedly an important move. In terms of exports, Japan’s terms of
trade will improve if it becomes possible to import relatively cheap natural gas from the United States.\(^3\)

As a little-discussed aspect, the TPP will have the effect of correcting the disparity in income levels. The elimination of tariffs in the agriculture sector can be expected to reduce the expenditure of elderly people with low incomes by lowering food prices especially rice prices.

![Figure 4-13 The effect of TPP (Cabinet Secretariat trial estimates)](image)

Thus, due to factors such as low growth in imports attributable to further consumption tax hikes, the upturn of the export environment and the curbing of fossil fuel imports through energy efficiency improvements, in reals terms, net exports will expand. The widening of the deficit of the trade balance, which is measured in nominal terms, will only be modest and the scenario where the current account balance moves deeper into deficit will be averted (Fig. 4-14). On the other hand, if the government stops making any more consumption tax hikes with the rate at 10%, the current account balance will soon move into the red as imports increase due to growth in internal demand and the deficit will widen.

![Figure 4-14 The forecast of current account balance](image)

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3 Exports of natural gas from the United States are subject to a permitting system, and to obtain a permit to export LNG to a non-FTA country, it is necessary to go through certain procedures until it is judged that it is in the public interest. As of November 2013, two projects had been approved to export to Japan.
5. **Strength of fundamentals on the supply side**

The size of a country’s economy is measured by domestically produced gross added value = GDP, and the source of this added value is divided into two parts called factors of production: labor and capital. The strength of the fundamentals of growth depends how much labor a country has, how much capital it has, and how high its capital and labor productivity is.

(1) **The labor force will shrink**

Looking at changes in the labor force, the labor force is expected to be smaller in 2025 than in 2012 due to decline in the working age population. With the aging of the population, the labor force participation rate will fall. Moreover, the labor force will age (Fig. 5-1). The number of children that will be part of the working age population by 2025 is already determined and the only way to increase the labor force population is to make use of women and the elderly and to actively bring in immigrants.

![Figure 5-1 The outlook of labor force and its age profiles](image)

Figure 5-1 The outlook of labor force and its age profiles

(2) **Capital will increase steadily**

On the other hand, the factors that determine the current level of capital stock (gross capital stock)⁴ that

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⁴ According to "Japan’s Public Capital Stock 2012" published by the Director-General for Policy Planning of the Cabinet Office, there are three ways of measuring capital stock: gross capital stock, which is the stock of assets surviving from past investment and re-valuated at the purchasers prices of new capital goods of a reference period, net capital stock, which is the stock of assets surviving from past periods, and corrected for depreciation, and productive capital stock, which reflects current productive capacity. From a productive capacity perspective, productive capital stock should be used but here gross
is input into production is the existing capital stock that is still usable (existing capital stock less capital stock which needs updating) and newly added capital stock (= investment). The source of funding for this investment is savings, and the savings rate is a factor that influences changes in capital stock over the long term. The factors that determine the macro savings of a country are the savings of the household sector, the corporate sector and the government sector. The macro savings rate has been falling for the past 20 years because the savings rate is declining in the household sector mainly due to aging and has been consistently negative in the government sector. However, the macro savings rate may start to stabilize in the future because the government sector deficit will narrow due to the consumption tax hikes (Fig. 5-2).

![Figure 5-2 Saving rate of total economy](image)

This trend is likely to push up investment and contribute to an increase in capital stock. It will be possible to keep long-term interest rates at a low level because government bond issues will be curbed due to the reduction of the fiscal deficit. Recently, consumption of fixed capital has increased in relative terms but if the fiscal deficit is successfully reduced, this will serve as a spur for investment, and an increase in facilities and equipment per capita will be possible in the medium and long term.

To use the Solow growth model, theoretically, in the long-term, while the marginal productivity of capital gradually decreases as a result of capital accumulation, fixed capital consumption expands in proportion to the accumulated capital. Therefore, at a certain point, new investment and fixed capital consumption counterbalance each other, and the economy will enter a balanced growth state. In this case, the capital coefficient converges to a constant. If we look at Japan’s capital coefficient (Fig. 5-3), we see that it is around 2.5 times GDP and has actually stabilized, suggesting that Japan has entered a balanced growth state. If the decline in the savings rate continues, a decline in the capital coefficient is feared, but the capital coefficient could be kept stable through a halt in the decline of the savings rate.

