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April 29, 2011
Bank of Japan

# Outlook for Economic Activity and Prices

## April 2011

(English translation prepared by the Bank's staff based on the Japanese original)

## The Bank's View[1]

### I. Introduction

The outlook for Japan's economy, which since early 2011 had been emerging from a phase of deceleration, changed significantly with the Great East Japan Earthquake that struck on March 11. As a result of the disaster, the economy will inevitably continue to face strong downward pressure for the time being. The following aspects are important in examining the outlook for Japan's economy through fiscal 2012 presented in this April 2011 issue of the *Outlook for Economic Activity and Prices* (Outlook Report). First, there has been no significant change in the fundamental conditions that supported Japan's economic recovery prior to the earthquake, including strong growth in overseas economies. The earthquake disaster is exerting downward pressure on the economy essentially in the form of a supply-side shock mainly due to damage to production facilities. In this respect, the situation differs from the economic conditions following the failure of Lehman Brothers, when the financial crisis triggered a sharp drop in global demand. Second, the effects of the disaster will change over time. In the short run, the effects of supply-side constraints will dominate, but such constraints will eventually ease and instead the effects of investment to restore damaged capital stock will become more evident. From an even longer-term perspective, what is also important is how the disaster affects the growth potential of Japan's economy. Third, there is considerable uncertainty regarding the way these effects of the disaster -- including their timing and scale -- will play out. Therefore, when making projections of future developments in economic activity and prices, it has become even more important than usual for the Bank of Japan to carefully assess not only its baseline scenario but also risk factors.

Keeping the above points in mind, this Outlook Report first provides a description of developments in overseas economies and global financial markets affecting trends in Japan's economy, followed by the Bank's assessment of Japan's financial environment. Next, the scenario considered to be the most likely by the Bank -- its baseline scenario -- is described, and upside and downside risks associated with the scenario are examined.

[1] The text of "The Bank's View" was decided by the Policy Board at the Monetary Policy Meeting held on April 28, 2011.

Finally, a summary of the Bank's basic thinking on the conduct of monetary policy is provided.

## II. Overseas Economies and Global Financial Markets

The pace of growth in overseas economies slowed somewhat from summer 2010, partly because inventory restocking carried out in the early phase of economic recovery had run its course. However, the recovery trend itself in overseas economies remained intact, and since autumn 2010 the global economy has again been growing at historically high rates, led by strong growth in emerging and commodity-exporting economies. On the back of this high growth, upward pressure on prices has gradually been increasing worldwide. Emerging and commodity-exporting economies have continued monetary tightening, and some advanced economies have started to withdraw monetary easing. Looking at developments by region, in the United States concern about the sustainability of the recovery has receded since autumn 2010, against the backdrop of monetary easing and fiscal stimulus measures, including the extension of tax cuts. Economic activity in Europe as a whole has continued to recover at a modest pace. At the same time, the contrast has become more pronounced between countries enjoying export-led growth, such as Germany, and peripheral countries experiencing sluggish growth as a result of fiscal austerity to cope with sovereign risk problems. Meanwhile, strong growth in emerging and commodity-exporting economies continues amid robust domestic demand and capital inflows from abroad.

Overseas economies are expected to continue recovering, led by strong growth in emerging and commodity-exporting economies. As in 2010, the growth rate of the global economy in 2011 and 2012 is expected to surpass the average of the ten years preceding the financial crisis, a period of high global economic growth.[2] Looking at developments by region, the U.S. economy is likely to continue recovering, as exports -- mainly to emerging and commodity-exporting economies -- will likely continue their uptrend, and private

[2] According to the projections for global economic growth (calculated as the aggregate of purchasing-power-parity weighted GDP growth projections for individual countries or regions) released by the International Monetary Fund in April 2011, the global economy is expected to grow by 4.4 percent in 2011 and 4.5 percent in 2012. The average growth rate during the ten years preceding the financial crisis -- from 1998 to 2007 -- was 4.0 percent.

consumption and business fixed investment will likely continue to increase moderately on the back of an accommodative monetary environment. As for Europe, with rising exports gradually boosting domestic demand, economic activity -- despite differences between core and peripheral countries -- is likely to continue recovering modestly. Emerging and commodity-exporting economies are likely to continue monetary tightening on the back of heightened concern over inflation but maintain relatively high growth amid continued robust domestic demand and capital inflows from abroad. Specifically, the Chinese economy is expected to continue showing high growth due to the continued uptrend in private consumption, housing investment, and investment in various infrastructures on the back of higher household incomes and continuing urbanization. Economic activity in the NIEs and ASEAN countries is likely to follow an expansionary trend, as not only exports but also domestic private demand such as business fixed investment and private consumption are expected to continue increasing.

Looking at developments in global financial markets, investors' risk aversion has receded since autumn 2010 partly due to an improvement in market perceptions of the U.S. economy, and stock prices in many countries followed an uptrend. In bond markets, U.S. long-term interest rates increased, leading to a rise in long-term interest rates in other countries. Meanwhile, in Europe, since the Greek crisis progress has been made in establishing various mechanisms to achieve stability, based on which Ireland and Portugal have requested financial support, but there continues to be concern about the sovereign risk problems in some peripheral European countries and the potential effects on global financial markets. Immediately after the earthquake in Japan, investors' risk aversion heightened and stock prices and long-term interest rates temporarily fell globally due to increased uncertainty about the economic outlook. However, financial markets subsequently regained stability. After the earthquake, volatility in foreign exchange markets increased substantially and the exchange rate of the yen against the U.S. dollar hit a historical high of 76.25 yen; however, triggered by concerted intervention by the Group of Seven (G-7) countries, the yen depreciated and stayed in a range of 82-83 yen. With regard to developments in global financial markets, careful attention needs to be paid to changes in investors' risk-taking stance as a result of the sovereign risk problems in some peripheral

European countries and potential shifts in capital flows due to adjustments to monetary easing around the world.

## III. Japan's Financial Environment

Looking at financial developments in Japan, even in the wake of the earthquake, the financial intermediation function has been maintained and smooth funds settlement has been secured. Financial markets have also remained stable as the Bank continued to provide ample funds. While financial conditions have generally continued to ease, the financial position of some firms, mainly small ones, has deteriorated since the earthquake.

As for the outlook, firms' demand for credit is likely to increase. A growing number of firms, especially small ones, are likely to face a deterioration in their financial position, mainly due to the drop in turnover as a result of the earthquake disaster. Because of the heightened uncertainty, some firms have started to build up on-hand liquidity. As for firms' funding conditions, looking at the CP and corporate bond markets, the issuing conditions for CP have remained favorable. In the corporate bond market, although the new issuance of bonds came to a halt after the earthquake due to heightened uncertainty, firms have gradually started issuing bonds again as credit spreads on corporate bonds have recently declined from the levels seen immediately after the earthquake. In terms of bank lending, which accounts for a large share of small firms' funding, private financial institutions are fully able to meet any future increase in demand for funds, as they have been increasing their own capital by issuing common shares and accumulating retained earnings. Moreover, firms' funding is supported by various financial measures including disaster-related guarantees provided by credit guarantee corporations. In this situation, the easing trend in financial conditions will likely continue as the effects of the Bank's significant monetary easing spread further, and this is likely to support the momentum toward recovery in domestic private demand.

## IV. Baseline Scenario of the Outlook for Economic Activity and Prices in Japan

### A. Outlook for Economic Activity

On the basis of the aforementioned developments in overseas economies and the financial

environment at home and abroad, the following examines the scenario for Japan's economy considered to be the most likely by the Bank -- that is, the baseline scenario.

The pace of recovery in Japan's economy slowed from the beginning of autumn 2010. Sales of some durable consumer goods declined substantially following the earlier rush in demand, while exports almost remained flat against the backdrop of a temporary slowdown in the pace of growth in overseas economies, the appreciation of the yen in the summer, and inventory adjustments in IT-related goods. However, from early 2011, prior to the earthquake, Japan's economy was emerging from the deceleration phase, with exports and production showing signs of resuming their uptrend as growth in overseas economies accelerated again. Thus, economic activity prior to the earthquake was broadly in line with the projections presented in the October 2010 Outlook Report.

The situation changed significantly as a result of the earthquake. Substantial supply-side constraints since the earthquake have disrupted the recovery mechanism in which recovery in overseas economies fuels the momentum for recovery in Japan through increases in exports and production. The earthquake has led to the loss of a large number of production facilities in widespread areas directly affected by the disaster. In addition, difficulties in procuring materials and parts have disrupted supply chains on a national scale. Power shortages have become another supply-side constraint. As a result, production in some areas has declined sharply, severely affecting exports as well as domestic shipments and sales. Thus, the disaster has been affecting Japan's economy mainly through supply-side constraints. It also appears to be affecting the demand side by exerting downward pressures on business fixed investment and private consumption through a deterioration in business and household sentiment amid uncertainty about the economic outlook, especially the effects of the accident at the nuclear power plant in Fukushima Prefecture. The nuclear accident is likely having adverse effects on private consumption and tourism, not only through the impact on sentiment described above but also through other channels including a decline in visitors from abroad.

The economic outlook greatly depends on when and at what pace the various supply-side constraints, including power shortages, are resolved. Examining the outlook for Japan's

economy, the economy for the time being is likely to continue facing strong downward pressure, mainly on the production side.[3] It is likely to take some time to reconfigure supply chains despite firms' ongoing efforts to restore affected facilities, carry out production at alternative sites, and secure alternative suppliers. Moreover, power supply shortages could put certain constraints on economic activity when electricity demand peaks in the summer. However, from the beginning of autumn 2011, supply-side constraints are likely to ease as the reconfiguration of supply chains will likely have made further progress and the balance of electricity supply and demand starts to improve. If this happens, improvements in overseas economies will lead to increases in Japanese exports and production, which in turn will once again clearly act as a driving force for economic recovery. Moreover, efforts to restore capital stock damaged by the earthquake disaster are projected to gradually provide a boost to Japan's economy.

Against this background, after facing strong downward pressure in the first half of fiscal 2011, Japan's economy is likely to recover at a faster pace throughout the second half, partly due to the rebound from the first half, on the back of clear increases in exports and production. In fiscal 2012, Japan's economy is projected to continue growing at a pace above its potential. It is likely that the transmission mechanism by which the strength in exports and production feeds through into income and spending will be more firmly established and demand for restoring capital stock will continue increasing.[4] The following provides more detailed explanations of the outlook for the corporate and household sectors.

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[3] When the Great Hanshin-Awaji Earthquake struck in January 1995, production in Japan in that month fell 2.6 percent from a month earlier but then increased 2.2 percent in February. Exports showed a similar movement. The nationwide effects of the earthquake dissipated quickly because it was possible to replace lost production using alternative sources in a short period of time, since there were no constraints on electric power and supply chains.

[4] Japan's potential growth rate during the projection period is estimated to be "around 0.5 percent" based on a standard production function approach. However, estimates of the potential growth rate are subject to a considerable margin of error as they greatly depend on the specific methodology employed, although their accuracy increases as more data for the relevant period become available. The supply-side constraints caused by the disaster can be considered to be temporary and essentially will not affect the potential growth rate, which corresponds to the pace of increase in supply capacity in the longer run.

Regarding the corporate sector, supply-side constraints are likely to curtail production significantly in manufacturing and reduce exports substantially for the time being. Business conditions in the nonmanufacturing sector are also likely to deteriorate for the time being due to electricity supply constraints and reduced production levels in manufacturing. Corporate profits will likely fall significantly as a result of the substantial decline in exports and production as well as the effects of the rise in international commodity prices. Therefore, business fixed investment, which had been picking up gradually before the earthquake, is likely to be somewhat weak for a while. However, in the second half of fiscal 2011, as supply-side constraints ease, exports and production are likely to start increasing again on the back of continued strong growth in overseas economies.[5] Moreover, it is projected that there will be efforts to restore capital stock damaged by the earthquake disaster. Thus, it is expected that corporate profits will start improving again after a temporary decline due to the effects of the disaster, and business fixed investment will also start picking up accordingly.