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5 Situation where economic growth, capital growth and effective labor (labor including improvements in productivity due to advances in technology) are all consistent. Occurs when capital per unit of effective labor converges.
Collaboration with public capital stock development has also become a major issue. Technology development to efficiently meet new infrastructure demand in response to technology innovation, such as stands for the widespread use of fuel cell vehicles, is also required. To promote efficient improvements through overseas cooperation and the introduction of technology from overseas, it is necessary to break through capital and regulatory barriers. Participation in the TPP is expected to powerfully promote this. In terms of expanding new investment in Japan, measures such as lowering the corporate tax rate, which is set at a higher level than other countries, are also important (Fig. 5-4).

(3) Other production factors

Other factors that determine the production level of the economy as a whole include public capital stock, knowledge-based capital stock and human capital stock.

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6 Gross capital stock is estimated assuming removal rate remains around 4%.
7 For public capital stock, since an income distribution for contribution to production does not exist, contribution to expansion in productive capacity is often taken as contribution to productivity. Also for knowledge-based capital stock...
(i) The capital stock to GDP ratio will remain at the current level

Without public capital such as roads and sewerage systems, the productivity of private capital would be severely limited. Until the late 2000s, Japan spent a large proportion of its GDP on public fixed capital formation compared with other advanced countries, and accumulated public capital stock. As a result, gross public capital stock exceeds 140% of GDP, and is likely to remain more or less at the current level until 2025 (Fig. 5-5).

However, it is forecasted that, from 2025, investment to update public capital stock will further increase, and Japan will be unable to afford the updating costs unless it increases its budget for the formation of public fixed capital. If Japan tries to cope by postponing the updating of public capital stock, unless it can delay updating around 13 years on average, under the budget currently being envisaged, updating costs will be unaffordable by 2050 (Fig. 5-6, 5-7). The circumstances vary for each individual item of capital stock, but this is a fairly impossible scenario and Japan has no choice but to carefully sort out to some degree which of the capital stock is to be updated. To do this, it needs to formulate a long-term vision for efficient capital stock development including compact cities and to incorporate a broad range of initiatives harnessing private sector expertise and capital such as PPP/PFI.

Figure 5-5 Public capital-output ratio

Note: Public capital-output ratio = Real public capital stock (Gross) / Real GDP (F.Y.)
Sources: Cabinet Office, “Estimates of Public Capital Stock”, “Quarterly Estimates of GDP”

human capital stock, a distribution based on contribution to production is included in corporate income and employee compensation respectively and while it is clear that economic value exists, there is no consensus among economists on the method used to measure contribution to productive capacity, and in many cases, it is handled as contribution to improvement in productivity.
Medium-Term Forecast: 2013-2025

The development of efficient maintenance and management techniques and selection methods for capital stock is a burning issue. It is neither realistic nor advisable to maintain and update all existing public capital stock.

Public capital infrastructure investment varies significantly from region to region. In the case of prefectures such as Hokkaido, Shimane, Akita and Kochi, figures per prefectural citizen show that a particularly large amount of investment has been made. It has to be said that, with tight budget conditions, infrastructure maintenance is a major issue for these local governments.
(ii) The level of human capital stock is high

The importance of human capital, including education and vocational training, as a factor of production of economic activity has long been pointed out. Human capital can be described as the economic value of the outcome of education and vocational training. As in the case of general capital where interest income increases, the more financial capital is available, so in the case of human capital a similar relationship can be considered to exist and income gain will also increase, the more human capital is available. However, in general, human capital is difficult to measure and is estimated in international comparisons based on data such as trends in income by education. An international comparison based on tertiary graduation ratio reveals that Japan ranks third among the compared OECD member countries for the age range 25-64. Also for the younger 25-34 years age group, Japan does well, ranking second behind South Korea. The results suggest that the level of Japan’s human capital stock is high (Box 1).

Figure 5-8 Percentage of population that has attained tertiary education (2011)

Source: OECD (2013) "Education at a Glance 2013: OECD indicator"

(iii) Knowledge-based capital - insufficient investment in ICT and competitiveness

The OECD analyzed the importance of knowledge-based capital as a source of future economic growth and conducted an international comparison. Knowledge-based capital investment is investment in intangible assets and refers to investment such as IT investment (software, databases), R&D investment (patents, copyright, trademark rights, designs), and investment to increase competitiveness (brand and asset value, entrepreneurial human capital, human and organizational networks, organizational knowhow).