As for the household sector, employment and income are likely to be somewhat sluggish as the earthquake disaster reduces production and firms' sense of having excess labor heightens. Private consumption is likely to be subdued for the time being, partly because of cautious consumer sentiment reflecting uncertainty about the future. From the second half of fiscal 2011, private consumption is expected to pick up again gradually as production recovers and the employment and income situation improves. However, compensation of employees is likely to increase clearly only from fiscal 2012, when the self-sustaining recovery in the economy becomes more pronounced. Thus, the pace of recovery in private consumption will likely remain modest for some time. Meanwhile, regarding housing investment, housing construction may be delayed in some regions for the time being, partly due to shortages of materials caused by the disaster. However, housing investment is projected to recover moderately throughout the projection period on the back of the decline in borrowing rates and efforts to restore damaged housing stock.

[5] When production and exports resume their uptrend, rates of increase are likely to be temporarily large as pent-up demand is realized and restocking of depleted inventories takes place. It should be noted, however, that the timing of a renewed increase in production is highly uncertain because it depends on the pace of the reconfiguration of supply chains and developments in the supply and demand of electricity.

## B. Outlook for Prices

Based on the above projections for economic activity, the following examines the outlook for price developments. The year-on-year rate of decline in the consumer price index (CPI) for all items excluding fresh food has continued to slow. With the aggregate supply and demand balance improving gradually, the year-on-year rate of change has recently turned slightly positive if the effects of subsidies for high school tuition are excluded, partly due to the rise in international commodity prices.[6]

The outlook for the environment surrounding prices can be summarized as follows. The supply constraints caused by the earthquake disaster will likely bring about bottlenecks in markets for certain goods and services, which could exert upward pressure on prices. However, there is considerable uncertainty in the short run about how the aggregate supply and demand balance will change, because the disaster will not only continue to cause severe supply-side constraints but also probably reduce demand.[7] In the longer run, the aggregate supply and demand balance is expected to improve gradually as the economy returns to a moderate recovery path. Judging from the results of surveys of households and firms and economists, no significant change in medium- to long-term expected rates of inflation has been observed so far and inflation expectations are assumed to remain stable throughout the projection period. Medium- to long-term expected rates of inflation by market participants and economists have been stable at around 1.0 percent in recent years. International commodity prices are rising continuously on the back of strong growth in emerging and commodity-exporting economies, and are assumed to continue increasing moderately in the future.

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[6] In order to assess the trend change in prices, the CPI for fiscal 2010 excludes the effects of subsidies for high school tuition, which significantly pushed down the year-on-year rate of change in the index for the period.

[7] Estimates of the aggregate supply and demand balance need to be treated from a longer-term perspective, and a certain margin of error should be allowed for. At present, particular attention needs to be paid to the exceptional circumstances such as electricity supply shortages and supply-chain disruptions.

As for the outlook for prices against this environment, with the aggregate supply and demand balance on an improving trend, the domestic corporate goods price index (CGPI) is expected to continue rising on a year-on-year basis throughout the projection period reflecting the rise in international commodity prices. The effects of the rise in international commodity prices are likely to spread to the CPI with some time lag. In addition, under the assumption that medium- to long-term inflation expectations remain stable, the year-on-year rate of change in the CPI is expected to remain slightly positive throughout the projection period, as the aggregate supply and demand balance improves as a trend.[8]

## V. Upside and Downside Risks

### A. Risks to Economic Activity

The aforementioned outlook is the scenario the Bank considers to be the most likely, in other words, the baseline scenario. The following upside and downside risks concerning the outlook for economic activity warrant attention.

First, there is a high degree of uncertainty about the possible effects of the earthquake disaster on Japan's economy. At this point, it is highly uncertain when supply-side constraints will be resolved, because it is difficult to forecast how electricity supply shortages and supply chain disruptions will unfold in the future. The effects of such constraints on economic activity greatly depend on the pace at which the constraints dissipate and the degree to which firms make progress in their response. There is also considerable uncertainty about the timing and scale of the restoration of damaged capital stock. From a longer-term perspective, on one hand, the recent disruptions to supply chains and damage to the electricity infrastructure may accelerate the shift to overseas production. On the other hand, in the process of reconfiguring supply chains, reviewing risk management based on the experience of the disaster, and restoring agriculture and fishery industries, individual economic entities may make proactive and creative efforts to

[8] This outlook for inflation is predicated on the 2005-base CPI. The statistics authority has announced that the base year for the CPI is scheduled to be changed to 2010 in August 2011, and year-on-year figures as far back as January 2011 are scheduled to be revised retroactively. This rebasing is likely to cause the year-on-year rate of increase in the CPI to be revised downward.

generate new sources of demand. As for the impact of sentiment on the economy, due attention needs to be paid not only to future developments in the situation at the nuclear power plant but also to uncertainty about the outlook for corporate profits and compensation of employees. On the other hand, economic activity in Japan might turn out to be stronger than projected through a favorable turn in business and household sentiment, if the above causes for concern are resolved at an early stage and uncertainty about the economic outlook declines.

Second, although the Bank's baseline scenario projects that medium- to long-term growth expectations by firms and households will remain unchanged, attention needs to be paid to a possible change in firms' and households' growth expectations triggered by the earthquake disaster. Even before the earthquake, Japan was faced with the fundamental challenge of strengthening the growth potential of the economy, but meeting this challenge has now become all the more important. If concern about the medium- to long-term growth potential of Japan's economy heightens due to the effects of the disaster, this could depress firms' and households' appetite for spending and act to reduce economic activity for a protracted period. On the other hand, medium- to long-term growth expectations by firms and households could rise if firms take the disaster as an opportunity to bolster efforts to implement growth strategies.

The third risk concerns developments in overseas economies. In the United States, uncertainty about the economic outlook has receded since autumn 2010; on the other hand, balance-sheet adjustment pressure has continued to weigh on the economy. As for Europe, attention needs to be paid to whether concern about sovereign risk problems in some peripheral countries acts to reduce economic activity through disturbances in financial markets and, if this happens, whether adverse feedback loops occur. In many advanced economies, including Japan, the amount outstanding of public debt has increased considerably. In this situation, there is an urgent need for efforts toward fiscal consolidation, and if markets judge such efforts to be insufficient, this is likely to have adverse effects on economic activity through a rise in long-term interest rates and a decline in market sentiment. On the other hand, emerging and commodity-exporting economies are likely to maintain relatively high growth led mainly by robust domestic demand, and it

is possible that growth will accelerate partly due to capital inflows from abroad. If this happens, the faster growth in these economies might present an upside risk to Japan's economy through an increase in exports. At the same time, although many emerging and commodity-exporting economies have continued monetary tightening, this has not sufficiently calmed concern over overheating or inflation. Therefore, due attention needs to be paid to the possibility that fluctuations in economic activity in these economies may grow and that, from a longer-term perspective, sustainable growth may be undermined.

Fourth, attention also needs to be paid to the effects brought about by a possible further rise in international commodity prices. One factor underlying the rise in international commodity prices is the increase in demand. Emerging economies with low energy efficiency have continued to grow at a rapid pace, and the standard of living in these economies has improved sharply amid such strong growth. If the rise in international commodity prices reflects the strong growth in emerging and commodity-exporting economies, its effects on Japan's economy are likely to be offset by an increase in exports to these economies and in direct investment income receipts. It should be noted, however, that the recent rise in commodity prices is also attributable to the heightened geopolitical risks in the Middle East and North Africa as well as supply-side factors such as adverse weather conditions and natural disasters. Moreover, financial developments on the back of continued accommodative monetary conditions worldwide have partly contributed to the acceleration in the increase in international commodity prices. If international commodity prices rise further, the decline in real purchasing power and deterioration in corporate profits resulting from a further deterioration in the terms of trade could act to reduce private domestic demand in Japan.

**B. Risks to Prices**

There is also uncertainty regarding the outlook for prices, which could deviate either upward or downward from the projection. To begin with, if any of the aforementioned upside and downside risks to economic activity materialize, prices might be affected accordingly. In this context, it is particularly important to assess the potential impact of the earthquake disaster on prices. As noted earlier, it should be taken into account that, regarding the effects of the disaster on the aggregate supply and demand balance,

supply-side constraints work in the direction of tightening the supply and demand balance, while the decline in demand works in the opposite direction. Meanwhile, if the supply capacity of the economy as a whole is constrained for a protracted period, for example due to power shortages, a tightening of the aggregate supply and demand balance is likely to present an upside risk to prices. At the same time, however, attention should be paid to the possibility that, if the economic downturn caused by supply constraints is prolonged and downward pressure on corporate profits and compensation of employees continues, this could lead to a deterioration in the supply and demand balance, which could in turn pose a downside risk to prices.

There are also the following risks specific to prices. The first concerns firms' and households' medium- to long-term inflation expectations. Going forward, Japan's economy is expected to return to a recovery path, but the pace of recovery is likely to remain moderate. In these circumstances, if firms and households expect a continued decline in prices, this might exert downward pressure on actual prices, together with wages. In addition, if the year-on-year rate of change in the CPI is revised downward with the base-year change scheduled for August 2011, attention needs to be paid to whether this affects firms' and households' inflation expectations.

The second risk concerns developments in import prices. Considerable uncertainty surrounds developments in prices of primary commodities such as crude oil, with potential for movement in either direction. Depending on the political situation in the Middle East and North Africa, economic developments in relatively energy-inefficient emerging economies, and capital inflows to commodity markets on the back of accommodative monetary conditions worldwide, primary commodity prices might see large fluctuations both up and down. Fluctuations in foreign exchange rates can also affect consumer prices to a certain extent, not only by causing swings in economic activity but also through changes in import prices.

## VI. Conduct of Monetary Policy

Since immediately after the earthquake, the Bank has been taking swift measures focusing on three major aspects: maintaining the functioning of financial and settlement systems,

ensuring the stability of financial markets, and supporting economic activity. First, in terms of maintaining the functioning of financial and settlement systems, the Bank has been doing its utmost to provide cash in the disaster areas and to ensure the stable operation of Japan's core payment and settlement systems, including the Bank of Japan Financial Network System (BOJ-NET). In response to increased precautionary demand for funds, with a view to ensuring stability in financial markets, the Bank has also been providing ample funds sufficient to meet demand in the markets. Moreover, it further strengthened monetary easing by increasing the amount of the Asset Purchase Program, mainly of the purchases of risk assets, by about 5 trillion yen, with a view to preventing any deterioration in business sentiment and heightening of risk aversion in financial markets from adversely affecting economic activity. In addition to such measures, the Bank decided to introduce a funds-supplying operation that provides financial institutions in disaster areas with longer-term funds in order to provide financial support to their initial response efforts to meet the demand for funds for restoration and rebuilding. The Bank also decided to broaden the range of eligible collateral for money market operations with a view to ensuring that financial institutions in the disaster areas have sufficient financing capacity.

The Bank assesses the economic and price situation from two perspectives and then outlines its thinking on the future conduct of monetary policy. In this process, the Bank takes into account the "understanding of medium- to long-term price stability" (hereafter "understanding") -- that is, the level of inflation that each Policy Board member understands, when conducting monetary policy, as being consistent with price stability over the medium to long term. The Bank has made clear that it will continue the virtually zero interest rate policy until it judges, on the basis of the "understanding," that price stability is in sight, on condition that no problem is identified in examining risk factors, including the accumulation of financial imbalances. The "understanding" was reviewed at the Monetary Policy Meeting on April 28, and showed that each Policy Board member's "understanding" falls in a positive range of 2 percent or lower, centering around 1 percent.

The first perspective from which the Bank assesses the economic and price situation is to examine the baseline scenario for the outlook for economic activity and prices -- that is, the scenario considered to be the most likely -- through fiscal 2012. As noted earlier, due to

the effects of the earthquake disaster, Japan's economy is likely to continue facing strong downward pressure, mainly on the production side, for the time being. However, backed by an increase in exports reflecting the improvement in overseas economic conditions and by a rise in demand for restoring capital stock, the economy is expected to return to a moderate recovery path from the second half of fiscal 2011 as supply-side constraints ease and production regains traction. As for prices, with the aggregate supply and demand balance improving as a trend, the year-on-year rate of change in the CPI is expected to remain slightly positive throughout the projection period. Based on a comprehensive assessment of the outlook for economic activity and prices described above, the Bank expects that, although some more time will be needed to confirm that price stability is in sight on the basis of the "understanding," Japan's economy will eventually return to a sustainable growth path with price stability in the longer run.

The assessment from the second perspective examines the risks considered most relevant to the conduct of monetary policy, including risks that have a longer time horizon than the first perspective. In the area of economic activity, there is a high degree of uncertainty about the effects of the earthquake disaster on Japan's economy. Moreover, growth in emerging and commodity-exporting economies could turn out to be stronger than expected due to robust domestic demand and capital inflows from abroad. In the United States, growth could be higher than expected, but there is also a risk that balance-sheet adjustments could act to reduce economic activity. Regarding European economies, the possible consequences of the sovereign risk problems continue to warrant attention. Meanwhile, turning to the implications of the rise in international commodity prices, on the one hand, the high growth in emerging and commodity-exporting economies that lies behind the price rise is likely to provide a boost to Japan's exports; on the other hand, the decline in real purchasing power resulting from the deterioration in the terms of trade could reduce private domestic demand in Japan. Regarding the outlook for prices, there is a possibility that inflation will rise more than expected if international commodity prices increase further, while there is also a risk that the rate of inflation will deviate downward from the Bank's baseline scenario due, for example, to a decline in medium- to long-term inflation expectations.

Based on the examination from the two perspectives described above, Japan's economy is expected to return to a sustainable growth path with price stability in the longer run. However, for the time being, attention should be paid to the downside risks to economic activity, especially the possible effects of the disaster.

As for the future conduct of monetary policy, the Bank -- in order for Japan's economy to overcome deflation and return to a sustainable growth path with price stability, and based on the examination from the two perspectives described above -- will continue to consistently make its utmost contributions as the central bank through the three-pronged approach of pursuing powerful monetary easing consisting of comprehensive monetary easing, ensuring financial market stability, and providing support to strengthen the foundations for economic growth. The Bank will continue to carefully examine the outlook for economic activity and prices, including the effects of the disaster, and take appropriate policy actions as necessary.

(Appendix 1)

## Forecasts of the Majority of Policy Board Members

y/y % chg.

| | Real GDP | Domestic CGPI | CPI (excluding fresh food) |
|---|---|---|---|
| Fiscal 2010 | +2.8 to +2.8<br>[+2.8] | +0.7 | -0.3 |
| Forecasts made in January 2011 | +3.3 to +3.4<br>[+3.3] | +0.5 to +0.6<br>[+0.5] | -0.4 to -0.3<br>[-0.3] |
| Fiscal 2011 | +0.5 to +0.9<br>[+0.6] | +1.6 to +2.6<br>[+2.2] | +0.5 to +0.8<br>[+0.7] |
| Forecasts made in January 2011 | +1.4 to +1.7<br>[+1.6] | +0.7 to +1.2<br>[+1.0] | 0.0 to +0.4<br>[+0.3] |
| Fiscal 2012 | +2.7 to +3.0<br>[+2.9] | +0.3 to +0.7<br>[+0.6] | +0.5 to +0.7<br>[+0.7] |
| Forecasts made in January 2011 | +1.9 to +2.2<br>[+2.0] | +0.5 to +0.8<br>[+0.7] | +0.2 to +0.8<br>[+0.6] |

Notes: 1. Figures in brackets indicate the median of the Policy Board members' forecasts (point estimates).

2. The forecasts of the majority of Policy Board members are constructed as follows: each Policy Board member's forecast takes the form of a point estimate, namely, the figure to which he or she attaches the highest probability of realization. These forecasts are then shown as a range, with the highest figure and the lowest figure excluded. The range does not indicate the forecast errors.

3. Individual Policy Board members make their forecasts with reference to the view of market participants regarding the future course of the policy interest rate -- a view that is incorporated in market interest rates.

4. The real GDP figures for fiscal 2010 are Policy Board members' estimates. The figures for the domestic CGPI and the CPI (excluding fresh food) are actual values.

5. The CPI for fiscal 2010 excludes the effects of the introduction of subsidies for high school tuition fees, a factor that substantially lowered the year-on-year rate of change in the CPI for the year. Specifically, this measure is estimated to have lowered the year-on-year rate of change in the CPI (excluding fresh food) by approximately 0.5 percentage point.

6. The outlook for inflation is predicated on the 2005-base CPI. The statistics authority has announced that the base year for the CPI is scheduled to be changed to 2010 in August 2011, and year-on-year figures as far back as January 2011 are scheduled to be revised retroactively. This rebasing is likely to cause the year-on-year rate of increase in the CPI to be revised downward.

7. The ranges shown below include the forecasts of all Policy Board members.

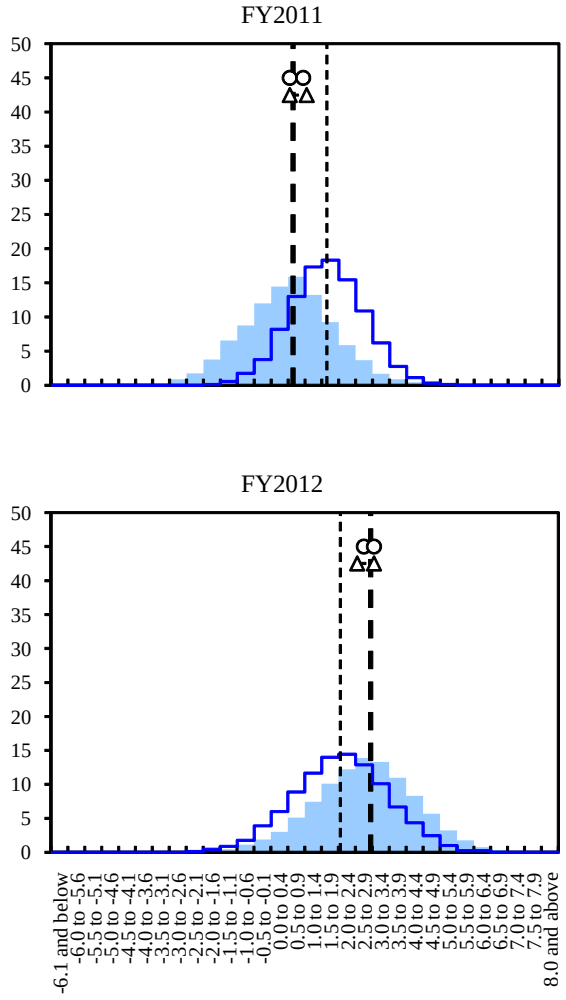
y/y % chg.

| | Real GDP | Domestic CGPI | CPI (excluding fresh food) |
|---|---|---|---|
| Fiscal 2010 | +2.7 to +2.9 | +0.7 | -0.3 |
| Forecasts made in January 2011 | +3.2 to +3.5 | +0.4 to +0.6 | -0.4 to -0.2 |
| Fiscal 2011 | +0.5 to +1.0 | +1.5 to +2.7 | +0.5 to +0.9 |
| Forecasts made in January 2011 | +1.4 to +1.8 | +0.6 to +1.2 | -0.1 to +0.4 |
| Fiscal 2012 | +2.5 to +3.0 | +0.1 to +1.0 | +0.4 to +0.7 |
| Forecasts made in January 2011 | +1.8 to +2.4 | +0.3 to +1.0 | 0.0 to +0.8 |

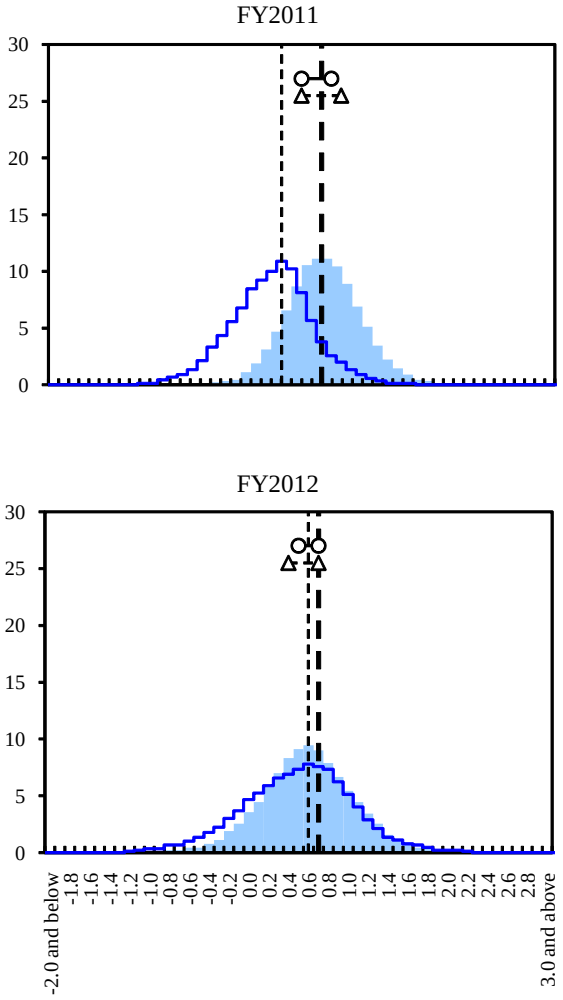
(Appendix 2)

## Risk Balance Charts

(1) Real GDP




(2) CPI (Excluding Fresh Food)




Notes: 1. Vertical axes in the charts represent probability (%), while horizontal axes represent the year-on-year percentage changes in the respective indicators. Bar charts represent the probability distributions in April 2011, and solid lines represent those in January 2011.

2. Vertical dashed heavy lines indicate the median of the Policy Board members' forecasts (point estimates). ○——○ indicates the range of the forecasts of the majority of Policy Board members. △- - -△ indicates the range of the forecasts of all Policy Board members.

3. Vertical dashed thin lines indicate the median of the Policy Board members' forecasts (point estimates) in January 2011.

4. For the process of compilation of the Risk Balance Charts, see the box on page 9 of the April 2008 *Outlook for Economic Activity and Prices.*

## The Background

## I. Economic, Price, and Financial Developments in Fiscal 2010

### *Economic Activity*

Looking back at fiscal 2010, Japan's economy was on a modest recovery path around spring, mainly due to the improvement in overseas economies and the effects of various policy measures. From the beginning of autumn, however, the pace of recovery slowed due to the slowdown in overseas economies, the adverse impact of the appreciation of the yen on business sentiment, and the drop in sales of durable consumer goods following the earlier rush in demand (Chart 1). From early 2011, Japan's economy was emerging from the deceleration phase as growth in overseas economies accelerated again. However, due to the effects of the Great East Japan Earthquake on March 11, 2011, the economy now faces strong downward pressure, mainly on the production side. The following discusses developments in each economic component, focusing essentially on the period before the earthquake. Developments following the earthquake will be described in detail in Section II.

Exports continued their uptrend, albeit with some fluctuations, reflecting developments in overseas economies. Specifically, Japan's real exports continued to increase substantially until around spring 2010 as overseas economies maintained relatively high growth supported by inventory restocking and policy effects following the failure of Lehman Brothers (Chart 2). From the summer, however, the pace of growth in overseas economies slowed as inventory restocking ran its course, the demand-boosting effects of fiscal policy measures waned, and emerging and commodity-exporting economies adjusted their accommodative monetary policies. With worldwide inventory adjustments in IT-related goods and the appreciation of the yen acting as additional factors, Japan's real exports decelerated and remained almost flat. Real exports subsequently showed signs of resuming their uptrend as growth in overseas economies accelerated again. Meanwhile, after showing relatively high growth at the beginning of fiscal 2010, real imports gradually slowed and leveled off.