If we look at the relationship between knowledge-based capital investment as a percentage of added value (density of knowledge-based capital investment) and per capita GDP, we see that there is a positive correlation, and this finding is consistent with the claim that knowledge-based capital investment plays an important role in productivity (Fig. 5-9).
The OECD has pointed out that although Japan ranks highly in terms of R&D investment, investment in competitiveness, including branding, reorganization and human investment, is lacking (Fig. 5-10).

Given that tax incentives in Japan have been biased towards physical investment and R&D investment, if Japan is going to introduce tax incentives, it needs to consider the incentives that promote investment in competitiveness. Since introducing corporate tax breaks rather than capital investment tax reductions will neutralize investment incentives between knowledge-based capital and physical capital, from the standpoint of economic efficiency, this may be preferable.

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8 The tax system to encourage investment in human resources introduced in the past was introduced as a provisional measure and was abolished. The R&D tax scheme is still in operation.
**What is to blame, School or Society?**

**Human capital in Japan and Survey results of OECD•PIAAC**

As explained above, in Japan, the tertiary graduation ratio is high compared with other OECD countries. However, even if the education is said to be the same, there is likely to be considerable difference in the content and quality. From a global perspective, how does the quality of Japan’s tertiary education actually compare?

**PIAAC survey results corroborate high level of human capital**

The data that can answer this question is the OECD Programme for the International Assessment of Adult Competencies (PIAAC) survey of adult skills published on October 8, 2013. The survey interviews men and women aged 16 to 64 nationwide in all member countries, assessing their literacy, numeracy and problem-solving in technology rich environments as well as the education and career history of participants. The survey results are expected to be used to analyze the relationship between adult skills and education and vocational training, and to develop policies for life-long learning and school education.

Looking at results by country (see Table below), Japan achieved the highest average scores among the 24 participating countries in literacy and numeracy. On the other hand, in problem solving in technology rich environments, Japan performed averagely.

### Table: Proficiency of adults in key information-processing skills

<table>
<thead>
<tr>
<th>Nation</th>
<th>Literacy (Average)</th>
<th>Numeracy (Average)</th>
<th>Problem solving in technology-rich environments (High score ratio, %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>280</td>
<td>268</td>
<td>38</td>
</tr>
<tr>
<td>Finland</td>
<td>288</td>
<td>282</td>
<td>42</td>
</tr>
<tr>
<td>France</td>
<td>262</td>
<td>254</td>
<td>Nonparticipation</td>
</tr>
<tr>
<td>Germany</td>
<td>270</td>
<td>272</td>
<td>36</td>
</tr>
<tr>
<td>Italy</td>
<td>250</td>
<td>247</td>
<td>Nonparticipation</td>
</tr>
<tr>
<td>Japan</td>
<td>296</td>
<td>288</td>
<td>35</td>
</tr>
<tr>
<td>Korea</td>
<td>273</td>
<td>263</td>
<td>30</td>
</tr>
<tr>
<td>U.S.</td>
<td>270</td>
<td>253</td>
<td>31</td>
</tr>
<tr>
<td>England / North Ireland (UK)</td>
<td>272</td>
<td>262</td>
<td>35</td>
</tr>
<tr>
<td>Average (24 participating nations)</td>
<td>273</td>
<td>269</td>
<td>34</td>
</tr>
</tbody>
</table>

Source: OECD, “OECD Skills Outlook 2013”

**Income and education**

Thus, Japan’s human capital can be considered to be high quality both in terms of education and its outcome. However, is this high quality human capital actually being used? If we look at the relationship between per capita GDP (nominal in dollars, 2011) and education (ages 25-64), a positive correlation can be confirmed. This finding is consistent with the theory that education is in a positive relationship with productivity and matches the theoretical forecast of human capital (see Figure below). On the other hand, Japan is under the approximation curve, which means that per capita GDP is lower than education predicts. In other words, high quality human resources are not used as effectively as in other countries and are not translated into productivity.
Support for women’s active participation is a burning issue

Japan needs to realize that the reason productivity is low in the economy as a whole in spite of education and educational outcomes is that there is something wrong not with the skills individuals possess but with the economic society that uses them. One problem that can be clearly identified is the persistence of a situation where many women have skills that are comparable to those of men but are nonetheless not participating in the labor market. A JCER report published in February 2008 pointed out that the waste of human capital that occurs in Japan is partly attributable to a lack of active participation by women\(^9\). In our view, Japan needs to allow diverse working styles, promote active participation by women and men’s involvement in housework and childcare to support this, and effectively use existing human capital stock. It also needs to explore new Japanese-style ways of accumulating human capital.

\(^9\) OECD also reports in this PIAAC survey results, many employees do not feel utilizing their skills at place of work in Japan.
(4) Conclusion

To sum up, the strength of fundamentals on the supply side is likely to change as follows:

- Although workforce decline and aging are inevitable, the rate of workforce decline will be moderated through improvement in the workforce participation rate of women and the elderly.
- Private corporate capital stock will show an upward trend, as savings (= investment) increase in proportion to the decrease in the government sector deficit.
- Public capital stock will be maintainable at the current level until around 2025, but may then prove too costly to update properly and start to hamper growth.
- Although productivity is low, the level of human capital stock is high and, assuming that systems also improve to some degree, with the conclusion of the TPP and promotion of equal participation of men and women, there is little risk of productivity growth slowing down.
6. Economic and social effects of the Tokyo Olympics

In September 2013, Tokyo was named as the host of the 2020 Summer Olympics and Paralympics. What impact will this have on the Japanese economy?

Key economic impacts include (i) an increase in private- and public-sector investment ahead of the games, (ii) growth in consumer spending in Japan as a result of the games, and (iii) a boost to Japan’s reputation and media exposure from the global attention given to the games. In addition to these economic effects, the games will also have an impact on national welfare which will not necessarily be reflected directly in GDP.

If we consider that an increase in a certain type of expenditure results in a reduction in another type of expenditure (substitution), it is difficult to calculate the net impact of hosting the games. In this report, we tried to calculate the amount of demand generated by the games, focusing as far as possible on expenditure directly related to the hosting of the games, in principle. Investment in the development of the Tokyo waterfront area (Ariake North District) - one of the focal points of the plans for the Olympics and also where the athletes’ village will be built – is included in the financial impact and growth in tourists to Japan following the boost to Japan’s worldwide reputation and recognition, and improvement of systems to accommodate them are also taken into consideration as impacts of the games. On the other hand, infrastructure investment brought forward following Tokyo’s selection as the host city is not taken into consideration. The Tokyo Metropolitan Government has previously formulated a long-term vision for the city’s development in anticipation of the games and Tokyo’s selection as the host city is likely to give a boost to development in accordance with this strategy. According to our estimation, the games will have the effect of generating total demand in the years through to 2025 of 2.1 trillion yen and the games are also expected to have a social impact that will not necessarily be evident in GDP. The following section explains this forecast in detail.

Investment in Olympic facilities will be limited and infrastructure will be developed in line with long-term vision

In terms of investment, public investment plans including the construction and renovation of Olympic facilities and the development of roads, railways and other infrastructure have been formulated and private-sector investment in bars and restaurants and accommodation facilities, etc. may also increase. However, planned expenditure on facilities for the upcoming Tokyo Olympics is around 360 billion yen (according to Tokyo Metropolitan Government estimates), which is modest compared with Olympics held in other countries in the past. One point to emphasize is that, if anything, Tokyo will make use of its existing infrastructure and facilities to host the games.

The games may give a boost to investment in ports, highways, accommodation facilities and other infrastructure that could not be undertaken previously but since the games last for one summer only it would be better to invest in the kind of facilities that will not be worthless after the games. Investment in facilities that will only be used for the games - though effective in pushing up demand temporarily – will necessitate cuts in other areas to fund this (or tax hikes to finance public investment) and the net impact may not be positive. Seen in this light, the role of the games is perceived as giving a boost to rational investment that should have been made anyway. At the time of the Tokyo 1964 Olympics, much of the infrastructure was completed in a rush, but this time, given the government’s financial difficulties, infrastructure development that considers the long-term maintenance and updating costs is required. In this
respect, in 2001, the Tokyo Metropolitan Government formulated the Development Plan for Tokyo Megalopolis and the City Planning Vision for Tokyo (revised in 2009), and the games in 2020 also mesh with this plan. The Tokyo Metropolitan Government’s investment plans include investment that is essential for the hosting of the games such as road development (Fig. 6-1) but this is seen as investment that would have been made as part of the city’s development to increase global competitiveness and enhance quality of life even if the games had not been held in Tokyo and, in this report, we decided not to include this as an economic effect of the games. As for the demand-generating effect of the games, we assumed the net boost to public investment demand to be only 280 billion yen which is the portion of the planned Games budget that is likely to be included in public investment (construction of the athletes village which will be financed by the private sector, etc. is not included in public investment).