In this situation, domestic private demand showed signs of picking up. Corporate profits

continued to improve due to sales increases and firms' efforts to reduce costs, especially labor costs. However, from the middle of fiscal 2010, the pace of improvement in corporate profits slowed, partly due to the slowdown in overseas economies as well as the rise in raw material prices (Chart 3 [1]). Business fixed investment started picking up on the back of the increase in production and the recovery in profits, but the pace of this pick-up was moderate as firms' sense of excessive capital stock persisted (Chart 3 [2]). Meanwhile, the employment and income situation remained severe, as indicated by the continuing high unemployment rate, but the degree of severity eased somewhat. In terms of compensation of employees, the change in the number of employees and in nominal wages both turned slightly positive on a year-on-year basis (Chart 4). Amid this employment and income situation, private consumption, notably durable goods consumption, continued to generally pick up on the back of various policy measures (Chart 5 [1]). Especially in the summer, car sales rose due to the last-minute increase in demand for energy-efficient cars ahead of the expiration of subsidies, and sales of air conditioners and beverages increased as a result of the extremely hot weather. Tobacco sales also rose due to the last-minute increase in demand ahead of the increase in the tobacco tax. From autumn 2010, private consumption weakened as a whole; although sales of electrical appliances such as flat-panel televisions increased significantly due to the last-minute increase in demand before the revision of the associated eco-point system, sales of tobacco products and cars decreased substantially following the earlier rush in demand. Meanwhile, consumer sentiment followed a recovery trend, albeit with some fluctuations, prior to the earthquake (Chart 5 [2]). Housing investment bottomed out and started to pick up against the backdrop of government measures to support home purchases as well as progress in inventory adjustments (Chart 6).

Reflecting these developments in demand both at home and abroad, industrial production, which had continued to recover from the plunge following the failure of Lehman Brothers, decreased temporarily toward the end of 2010, but started to return to an uptrend from early 2011 (Chart 7 [1]). On a year-on-year basis, growth in production accelerated in many industries at the beginning of fiscal 2010, especially in the transport equipment and electronic parts and devices industries. From the summer, however, growth in industrial production decelerated, reflecting the slowdown in exports, inventory adjustments in

IT-related goods, and the decline in car sales following the expiration of subsidies for energy efficient cars. Meanwhile, growth in inventories was restrained at the beginning of fiscal 2010 but gradually started to surpass that in shipments, partly due to the effects of worldwide inventory adjustments in IT-related goods (Chart 7 [2]). Looking at the indices of all industrial activity, the year-on-year growth rate in activity in the manufacturing sector temporarily rose sharply and then decelerated gradually, while activity in the nonmanufacturing sector continued to increase modestly (Chart 8).

Reflecting these economic developments, utilization of labor and production capacity continued to improve (Chart 9 [1] and [2]). Looking at the weighted average of the *Tankan* (Short-Term Economic Survey of Enterprises in Japan) diffusion indices (DIs) of production capacity and employment conditions, where indices are weighted by capital and labor shares, the negative value decreased. The estimated negative output gap also narrowed steadily, but stopped narrowing toward the end of 2010 when the economic recovery slowed (Chart 9 [3]).

***Prices***

On the price front, the decline in prices decelerated as the aggregate supply and demand balance improved gradually and international commodity prices rose. The year-on-year rate of change in the domestic corporate goods price index (CGPI) was around 0 percent until around summer 2010, but since the autumn the rate of increase has risen due to the rise in international commodity prices (Chart 10 [1]). The year-on-year rate of decline in the consumer price index (CPI) for all items excluding fresh food continued to slow as a trend (Charts 11 and 12 [1]).[9] The pace of decline in the CPI excluding food and energy and in the trimmed mean CPI also followed a decelerating trend. The deceleration in the decline in prices was due to the fact that, amid stable medium- to long-term inflation expectations by firms and households, the effects of the gradual improvement in the aggregate supply and demand balance were spreading to prices with a time lag. Looking at a breakdown of

[9] In terms of the CPI excluding high school tuition, the year-on-year rate of change has turned positive (Chart 11 [2]). The year-on-year CPI figures from October 2010 were boosted by 0.3 percentage point due to the rise in the tobacco tax and by 0.1 percentage point due to the increase in accident insurance premiums.

the CPI, as for goods, the positive contribution from petroleum products increased, while the year-on-year rate of decline in prices for food products slowed (Chart 12 [2]). As for services, the rate of decline in housing rents accelerated, while the decline in prices for other services slowed partly due to price changes in overseas package tours, so that the decline in service prices as a whole slowed (Chart 12 [3]).

***Financial Markets***

Global financial markets became unstable from spring through autumn 2010. This was attributable to intensified risk aversion by investors worldwide partly reflecting concern about sovereign risk problems in European peripheral countries including Greece, followed by the release of a series of weaker-than-expected economic indicators in the United States. The sovereign risk problems in European peripheral countries are unlikely to be resolved in a short period of time. As a result, they have continued to cause concern, and credit default swap premiums for these countries and spreads in long-term interest rates against German government bonds have remained elevated, albeit with some fluctuations (Chart 13).

From autumn 2010, partly because pessimism on the outlook for the U.S. economy receded mainly due to demand-boosting policy measures both on the monetary and the fiscal front, global financial markets improved, as seen in the uptrend in stock prices around the world. After the earthquake in Japan in March 2011, investors' risk aversion heightened temporarily, but financial markets subsequently regained stability.

Policy interest rates in the United States and Europe remained at low levels, but in April 2011 there was a rate hike in Europe to counter heightened inflationary pressures (Chart 14 [1]). Emerging and commodity-exporting economies continued to tighten monetary policy (Chart 14 [2]).

Looking at financial and capital markets in Japan, the overnight call rate remained at extremely low levels in the money market as the Bank pursued significant monetary easing (Chart 15 [1]). Among interest rates on term instruments, interbank rates declined

moderately and then remained unchanged at low levels. Futures markets and other markets indicate that market participants expect that short-term rates will remain low for the time being (Chart 15 [2] and [3]).

Until the earthquake, long-term interest rates and stock prices in Japan essentially followed developments in the United States and Europe. The 10-year and 5-year rates followed long-term interest rates in the United States and Europe, declining temporarily through autumn 2010 and subsequently increasing again, albeit with some fluctuations (Chart 16). Stock prices in Japan declined through autumn 2010, following the decline in U.S. and European stock prices. However, when U.S. and European stock prices subsequently recovered, the rise in Japanese stock prices was relatively small, weighed down by the appreciation of the yen (Chart 17). In the foreign exchange markets, the yen, after continuing to appreciate toward autumn 2010 amid a decline in interest rate differentials between Japan and other countries, remained more or less unchanged (Chart 18).

After the earthquake in March 2011, stock prices plunged and the yen appreciated temporarily, partly because investors' risk aversion heightened sharply due to increased uncertainty about the outlook for Japan's economy. However, financial markets subsequently calmed down and have remained stable as the Bank continued to provide ample funds.

In fiscal 2010, the Bank strengthened monetary easing. In August 2010, the Bank introduced a six-month term in its fixed-rate funds-supplying operation against pooled collateral and increased the total amount of funds to be provided through the operation from about 20 trillion yen to about 30 trillion yen. In October, the Bank decided to implement comprehensive monetary easing, consisting of three measures: a clarification of the Bank's pursuit of a virtually zero interest rate policy, a clarification of the policy time horizon based on the "understanding of medium- to long-term price stability," and the establishment of the Asset Purchase Program. Moreover, after the earthquake, the Bank swiftly decided to increase the volume of the Program by about 5 trillion yen, focusing mainly on the purchase of risk assets. This doubled the amount of asset purchases to about 10 trillion yen and brought the total volume of the Program to about 40 trillion yen (Chart 19).

***The Financial Environment***

Financial conditions continued to ease from spring 2010. Issuing conditions for CP remained favorable, with credit spreads being generally stable at low levels (Chart 20). In the corporate bond market, issuing conditions continued to be favorable as seen in the increased variety of corporate bond issuers. However, after the earthquake, new issuance came to a halt due to heightened uncertainty. Credit spreads for high-rated corporate bonds were more or less unchanged at low levels, while those for medium- and low-rated bonds continued to narrow moderately as a trend with some fluctuations (Chart 21). In the real estate investment trust (REIT) market, prices surged and trading volume increased following the announcement of the Bank's comprehensive monetary easing (Chart 22). Bank lending rates continued to decline moderately as a trend, as firms' demand for funds continued to subside (Chart 23 [1]). Against this backdrop, firms' funding costs continued to decline. In terms of economic activity and prices, the stimulative effects of low interest rates have been subdued (Chart 24).

With regard to credit supply, financial institutions' lending attitudes eased. Firms continued to view financial institutions' lending attitudes as improving (Chart 25 [1]). As for credit demand, prior to the earthquake, firms' need to fund working capital and fixed investment was declining, and some firms were reducing the on-hand liquidity that they had accumulated. However, after the earthquake, increased demand for working capital as well as the accumulation of on-hand liquidity could be observed among some firms.

Under the above-mentioned circumstances, developments in firms' funding show that from 2010 until the earthquake, bank lending continued to decline due to, among other things, a decrease in firms' demand for funds (Chart 23 [2]). On the other hand, the amount outstanding of corporate bonds exceeded the previous year's level and the pace of decline in the amount outstanding of CP was on a decelerating trend. Although the financial positions of firms were improving as a whole, some firms, mainly small ones, faced difficulties in funding after the earthquake (Chart 25 [2]). Meanwhile, the year-on-year rate of growth in the money stock (M2) was within a range of around 2.0-3.0 percent (Chart 23 [3]).

Land prices continued to decline in both metropolitan and nonmetropolitan areas, but the rate of decline slowed somewhat. According to the *Public Notice of Land Prices* as of January 1, 2011, both commercial and residential land prices in the three major metropolitan areas (Tokyo, Osaka, and Nagoya) and in nonmetropolitan areas showed a year-on-year decline, but at a somewhat slower pace (Chart 26). The fall in commercial and residential land prices in the 23 wards of Tokyo moderated.[10]

## II. The Outlook for Economic Activity and Prices from Fiscal 2011 through Fiscal 2012

### *The Effects of the Great East Japan Earthquake*

As described above, Japan's economy had been emerging from the deceleration phase, but the situation changed significantly as a result of the Great East Japan Earthquake on March 11. The earthquake and subsequent tsunami caused damage to social capital stock such as roads and ports, private capital stock such as factories and commercial facilities, and housing capital stock (Chart 27 [2]). Moreover, the accident at the nuclear power plant in Fukushima Prefecture caused by the earthquake disaster has hindered economic activity in the surrounding areas and led to constraints in electricity supply across widespread areas (Chart 28).[11] Through their impact on supply chains, the decline in production in the affected areas and the electricity supply constraints have also impacted economic activity in areas not directly affected by the earthquake. Especially in the automobile industry, which relies on a large number of parts and components, and where inventories tend to be kept to a minimum, an immediate and pronounced drop in production was observed due to supply

[10] Land prices are compared on a semiannual basis for areas that are surveyed in both the *Public Notice of Land Prices* and the *Land Price Survey by Prefectural Governments*.

[11] See Box 1 for details on electricity supply problems.

chain disruptions.[12] As a result, since the earthquake, Japan's economy has faced strong downward pressure, mainly on the production side, due to damage to production facilities, supply chain disruptions, and electricity supply constraints.

Going forward, downward pressure on the production side is likely to continue for the time being, but the degree of this downward pressure is expected to ease gradually. The balance of electricity supply and demand will temporarily improve somewhat and the reconfiguration of supply chains is expected to make some progress in the coming few months as production facilities are restored and production is moved to alternative sites in non-affected areas, including overseas sites. However, electricity supply constraints will likely heighten as demand for electricity surges in the summer due to the use of air conditioners. In response, various efforts are expected to be made both on the supply and the demand side to avoid blackouts, but electricity constraints are likely to be a factor hampering economic activity to some extent.

The earthquake disaster has also affected the demand side of the economy through a deterioration in business and household sentiment. Increased uncertainty about the future and widespread voluntary restraint put a chill on business and household sentiment (Charts 1 [2] and 5 [2]). For this reason, some businesses postponed fixed investment and some households restrained consumption other than of necessities. This behavior by firms and households, together with the supply-side constraints described above, is likely to reduce economic activity for the time being.