Similarly, it is difficult to judge the extent to which the games will push up private investment, but the investment (estimated at around 500 billion yen) in the planned development of the Tokyo Waterfront Area (Ariake North District), which picked up pace with the Olympic bid plan, was included in the boost to private investment. Athletes’ village construction expenses of around 100 billion yen are also included in private investment. As explained above, there may also be additional private investment in accommodation facilities and such like which is brought forward ahead of the games, but, given that Tokyo already has sufficient capacity, the bringing-forward and subsequent decline of investment were not factored into the forecast.

**Figure 6-1 Main investment project about infrastructure in Tokyo metropolitan area**

<table>
<thead>
<tr>
<th>Investment project</th>
<th>Contents (time, scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of the three loop roads</td>
<td>Complete 90% of the roads in 2020F.Y. (50% in 2011F.Y.) Remaining works are estimated to be over 1trillion yen.</td>
</tr>
<tr>
<td>Repair work of Metropolitan Expressway</td>
<td>A proposal for Metropolitan Express Company (Jan 2013) estimates 790–910billion yen is needed for replacement and maintenance. Moreover, about 320billion yen will be needed 10years after.</td>
</tr>
<tr>
<td>The direct train from Narita to Haneda</td>
<td>Estimated construction costs are 400 billion yen (Covered by private fund) mentioned “Japan Revitalisation Strategy” in June 2013 to make efforts to develop.</td>
</tr>
<tr>
<td>Moving Tsukiji central wholesale market to Toyosu</td>
<td>Completion is scheduled in 2015F.Y. Construction costs are about 100billion yen.</td>
</tr>
<tr>
<td>Extension of YURIKAMOME line from Toyosu to Kachidoki</td>
<td>Not Progressing.</td>
</tr>
<tr>
<td>Casino plan</td>
<td>Bipartisan caucus consider to submit legislation to promote casinos.</td>
</tr>
<tr>
<td>Residential development in the waterfront area</td>
<td>The resident population at Ariake North District is expected to grow from 7,000 to 38,000. ⇒Investment demand of about 500billion yen (estimates) for resident and business and commercial facilities.</td>
</tr>
</tbody>
</table>

Note: Only the development in the waterfront area is included as an effect of the Olympics.
Sources: Tokyo Metropolitan Government; Ministry of Land, Infrastructure, Transport and Tourism; etc.

As for domestic consumption, the operating costs will be reflected in government consumption and will push up GDP, and tourism demand and expenditure on sales of Olympic merchandise, etc. may increase. The operating costs that will be reflected in government consumption are estimated, based on the Tokyo Metropolitan Government’s plan, at around 270 billion yen. Around 70 billion yen of this will be recorded in the form of new demand as labor costs. Private consumption is likely to be pushed up around 440 billion yen through games-related expenditure such as consumption by games spectators and merchandise, including tourism expenditure in the years running up to the games and throughout the year of the games.
Increase in tourists to Japan will push demand up by around 700 billion yen in the years through to 2025

Regarding the effect on Japan’s reputation, etc., which is more important in the medium and long-term and yet difficult to measure, possible impacts include growth in the number of tourists to Japan due to increased global recognition, the hosting of international meetings and events in Japan, and an increase in trade and overseas investment.

Tourist income is one major economic effect that can be expected from hosting the games. In calculating GDP, consumption by foreign tourists in Japan is recorded in Japan’s exports. During the games, in addition to around 45,000 athletes, coaches, officials, etc. who participate in the games, almost 600,000 games spectators are expected to visit Japan from overseas. Furthermore, the number of visitors to Japan may increase - not only during the games but also in the medium and long term - due to increased global recognition and the development of systems for receiving visitors to Japan. However, if we look at past examples, although there are cases where host cities dramatically improved their status as tourist destinations such as Barcelona, the effect varies depending on the host. According to research assessing the number of tourists from overseas in past host countries\(^\text{10}\), unlike exports explained later, hosting the games is said to have the effect of increasing the number of tourists in the short term, but the effect diminishes over the long term. In this report, we tried calculating the boost to exports, assuming a maximum increase of 3% in the number of tourists during the 7 years before and after the games (increase is partially offset by decrease, as the games will also have the effect of deterring some people from visiting Japan in the year of the games). On this basis, we estimate that in the 13 years to 2025, the games will increase the number of foreign visitors to Japan by almost 4 million in total and give a boost of around 660 billion yen to exports.

Some may think that Tokyo’s hosting of the games for the second time cannot be expected to have as big an effect as a city hosting the games for the first time, but there is still certainly room for growth in the number of visitors to Japan. If we look at visitor numbers in 2012, Japan ranked 33\(^\text{rd}\) with 8.36 million visitors, trailing behind Malaysia (25.03 million visitors), Thailand (22.35 million visitors) and South Korea (11.14 million visitors)\(^\text{11}\). The Government set itself the target of increasing the number of visitors to Japan to more than 30 million by 2030, and to do this, it needs to further increase visitors from East Asia, which is a major market for Japan, and to also get people from a wide range of other regions to choose Japan as a place to visit.

As for trade, there are research findings saying that, after the games, host nations see as much as a 30% increase in their exports compared to other countries\(^\text{12}\). By hosting the games, nations send out a signal to the world that they are liberalizing and deregulating trade and as a result this actually happens and the amount of trade increases. Incidentally, 1964, when Tokyo hosted the Olympics for the first time, was the year when Japan joined the OECD, and China joined the WTO in 2001, the year Beijing was selected to host the Olympics. In Japan’s case today, negotiations to conclude economic partnerships such as the TPP and the Regional Comprehensive Economic Partnership for East Asia (RCEP) would seem to fit this pattern. If a 30% increase in exports were achieved, the impact would be enormous, but in this report, we did not include this as an effect of the games.


\(^{11}\) Japan National Tourism Organization (JNTO)

To recap the foregoing, hosting the games is expected to have the effect of generating demand of around 2.1 trillion yen in total (Fig. 6-2). If we look at average GDP fluctuations in the years leading up to the games and several years afterwards for the nations that hosted the Summer Olympics after the Tokyo 1964 Olympics, we see that, while figures vary widely from country to country and the results should be seen with some margin of error, there is a tendency for growth to pick up from around four years before the games through the year of the games and to subsequently drop off in the year following the games. A breakdown by demand component reveals that gross fixed capital formation increases from around four years before the games, private consumption is pushed up in the year of the games, and there are negative repercussions after the end of the Olympics the following year. Likewise, the upcoming Tokyo Olympics are expected to have a similar pattern of impacts, though their contribution to growth will be insignificant - around 0.1% percentage points at most.

**Ripple effect of demand using the Input-Output Table**

The 2.1 trillion yen in demand generated by the games mentioned above is only the amount of final demand created by games and does not include the ripple effect that this will have on the wider economy. Therefore, we used the Input-Output Table published by the Ministry of Internal Affairs and Communications to analyze which industries would benefit from the ripple effect of this new demand generated by the games and to what extent. To study the economic ripple effect using the Input-Out Table, it is first necessary to consider which industries will experience new demand. In the case of private consumption, as explained above, new demand consists in domestic games spectators' consumption and purchases of merchandise including tourism expenditure. For consumption by games spectators, we proportionally divided consumption taking into consideration consumption trends for overnight visitors and same-day visitors using the “Consumption Trend Survey for Foreigners Visiting Japan” by the Japan
Tourism Agency. We allocated consumption growth that can be expected from sales of merchandise and corporate sponsorship of the Olympics to private consumption depending on the advertising expenditure of each industry. Private and public investment including Olympic-related facilities and the waterfront development was divided into residential construction and non-residential construction according to building estimates. Government operating costs are mostly recorded as intermediate demand and not final demand. Therefore, we took only the labor cost component of operating costs as costs that create new demand and accumulated the rest as intermediate demand generated through the ripple effect of ticket sales and other Olympics event consumption. Finally, we proportionally divided exports attributable to anticipated overseas tourist income among sectors based on exports (direct purchases) in the Input-Export Table. Fig. 6-3 shows a breakdown of the new demand outlined above by demand component for 15 industries.

Figure 6-3 Increase in final demand by industry

An overview of new demand by industry shows that demand for “Construction,” which includes waterfront area development and Olympic facilities and infrastructure, will be biggest. “Personal services” and “Transportation,” which include accommodation, travel expenses and ticket sales, will be pushed up by private-sector consumption and exports.

After allocating new demand to each sector as explained above, we used the Input-Output Table to examine which industries would benefit from the ripple effect of the new demand in each industry (Fig. 6-4).
The sector where the biggest ripple effect (additional production growth) is seen is the “Materials” sector. Increase in final demand for construction will bring about expansion in production. The new demand for construction will have a ripple effect not only on the “Materials” sector but also on “Business services.” This is because this industry is made up of services such as civil engineering and construction services, and temporary worker services. Consumption by tourists from overseas and domestic games spectators will also push up “Business services.” In the “Commerce” sector, tourists from overseas bringing significant growth in new demand and the construction of Olympic related facilities will increase production. In the “Advertising” industry, demand will expand due to promotions and advertising by sponsors and expansion in advertising as a result of increased economic activity.