At the same time, however, efforts to restore capital stock damaged by the earthquake disaster are gradually getting underway. For example, work to restore social capital essential for daily life and distribution in the affected areas, such as essential utilities and

[12] Compared with the Great Hanshin-Awaji Earthquake, the Great East Japan Earthquake affected wider areas and the damage was larger in scale (Chart 27 [1] and [2]). In addition, the affected areas serve as a hub for firms that manufacture important parts and components, especially electronic parts and devices (Chart 27 [3]). These parts and components were supplied to customers nationwide and abroad. Thus, the suspension of production in the affected areas has had a large impact on production in Japan as a whole and has also affected overseas production. For details on the economic impact of the Great Hanshin-Awaji earthquake, see Box 2.

traffic networks, has already started. Private firms have also begun restoring damaged machinery and equipment, factories, and commercial facilities. These restoration activities will for the time being likely be hampered by the above-mentioned supply-side constraints, but are expected to make greater progress as such constraints ease. It should be noted that, as the damage caused by the earthquake disaster was enormous, it is likely to take a long time to restore the capital stock.

While the current drop in economic activity is partly due to the deterioration in business and household sentiment, essentially it mainly reflects supply-side constraints. In this respect, the nature of the shock differs from the sharp drop in demand triggered by the financial contraction when Lehman Brothers collapsed in autumn 2008. Therefore, if and when the supply-side constraints ease, Japan's economic growth is likely to gradually accelerate as exports increase on the back of improvements in overseas economies and demand materializes for the restoration of capital stock. However, there is considerable uncertainty about when and at what pace supply-side constraints will ease. Attention should also be paid to the question of whether the disaster will lower firms' and households' medium- to long-term growth expectations.

***The Outlook for Economic Activity and Prices***

Taking the aforementioned effects of the earthquake disaster into account, the annual real GDP growth rate is projected to be in the range of 2.5-3.0 percent in fiscal 2010, around 0.5 percent in fiscal 2011, and 2.5-3.0 percent in fiscal 2011. These projected growth rates for fiscal 2010 and fiscal 2011 are lower than those in the January 2011 interim assessment, mainly due to the supply-side constraints caused by the effects of the disaster. On the other hand, the projected growth rate for fiscal 2012 is higher because the easing of the supply-side constraints will push up the growth rate and efforts to restore capital stock will also continue.

Considering this in terms of the investment-saving balance, while the large fiscal deficit of the general government is expected to continue, net saving in the private sector will remain considerable as the pace of recovery in business and consumer sentiment is likely to be

moderate (Chart 29). Net saving is likely to be somewhat larger than the fiscal deficit, implying that the current account surplus will continue.

As for the outlook for prices in terms of price indices, with the aggregate supply and demand balance on an improving trend, the CGPI is expected to continue rising on a year-on-year basis throughout the projection period reflecting the rise in international commodity prices. Looking at the CPI (excluding fresh food), amid stable medium- to long-term inflation expectations, the year-on-year rate of change is expected to remain slightly positive throughout the projection period, as prices of raw materials increase and the aggregate supply and demand balance improves as a trend. Compared with the January 2011 interim assessment, the projection for the CGPI is higher for fiscal 2011, and more or less unchanged for fiscal 2012. The projection for the CPI is somewhat higher for fiscal 2011, and more or less unchanged for 2012.

Given these economic and price developments, the pace of growth in nominal income is likely to slow for a while in fiscal 2011, but is expected to start accelerating in fiscal 2012.

The following provides supplementary details on each of the items.

***Government Spending***

Going forward, public investment, which had been on a declining trend under the severe fiscal conditions, is expected to start increasing as efforts to restore capital stock make progress (Chart 30). Expenses (for premises, equipment, and personnel) related to the earthquake disaster, such as debris removal costs, will push up government consumption. In the case of the Great Hanshin-Awaji Earthquake, nearly 10 trillion yen was provided from fiscal 1994 to fiscal 1999 under budgets for projects related to earthquake disaster reconstruction.[13] On April 22, 2011, the cabinet decided on a supplementary budget for fiscal 2011 amounting to about 4 trillion yen. The restoration of social capital stock is

[13] See Hiromu Yasuda, Tomonori Uchikawa, and Shingo Nagamatsu, "How Have Public Finances Helped for Real Recovery from the Hanshin-Awaji Big Earthquake?" *TOSHIMONDAI*, 91, (1), 2000 (available only in Japanese).

likely to take considerable time, not only because the financial damage caused by the March 11 earthquake is large but also because the disaster affected a wide area.

***The Environment Surrounding Exports***

Overseas economies are expected to continue recovering, led by strong growth in emerging and commodity-exporting economies (Chart 31 [1]). The U.S. economy has continued to recover, partly due to monetary easing and fiscal stimulus measures including the extension of tax cuts. Economic activity in Europe has continued to recover moderately, especially in Germany, with some differences in growth by country. Although they have continued to tighten their monetary policies, emerging and commodity-exporting economies continue to register strong growth, led by robust domestic demand, partly due to capital inflows from abroad. In particular, Asian emerging economies, which account for a large share of Japan's exports, are expected to continue growing at a rapid pace.

Meanwhile, global demand for IT-related goods is expected to be firm. Growth in global shipments of semiconductors decelerated temporarily in 2010 amid the slowdown in demand for personal computers and flat-panel televisions, but has started to accelerate again since early 2011 due to progress in inventory adjustments (Chart 32 [1]). Looking at the shipment-inventory balance of electronic parts in South Korea, which is an important production base for IT-related goods, this improved through the second half of 2010 (Chart 32 [2]). Prices of dynamic random access memory (DRAM) chips have been showing signs of bottoming out (Chart 32 [3]). Moreover, demand for final products, particularly tablet devices and smartphones, is expected to increase. Against this backdrop, prices of flash memory chips have been firm (Chart 32 [4]). In view of these factors, growth in global demand for IT-related goods is likely to accelerate again. However, supply and demand conditions in this area can often change significantly in a short period of time. Attention also needs be paid to whether interruptions to parts supplies from Japan will restrain production of final products.

Against the backdrop of continued recovery in overseas economies led by strong growth in emerging and commodity-exporting economies, Japan's exports are expected to follow an upward trend in the projection period on the whole. However, in the short run, exports

will fluctuate significantly due to the effects of the earthquake disaster. Specifically, in the first half of 2011, real exports will likely be somewhat weak because of supply constraints caused by the disaster. As such constraints ease, exports are likely to increase substantially for a while, partly due to restocking of overseas inventories. Once these temporary developments subside, Japan's real exports are expected to continue increasing moderately reflecting the expansion of overseas economies.

The shift to overseas production is likely to continue, but this can be considered part of the ongoing deepening of the cross-border division of labor. In fact, the rise in the overseas production ratio is accompanied by a rise in the share of exports going to overseas subsidiaries, which suggests that global supply chains have continued to broaden (Chart 33 [1]). Moreover, for different goods and industries, a variety of developments such as the provision of export incentives, import substitution, and increases in reverse imports can be observed, and Japanese manufacturers have continued to grow by playing a part in this deepening of the division of labor (Chart 33 [2]). Although alternative production at overseas locations will increase in the short run due to the earthquake disaster, in the longer run the basic structure -- in which production in Japan occupies a key position in the cross-border division of labor -- will remain unchanged. However, attention needs to be paid to whether the disaster and the attendant power shortages result in production in Japan being left out of the reconfiguration of global supply chains, which could lead to a hollowing-out of Japan's manufacturing base.

In addition to the effects of the disaster, continued attention needs to be paid to the following uncertainties regarding the external environment: the possibility of higher-than-expected growth in emerging economies; developments in advanced economies such as future developments in the U.S. economy and developments in the European economies, especially the sovereign risk problems; and the possibility that commodity prices might turn out substantially higher than expected partly due to uncertainty about the situation in the Middle East and North Africa.[14]

[14] The rise in international commodity prices exerts an adverse effect on Japan's economy through the deterioration in the terms of trade. However, if the reason for such a rise in prices is strong growth in emerging economies, this could offset the adverse effects on Japan's economy. For details, see Box 3.

***Firms' Profits and Spending Behavior***

Regarding the corporate sector, corporate profits are likely to be under severe downward pressure for the time being due to the effects of the earthquake disaster. Firms' current profits continued to improve in fiscal 2010, but are likely to turn out lower for the year than projected in the March 2011 *Tankan* (Chart 34). In terms of current net income, corporate profits are likely to turn out much lower than projected because capital stock was damaged by the disaster, various costs increased temporarily, and stock prices declined. Corporate profits for fiscal 2011 are also likely to be sluggish due to the effects of the disaster and of the rise in international commodity prices. However, in fiscal 2012, with production increasing, corporate profits are expected to rise again.

Business fixed investment had been picking up on the back of the recovery trend in production and corporate profits, but is likely to be sluggish for a while due to supply constraints and a temporary deterioration in business sentiment. However, assuming that firms' medium- to long-term growth expectations remain unchanged, the recovery in business fixed investment is expected to become more pronounced throughout the projection period, with efforts to restore capital stock acting as an additional factor (Chart 35).

In terms of the capital stock cycle, business fixed investment is in a recovery phase (Chart 36). Specifically, due to the drop until fiscal 2009, the level of business fixed investment relative to capital stock is extremely low. Therefore, fixed investment will increase as a result of the resumption of investment for maintenance and repairs alone. Consequently, even if the expected growth rate of the economy is only around 0 to 1 percent, business fixed investment can be expected to recover during fiscal 2010 to fiscal 2012.

Although firms' medium- to long-term growth expectations have been declining from a long-term perspective, recently no noticeable change has been observed (Chart 37 [1]). In this situation, business fixed investment relative to cash flow is likely to remain at a low level (Chart 37 [2]). However, business fixed investment is expected to continue

recovering moderately throughout the projection period as cash flow itself is expected to improve.

The above is the baseline scenario, but there is considerable uncertainty about the effects of the earthquake disaster, not only in the short run but also in the medium to long run.

In the short run, first of all, it is highly uncertain at what pace supply chains will start to operate normally again. Firms affected by the disaster have been making strenuous efforts to restore production capabilities, but this could take time partly due to the shortage of materials and electricity supply constraints. Moreover, some of the manufacturers affected by the earthquake hold a large global market share in the electronic parts and materials they supply, and finding alternative sources of supply for these parts and materials will not be easy. Under these circumstances, if supply-side constraints are prolonged, this poses the risk of further undermining business sentiment and business fixed investment through lower-than-expected corporate profits.

Attention also needs to be paid to the possibility that firms' medium- to long-term growth expectations will decline, exerting persistent downward pressure on domestic business fixed investment and on the employment and income situation. For example, firms' medium- to long-term growth expectations could fall if supply chain disruptions and power shortages trigger an acceleration in the shift to overseas production, which could lead to a hollowing-out of Japan's manufacturing base. In addition, due to concern about radiation contamination, some foreign residents have returned to their home countries and inspection of products made in Japan has intensified in some countries. If such concern about visiting or doing business in Japan and about Japanese products were to become entrenched, this could reduce medium- to long-term growth expectations. Moreover, if the fiscal deficit were to grow further due to the disaster, this could give rise to concern about future tax increases or a deterioration in social security, restraining firms' and households' growth expectations.

However, there is also the possibility that medium- to long-term growth expectations will turn out stronger than projected. For instance, the power supply constraints could trigger

an acceleration in innovation in energy-related technologies, which in turn could strengthen Japanese firms' international competitiveness. It is also expected that, in the process of restoring and rebuilding the affected areas, some of the efforts will help to strengthen the growth potential of Japan's economy as a whole; examples include efforts to create towns based on new concepts focusing on safety and conservation of the natural environment and to streamline and boost added value in agriculture and fisheries.