The total value of such ripple effects comes to around 1.8 trillion yen. When this is combined with new demand of around 2.1 trillion yen, the hosting of the games will bring about production of around 3.9 trillion yen.

The impact on welfare that cannot be ignored

The impact of the games is not confined to economic effects that are directly reflected in GDP. The hosting of a major event has a direct impact on people’s happiness and according to one study, willingness to pay for the intangible benefits (non-monetary effects such as enjoyment and inspiring children) of the United Kingdom’s hosting of the Olympics was £22 per household in London and £12 in other regions (for 10 years) and, for the United Kingdom as a whole, the value of the intangible benefits of hosting the games was estimated at around £3.2 billion (around 500 billion yen). Also, according to the post-games evaluation report of the London Olympics, the games had an impact in a wide range of areas besides the economy, including the promotion of sport and participation in volunteer activities (Fig. 6-5).

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Figure 6-5 The effect by London Olympic

| 1. | The Games have provided a substantial boost to the UK economy |
| 2. | More of us are participating in sport because of the Games |
| 3. | The Games inspired a generation of children and young people |
| 4. | The Games were the catalyst for improved elite sporting performance in the UK |
| 5. | The Games Supported the growth of the UK tourism industry |
| 6. | The Games set new standards for sustainability |
| 7. | The Games improved attitudes to disability and provided new opportunities for disabled people to participate in society |
| 8. | Communities across the UK engaged with Games |
| 9. | The Games have increased enthusiasm for volunteering |
| 10. | The Games accelerated the physical transformation of East London |
| 11. | Socio-economic change in East London has been shaped by the Games |
| 12. | The Games delivered many strategic benefits and lessons learnt |


The number of people who participate in volunteer activities in Japan is not high compared with other advanced nations (Fig. 6-6) but, under the Tokyo Metropolitan Government’s plan, around 80,000 volunteers will be required for the Tokyo Olympics, and this could make volunteer activities more widespread. Generally speaking, people who are involved in volunteer activities are said to feel more satisfied with life and such activities also have the role of maintaining social connection. In the United Kingdom, in 2012-2013 the volunteer population stopped declining and various initiatives such as the Join In campaign to encourage people to participate as volunteers in sport and regional activities have continued even after the London Olympics.

Growth in the sporting population is also an important effect in Japan, where the percentage of the population taking insufficient exercise is rising. In the United Kingdom, the number of people taking exercise at least once a week was 15.3 million in 2012, up 1.4 million from 2005. The promotion of sport is said to contribute not only to the improvement of health but also to community formation and fulfillment in life for elderly people (Fig. 6-7). Also, continuation of exercise reduces the risk of lifestyle diseases, etc. and, by extension, will also help to reduce medical care expenses which are trending upward. According to survey results, a tendency for medical expenses to be 8% higher for people who take insufficient exercise has been observed. In view of the fact that general medical expenditure on lifestyle related diseases are as much as 9 trillion yen a year, there is the potential to save several hundreds of billions of yen in medical expenses a year simply by improving exercise habits. When measured solely in terms of directly generated demand, the 2 or 3 trillion yen impact of the games mentioned above is not necessarily huge, but if Japan is able to use the Tokyo Olympics, as an opportunity to leave a positive long-term legacy, as was also stressed at the time of the London Olympics, then their impact will be much bigger.

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15 Sport England, Active People Survey
Figure 6-6 The proportion of active members of voluntary organizations (2005)

![Graph showing the proportion of active members of voluntary organizations in different countries.](image)

Source: World Values Survey

Figure 6-7 Perceptions of lack of exercise (left), the effect of sports promotion in communities (right)

![Graph showing the percentage of people perceiving they have too little physical activity over time.](image)

Source: Ministry of Education, Culture, Sports, Science and Technology
7. Energy and CO2

In the energy field, the progress of the shale revolution is a focus on attention. The shale revolution has had a ripple effect not only on natural gas but also on crude oil and has also had an impact on total energy supply and demand projections. Changes in crude oil price assumptions will also have a very big impact on economic developments in Japan. It is necessary to prepare a number of scenarios and be ready for change. When we carried out simulations based on the price scenarios published by the EIA (Fig. 7-1), we found that the average real growth rate for 2013-2025 will work out around 0.4% higher or lower due to the impact of the crude oil price (Fig. 7-2).