***The Employment and Income Situation and Households' Spending Behavior***

The employment and income situation in terms of the compensation of employees will be somewhat weak for a while in fiscal 2011, partly due to the effects of the disaster; however, improvements will gradually become evident through fiscal 2012 (Chart 38 [1]). Meanwhile, the labor income share (compensation of employees/nominal GDP) is likely to rise in fiscal 2011 due to the sluggishness of nominal GDP, which is the denominator. It is then likely to decline in fiscal 2012 (Chart 38 [2]).

The following considers developments in the compensation of employees by looking separately at labor input and wages per worker. Labor input had been recovering, especially in terms of working hours -- overtime hours in particular -- following the plunge after the failure of Lehman Brothers, but has recently been rising at a slower pace (Chart 38 [3]). Going forward, labor input, especially in terms of working hours, will likely decrease for a while due to the earthquake disaster, but is then expected to remain on a clear uptrend in the second half of the projection period. Labor productivity per worker has been increasing moderately, but is still about 2 percent below the trend, suggesting that workforces still remain excessive (Chart 39 [1]). The sense among firms of having excess labor is likely to strengthen again for a while due to the effects of the disaster, but then economic activity will likely rebound swiftly. Thus, the labor supply and demand situation will likely start to improve through fiscal 2012. Meanwhile, the number of applicants for employment adjustment subsidies has continued to be in line with the gap in labor productivity relative to the trend (Chart 39 [2]). The number of such applicants is likely to

increase for a while due to the effects of the disaster.[15] The unemployment rate is expected to remain more or less unchanged for the time being and then continue to decline moderately (Chart 39 [3]). Because production is expected to improve, firms are likely to address the decline in production basically by shortening working hours and utilizing employment adjustment subsidies. However, if the sluggishness in private consumption-related industries persists partly due to the effects of voluntary restraint, power shortages, and overseas concerns about visiting and doing business in Japan as well as Japanese products, the deterioration on the employment front might be pronounced.

The rate of change in wages per worker has recently been slightly positive on a year-on-year basis, partly reflecting an increase in working hours (Chart 38 [4]). However, the earthquake disaster has led to a decline in working hours and days, and wages are likely to weaken temporarily in line with this decline. It is likely to take until sometime in fiscal 2012 before stable and continued increases in wages per worker are observed.

Private consumption is likely to be subdued for a while due to the disaster, but then start to pick up moderately. However, consumption is unlikely to recover at a rapid pace throughout the projection period because anxiety will persist regarding, for example, fiscal conditions and social security. Growth in real disposable income continued to be relatively high from fiscal 2009 to fiscal 2010, partly due to income transfers from the government to households such as cash benefits and child allowances. However, growth in real disposable income is likely to be quite slow in fiscal 2011, because the decline in prices will slow and growth in the nominal compensation of employees will decelerate

[15] Among the areas hit by the Great East Japan Earthquake (the prefectures of Aomori, Iwate, Miyagi, Fukushima, Ibaraki, Tochigi, Chiba, Niigata, and Nagano), the following businesses can receive the employment adjustment subsidies: businesses located in regions where the Disaster Relief Act applies; those conducting a certain amount of business with these firms in disaster-stricken areas; and businesses located in areas that are subject to rolling blackouts and whose business activity has been reduced due to these blackouts. These businesses also need to meet either of the following requirement to receive these subsidies: (1) their production volume, sales, etc., in the most recent one-month period must have fallen by 5 percent or more compared to the prior month or on a year-on-year basis; or (2) their expected production volume, sales, etc., in the one-month period following the earthquake disaster must have fallen by 5 percent or more compared to the prior one-month period on a year-on-year basis.

(Chart 40 [1]). In fiscal 2012, growth in real disposable income will accelerate somewhat reflecting a recovery in the nominal compensation of employees. Meanwhile, the propensity to consume has been on a downtrend (Chart 40 [2]). The saving rate has been rising somewhat, mirroring the decline in the propensity to consume (Chart 40 [3]). This is attributable to anxiety over the future related to possible tax increases, decreased social security benefits, and increased social security contributions.

Housing investment has been picking up, but going forward there may be delays in housing construction in some regions partly due to shortages of materials caused by the disaster. However, housing investment is expected to increase modestly throughout the projection period partly reflecting the restoration of damaged housing stock.

***The Environment Surrounding Prices***

International commodity prices have been increasing. They are likely to continue increasing, albeit at a slower pace, on the back of, for example, the expansion of overseas economies (Chart 41). From a longer-term perspective, international commodity prices have been linked to the growth rate of overseas economies (Chart 42 [1]). Especially since early 2000, there has been a clear uptrend in international commodity prices, partly due to continuing strong growth in emerging economies. Specifically, the average rate of change in commodity prices in the 1980s and 1990s was minus 0.9 percent, while that from 2000 onward is plus 5.6 percent. Views differ on the reasons underlying this trend change in international commodity prices. One view, for example, holds that the reason for the rise in international commodity prices is the increase in demand for energy and food, especially from emerging economies, amid constraints on the pace at which supply can be increased. Another view is that the rise in international commodity prices may have been brought about by the financialization of commodities in a global environment of loose monetary policy.[16]

The baseline scenario for future developments in international commodity prices is that they will follow a moderate uptrend in line with the expansion of overseas economies.

[16] For details, see "Recent Surge in Global Commodity Prices," Bank of Japan Review Paper No. 2011-E-2.

However, this scenario -- including the interpretation of the trend change on which it is based -- is subject to considerable uncertainty. Looking at the demand for crude oil, the share in global demand of emerging economies -- where the efficiency of crude oil use is low -- has been steadily rising since 2000 (Chart 42 [2]). On the other hand, the supply of crude oil continued to increase until the mid-2000s, but then leveled off. The reason is that oil fields that can be developed at low cost are diminishing, and in order to gain additional supply capacity it has become necessary to tap oil fields that are more difficult and costly to develop (Chart 42 [3][a]). Against the background of these changes in the supply and demand balance, the relationship between crude oil production and prices has clearly changed since the mid-2000s (Chart 42 [3][b]). The above considerations suggest that the recent acceleration in the rise of international commodity prices could to some extent be a structural one.

The output gap had been narrowing steadily until the first half of fiscal 2010, but remained more or less unchanged in the second half as the economic recovery paused (Chart 43 [1]). Going forward, developments in the output gap are subject to a high degree of uncertainty because there are likely to be severe supply-side constraints as a result of the earthquake disaster, while demand will likely decline. However, thereafter, the aggregate supply and demand balance is expected to improve gradually as the economy returns to a moderate recovery path.[17] The output gap is likely to approach zero in the final phase of the projection period.

The potential growth rate fell to close to 0 percent in the recession phase following the failure of Lehman Brothers, mainly because the capital stock and the potential workforce declined, but it has recently been picking up somewhat (Chart 43 [2]). Going forward, the potential growth rate is likely to increase gradually throughout the projection period.

[17] See Box 4 for consideration of the effects on the output gap and prices of the increased supply constraints caused by the disaster.

Therefore, the potential growth rate during the projection period is likely to be around 0.5 percent on average.[18]

From a longer-term perspective, there is a loose correlation between the CPI and the output gap. In fact, looking at the relationship between developments in the CPI (excluding food and energy) and the output gap, the rate of decline in prices has been gradually slowing in line with the shallow Phillips curve observed since the second half of the 1990s (Chart 44 [1]). The same relationship is observed between the trimmed mean CPI and the output gap (Chart 44 [2]). Under the assumption that medium- to long-term expected rates of inflation remain stable at about 1 percent, the CPI (excluding fresh food) is likely to deviate upward from the above-mentioned Phillips curve from mid-2011. However, due to the base-year change explained below, the CPI is likely to shift down to some extent *ex post*.

It is unlikely that any increase in prices of some goods reflecting the rise in international commodity prices will lead to a price rise in a wide range of goods and services through second-round effects. Medium- to long-term expected rates of inflation by households and market participants have been generally stable, just as in 2008, when international commodity prices previously surged (Chart 45 [1]). Surveys indicate that firms in recent years continued to pay little attention to price rises when determining wages (Chart 45 [2]). In fact, the rise in raw material costs could lead firms to step up efforts to reduce other costs, so that it could actually act to restrain wages. However, attention needs to be paid to the fact that future developments in international commodity prices in themselves are subject to considerable uncertainty, meaning that CPI inflation could turn out either higher or lower than expected.

The year-on-year rate of change in the CPI (excluding fresh food) is likely to be revised downward to some extent with the change in base year to 2010, which is scheduled for August 2011.

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[18] Disruptions to supply chains can be considered to be a temporary phenomenon, so that essentially they will not affect the potential growth rate, which corresponds to the pace of increase in supply capacity in the longer run. However, if electricity supply constraints persist, this will act to reduce the potential growth rate.

**(Box 1) Power Supply Problems**

**1. Japan's Power Supply**

Japan's electricity is provided mainly through ten regional electric power companies.[19] Eastern Japan and western Japan operate on different power frequencies, with eastern Japan, which includes the Tokyo metropolitan area and the Tohoku region, using 50 Hz and western Japan using 60 Hz.[20] While there are facilities to transform power frequencies, their capacity is limited, so that the amount of electricity that can be transmitted between western and eastern Japan is extremely limited. Therefore, each area requires a supply of electricity sufficient to meet its internal power demand. Prior to the disaster, the supply capacity of the regional electric power companies was 89 million kW in eastern Japan and 114 million kW in western Japan,[21] which was sufficient to meet power demand during the recent peak in summer 2010 -- approximately 82 million kW in the former and 100 million kW in the latter. By energy source, thermal power accounts for 60 percent of Japan's total power supply, followed by nuclear power at 23 percent and hydro power at 17 percent.

**2. Damage to Power Plants Caused by the Disaster**

The Great East Japan Earthquake damaged not only the Fukushima Dai-ichi nuclear power plant but also several other power plants, and Tokyo Electric Power Company (TEPCO) lost about 30 percent of the power supply in its service area. Tohoku Electric Power Company likewise lost about 30 percent of the power supply in its service area.

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[19] In addition, some firms operate their own power plants to generate electricity, while some households operate their own solar power generation equipment.

[20] When electric power facilities were introduced into the country during the Meiji Period (1868-1912), eastern Japan began using 50 Hz power generators made in Germany, while western Japan began using 60 Hz generators made in the United States. The use of different power frequencies in eastern and western Japan has continued ever since.

[21] The figure for the amount of electric power supply prior to the disaster includes Tohoku Electric Power Company's Sendai thermal generator No. 4, which started operating in July 2010 with a capacity of about 0.4 million kW, as well as the incremental increase of about 0.5 million kW through the enhancement of TEPCO's Tomitsu thermal generator No. 4 series completed in October 2010, which were added to the total power supply as of end-March 2010. As for western Japan, the power supply of Okinawa Electric Power Company is excluded. The same applies to the calculation of the peak power demand in summer 2010.

### 3. Power Supply Following the Disaster

As the damage to power plants in the eastern region has been substantial, there have been severe power shortages in the region since the disaster. Because only a limited number of power plants in eastern Japan were able to operate immediately after the earthquake, and because the electricity that could be transmitted from western Japan to eastern Japan was limited due to the difference in power frequencies, it became necessary for the ministers in charge to make an urgent appeal for electricity conservation and for TEPCO to implement planned rolling blackouts. Consequently, the operating hours of factories and commercial facilities were reduced and transportation operations such as railways were curtailed, severely affecting economic activity.

### 4. Current State of the Power Supply and Prospects through the Summer

Since April, there has been a seasonal decline in power demand on the one hand and an increase in the amount of power supply on the other, as power plants that had been forced to stop have gradually started operating again and firms have increased in-house power generation. Therefore, the planned rolling blackouts did not have to be implemented and constraints on economic activity due to power shortages have eased.

However, because seasonal demand for electricity will rise again during the summer due to the use of air-conditioning, and because production activity is gradually recovering, the balance of electricity supply and demand is expected to tighten. TEPCO and Tohoku Electric Power Company have therefore been considering additional measures to provide power and firms are making efforts to increase power supply through, for example, more use of in-house power generation facilities. Despite these efforts to increase power supply, however, electricity demand in peak hours during the summer may exceed supply. The government therefore has been requesting that firms draw up specific plans to restrict peak electricity use in summer to a level about 15 percent below that of last year, and has been calling on households to use about 15 percent less electricity in the peak period than last year. In response, firms have been taking steps to formulate business plans premised on electricity shortages, such as shifting operating hours to the nighttime, dispersing holidays, and moving production to alternative sites in western Japan.

(**Box 2) The Economic Situation Following the Great Hanshin-Awaji Earthquake**

Following the Great Hanshin-Awaji Earthquake in January 1995, the damage to Japan's capital stock exerted downward pressure on production activity in the affected areas, as in the case of the Great East Japan Earthquake (Chart 27). Production declined in the iron and steel, shipbuilding, and local industries, as well as at parts manufacturers. Moreover, immediately following the earthquake, disruptions to distribution networks reflecting damage to the port of Kobe and major roads caused delays in the transportation of parts and, for example, affected automobile production in other regions. The impact on other regions was limited, however, since distribution networks improved fairly quickly and production at alternative sites proceeded promptly given that there were relatively few knock-on effects such as electricity constraints. As a result, Japan's industrial production in January 1995 declined only 2.6 percent from the previous month and rebounded sharply in February (Chart 46 [1]). Household and corporate sentiment deteriorated through mid-1995 (Chart 46 [2]), but this decline may have been partly attributable to the rapid appreciation of the yen and the sarin gas attack on the Tokyo subway. Thus, the 1995 earthquake did not have any readily apparent effects on developments in real GDP (Chart 46 [3] and [4]).

In contrast, the Great East Japan Earthquake has had a substantial impact on economic activity in regions other than the area directly affected by the quake. This is mainly because (1) of the increased sophistication in supply chains in recent years and the fact that electronics have come to play a much greater role in products; (2) many production bases for electronic devices and high-end materials, mainly those essential to supply chains in the automobile industry, were damaged (Chart 27); and (3) the accident at the nuclear power plant has not only impacted economic activity in the surrounding areas but also significantly constrained the electricity supply across widespread areas.

**(Box 3) Trading Gains and the Real Trade Balance**

Trading gains are that part of real income a country earns through trade due to changes in the terms of trade (terms of trade = export prices/import prices). Just as in the case of price indexes, the absolute value of trading gains does not have any particular significance, since it depends on the base period. Therefore, trading gains should be gauged in terms of their change over a certain period of time. Specifically, as shown in the equation below, trading gains are calculated by subtracting the real trade balance (real exports minus real imports) from the nominal trade balance (nominal exports minus nominal imports) divided by a certain deflator.[22]

Trading gain = (Nominal trade balance / deflator) – real trade balance

The first term on the right-hand side of the above equation converts the income from trade into real terms, and can be considered to represent the real income associated with trade (referred to as "real trade income" hereafter). The second term on the right-hand side shows the gains due to the difference between real exports and real imports, and can be interpreted as gauging the quantity effect associated with trade. The trading gain -- that is, the difference between the first term and the second term -- thus represents the gain due to the difference between export prices and import prices, and therefore can be considered to gauge the price effects associated with trade. Given these considerations, the above formula can be rewritten as follows:

Real trade income = real trade balance + trading gain
(quantity effect) (price effect)

As mentioned above, the trading gain is a meaningful concept only when changes over a certain period of time are considered; the same applies to real trade income and the real

[22] Views differ on the question of what should be used as the deflator. In Japan's SNA statistics, the weighted average of the export deflator and the import deflator is employed. On the other hand, the Bureau of Economic Analysis of the United States uses the domestic demand deflator. Yet another view is that the import deflator should be employed. Whatever deflator is used, however, it makes little difference in calculating Japan's trading gains.

trade balance. Consequently, in the following discussion, figures are considered in terms of changes such as the difference from the previous year. To begin with, we find that there is a negative correlation between the real trade balance and trading gains (Chart 47 [1]). Most recently, too, the real trade balance and trading gains have been moving in opposite directions in most periods (Chart 47 [2]). This seems attributable to the fact that when the global economy is buoyant, international commodity prices tend to increase (Chart 42 [1]). Specifically, high growth in the global economy tends to improve Japan's real trade balance. At the same time, however, a rise in international commodity prices due to high growth in the global economy brings about a deterioration in the terms of trade of Japan, which is a commodity importing country. Of course, although there tends to be a negative correlation between the real trade balance and trading gains, there is no guarantee that the extent of change in the two is identical, so that real trade income -- that is, the sum of the two -- can at times be either positive or negative. Moreover, as was the case in the first half of 2005, the real trade balance can remain unchanged (due to inventory adjustments in IT-related industries in this case), while trading gains decline as a result of a continued rise in international commodity prices.

For this report, the Bank conducted a simulation using the Bank of Japan Research and Statistics Department's econometric model (Q-JEM) to estimate the degree of improvement in the real trade balance and the degree of deterioration in trading gains when growth in emerging economies accelerates. The result shows that the former exceeds the latter and real trade income, which is the sum of the two, increases (Chart 47 [3][a]). Since this gain in real income will spread to Japan's economy as a whole, there is a positive contribution to real GDP (Chart 47 [3][b]). Based on this simulation, it can be said that even in cases when raw materials prices rise due to an increase in international commodity prices, if the rise in international commodity prices is attributable to an acceleration of growth in emerging economies, the overall effect on Japan's economy is positive.

**(Box 4) Effects of the Disaster on the Output Gap and Prices**

This box considers the effects of the earthquake disaster on the output gap and prices based on demand and supply curves.

Suppose the most simple case, in which the earthquake disaster only gives rise to supply constraints and all else remains equal. In this case, since only the supply curve shifts to the left, output of goods declines and the output gap tightens (Chart 48 [1]). When power shortages and disruptions to supply chains are resolved, the supply curve returns to the previous position and the output gap returns to its initial value.

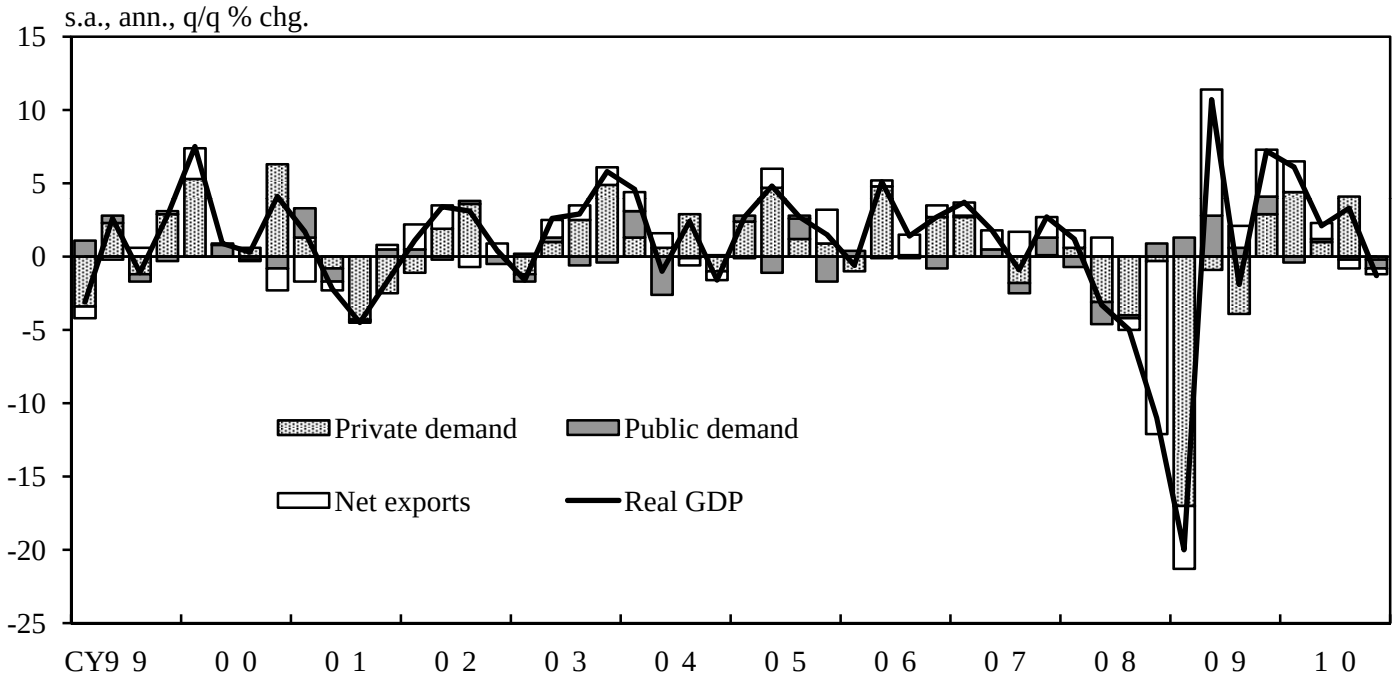
However, in practice, the disaster resulted not only in a shift in the supply curve but also apparently in a shift in the demand curve to the left -- that is, in the direction of reduced demand. This is mainly because business and household sentiment has weakened due to heightened uncertainty and because the decline in production has adversely affected corporate profits, employment, and wages. In this case, if the shift in the demand curve to the left is sufficiently large, the output gap could actually widen and prices could decline compared with their initial level (Chart 48 [2]).

Given these considerations, even if the initial impact of the earthquake disaster gave rise to supply constraints, this would not necessarily lead to a tightening of the output gap. Thus, in judging the output gap, it is necessary to compare the extent of supply constraints with the extent of the concurrent decline in demand. Of course, such a comparison is not easy in practice. Therefore, the question of how the disaster affects the output gap in the immediate future warrants careful examination of various demand and supply indicators and price developments without prejudice.