Figure 7-1 The multiple assumptions about oil prices by U.S. EIA

![Figure 7-1 The multiple assumptions about oil prices by U.S. EIA](image)

Sources: The Nihon Keizai Shimbun; U.S. Energy Information Administration

Figure 7-2 The simulations based on the multiple assumptions about oil prices by EIA

![Figure 7-2 The simulations based on the multiple assumptions about oil prices by EIA](image)

Source: U.S. Energy Information Administration, forecast by JCER
In Japan, there was also a major change in terms of energy demand after the Great East Japan Earthquake. The industrial sector made good progress in becoming more energy efficient in the 1970s but progress slowed in recent years. However, the most recent electric power statistics show that, from FY2010 through FY2012, both the industry and household sectors made significant progress in increasing power efficiency (Fig. 7-3). Furthermore, power consumption in the industry and household sectors is expected to continue being reduced during the forecast period at such a rate that 20% energy savings will be achieved by 2030, compared to 2010, thanks to the widespread use of energy efficient technologies in addition to firmly established power saving efforts.

To break down the energy barriers stopping Japan from securing sufficient energy, Japan needs to pursue measures on the supply side in addition to efforts on the demand side, including reviewing the positioning of nuclear power generation and seeking to reduce costs through general energy policy measures. Securing LNG imports is another major issue. Although the percentage of renewable energy is still low, accounting for 4.7% of the domestic energy supply in FY2012, it is rapidly becoming more widely used (Fig. 7-4). This trend is being supported by feed-in tariffs which are among the highest in the world. The system is designed to allow renewable energy suppliers to fix a price by submitting just a plan and to wait for costs to fall and has the disadvantage that

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**Figure 7-3 Efficiency of energy usage**

**<Industrial Sector>**

- Electricity demand (from the industries)
- Indices of Industrial Production

Note: Percentage change compared to the same period in 2010.
Sources: Agency for Natural Resources and Energy “Electric power statistics”, Ministry of Economy, Trade and Industry “Indices of Industrial Production”

**<Household>**

- Electricity demand

Note: Percentage change compared to the same period in 2010.
Source: Agency for Natural Resources and Energy “Electric power statistics”
actual work is limited at the present time. Since the cost of purchasing at a fixed price reverberates to electricity charges, the system needs improving urgently.

Energy supply and demand strategies are also closely connected with global warming countermeasures. CO2 emissions are expected to start decreasing from 2014, reflecting the power-saving initiatives mentioned above (Fig. 7-5).

**Figure 7-4 Contribution of renewable energy (except hydroelectric power) to total electricity generated**

![Figure 7-4](image)

**Figure 7-5 CO2 emissions**

![Figure 7-5](image)
8. Policy Proposals

If further tax increases are made, the government deficit will start to be cleared and the debt-to-GDP ratio will start to stabilize (Fig. 8-1). The government has embarked on steps to avoid fiscal default, which would be enormously damaging, and it is important that it does not stop taking these steps.

Figure 8-1 The consumption tax rate and government debt to GDP ratio

The summary table (p.5) gives an overview of the forecast and the Japanese economy is likely to achieve growth of around 0.9% in the 2010s and around 0.7% in the early 2020s. Inflation is likely to start rising steadily in the late 2010s largely due to the consumption tax hikes. However, the household savings rate will inevitably turn negative chiefly as a result of aging.

Under the main scenario based on current trends, in the years leading up to 2025, growth will be limited, reflecting Japan’s aging labor force and aging capital stock, and this will make the road to fiscal reconstruction far from smooth.

However, judging from the level of human and physical capital stock alone, Japan’s economic fundamentals are sufficiently strong. The problem is that hidden skills are not being fully utilized. For many reasons including responding to changes in the overseas environment, Japan needs to stage a robust recovery. More specifically, it is essential to take steps to strengthen the economy including:

- Fiscal reconstruction through further consumption tax hikes;
- Reduction of the strain of increased tax payments on households through wage increases;
- Use of human capital stock through greater support for female labor force participation;
- Efficient selection of public capital stock and development of better ways to maintain and manage it;
- Market access and improvement of the export environment through the conclusion of the TPP; and
- More efficient use of energy through the promotion of power saving and clarification of the positioning of nuclear power generation.

Those measures need to be done as soon as possible in order to see when Tokyo hosts the Olympics in 2020, the various efforts are beginning to bear fruit.