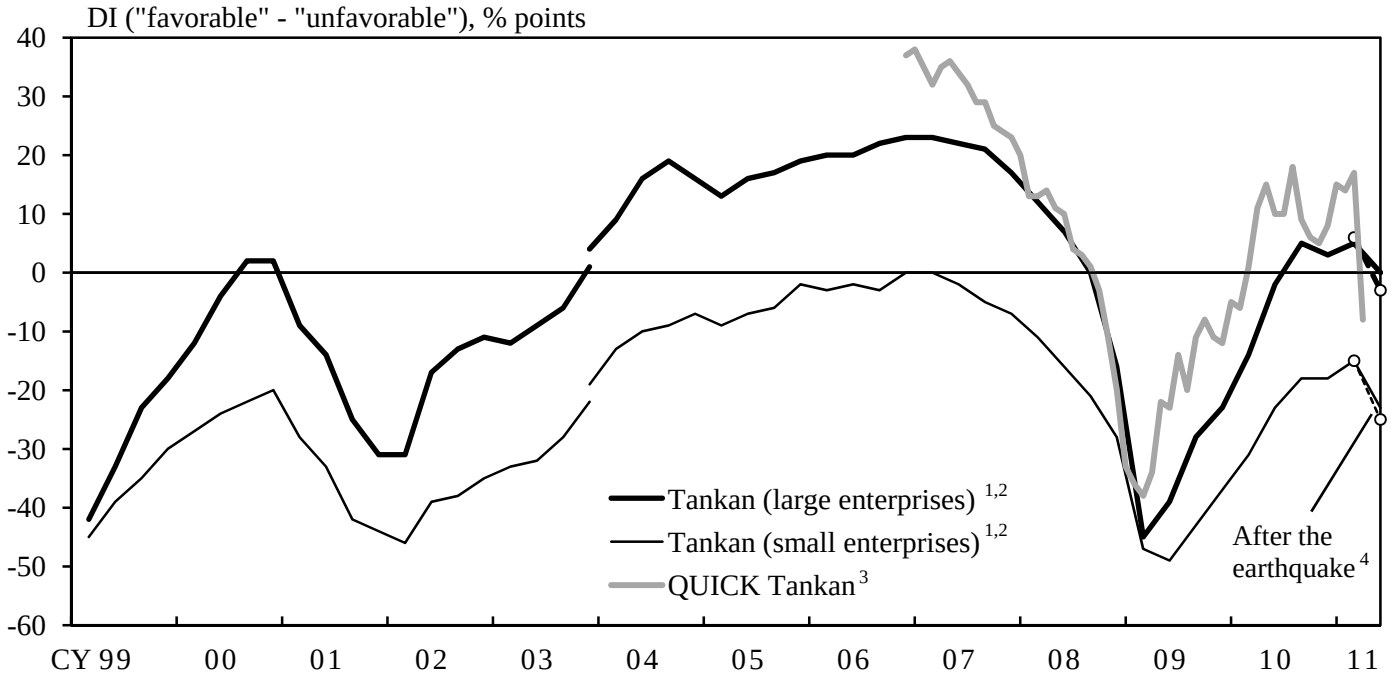
# Charts

# Real GDP and Business Conditions

(1) Real GDP




(2) Business Conditions

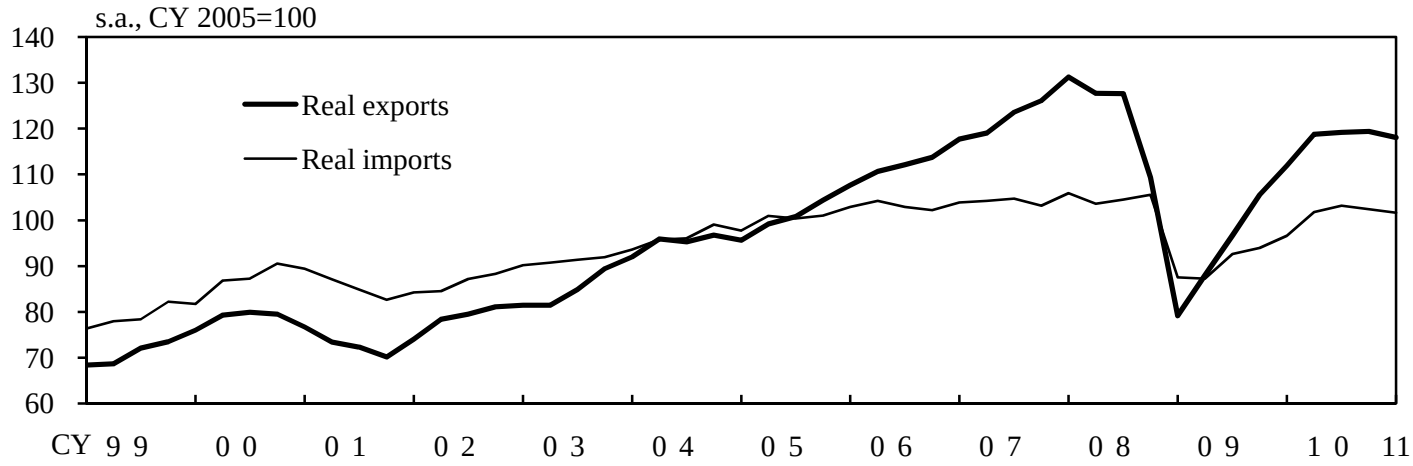



Notes: 1. Based on all industries. Quarterly figures are plotted at the last month of each quarter. Figures for June 2011 are the forecasts in the March 2011 survey.
2. The "Tankan" has been revised from the March 2004 survey. Figures up to the December 2003 survey are based on the previous data sets. Figures from the December 2003 survey are on the new basis.
3. Sample enterprises of the "QUICK Tankan" are selected from nationwide listed enterprises. The number of reporting enterprises is 466 as of the April 2011 survey.
4. Figures "after the earthquake" are based on the survey form returned to the Bank of Japan after the Great East Japan Earthquake.

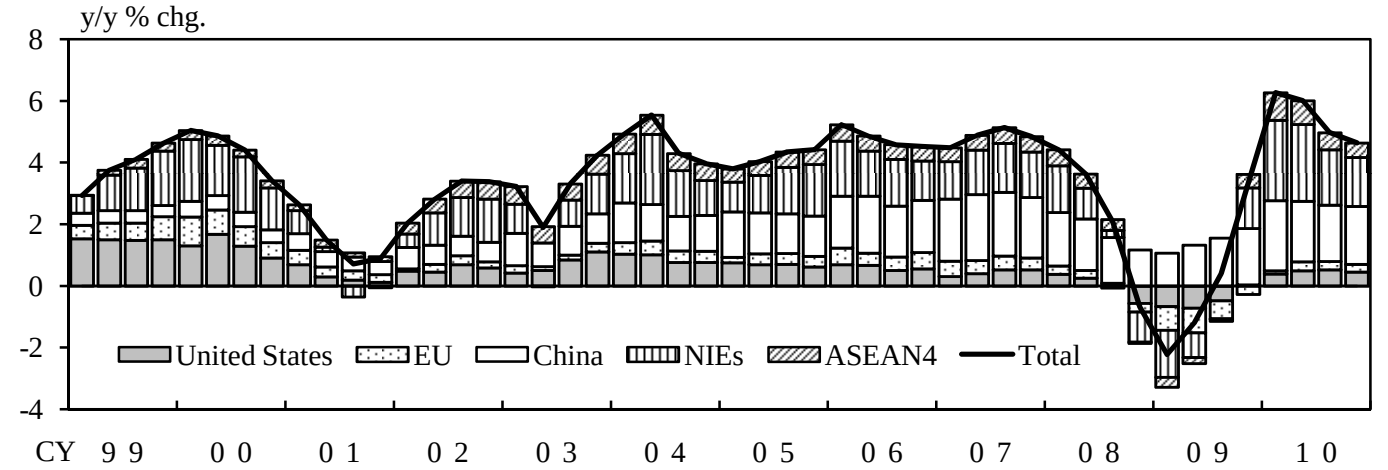
Sources: Cabinet Office, "National Accounts";
QUICK, "QUICK Tankan, Short-term Economic Survey of Enterprises in Japan";
Bank of Japan, "*Tankan*, Short-Term Economic Survey of Enterprises in Japan."

# Exports and Imports

(1) Real Exports and Real Imports

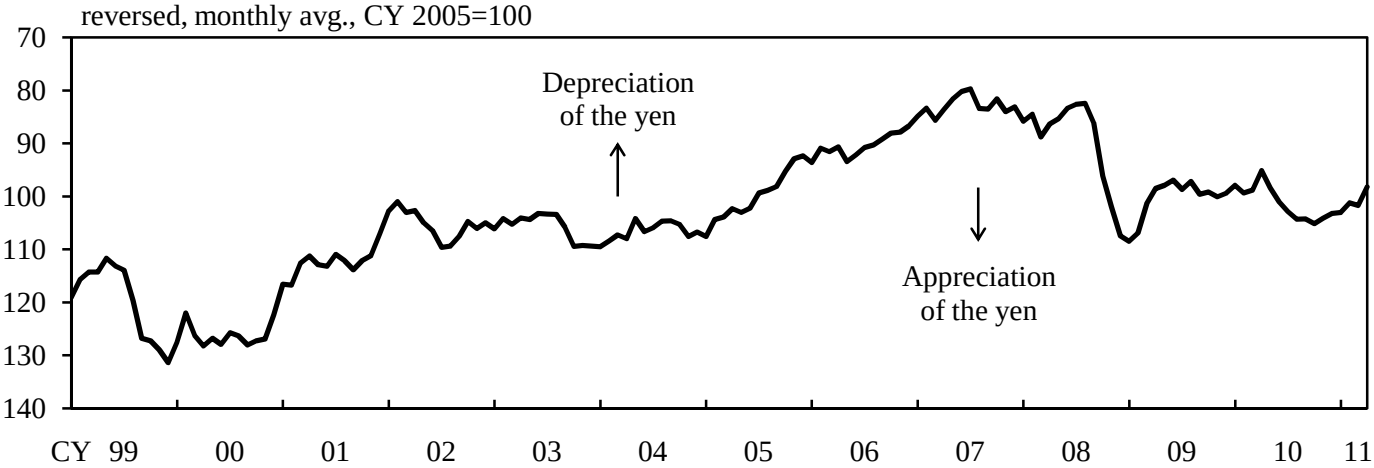



(2) Real GDP Growth Rates of Major Trading Partners




Note: Real GDP growth rate of the total is the weighted average of real GDP growth rates by values of exports from Japan to each economy.

(3) Real Effective Exchange Rate of the Yen

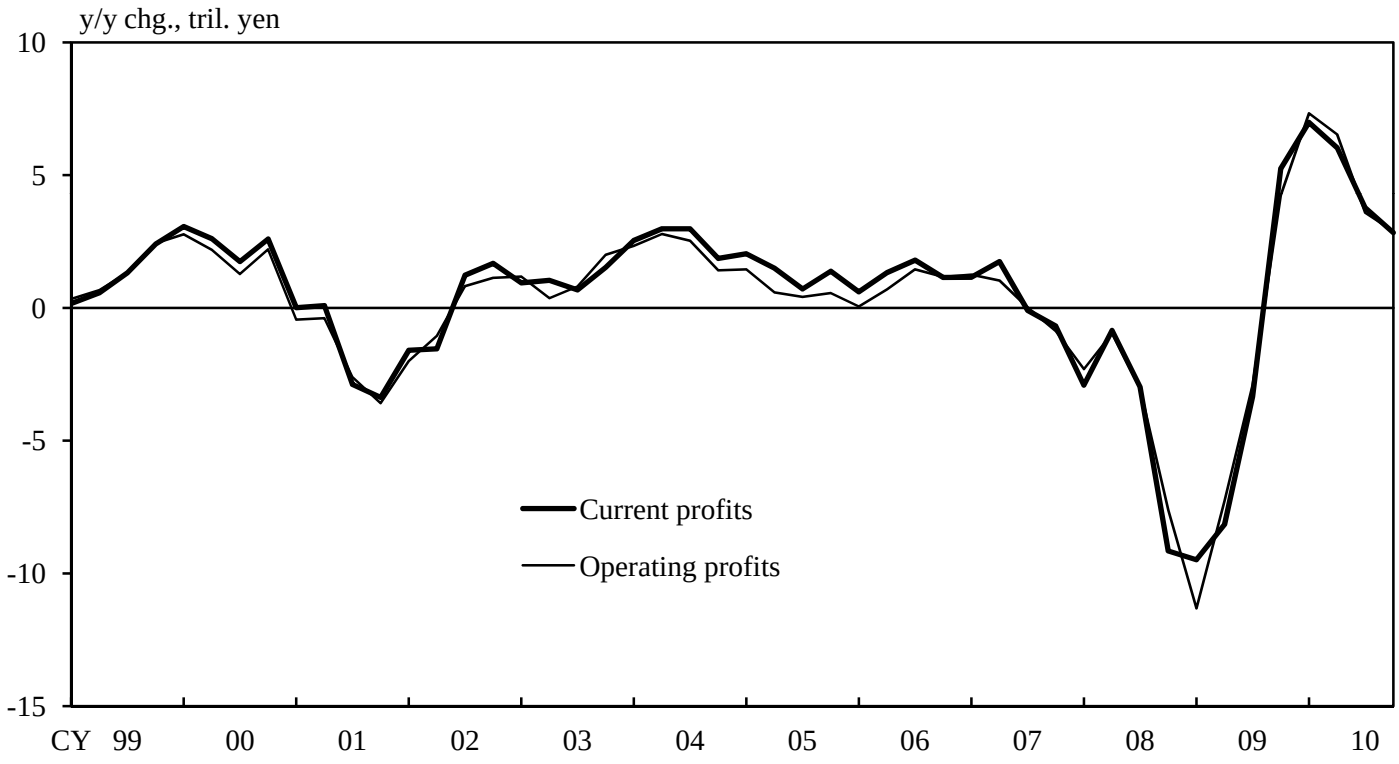



Note: The real effective exchange rate is based on the broad index of the BIS real effective exchange rate. The figure for April 2011 is calculated using the Bank of Japan's nominal effective exchange rate of the yen.

Sources: Ministry of Finance, "Trade Statistics"; Bank of Japan, "Corporate Goods Price Index"; Bank for International Settlements; CEIC.

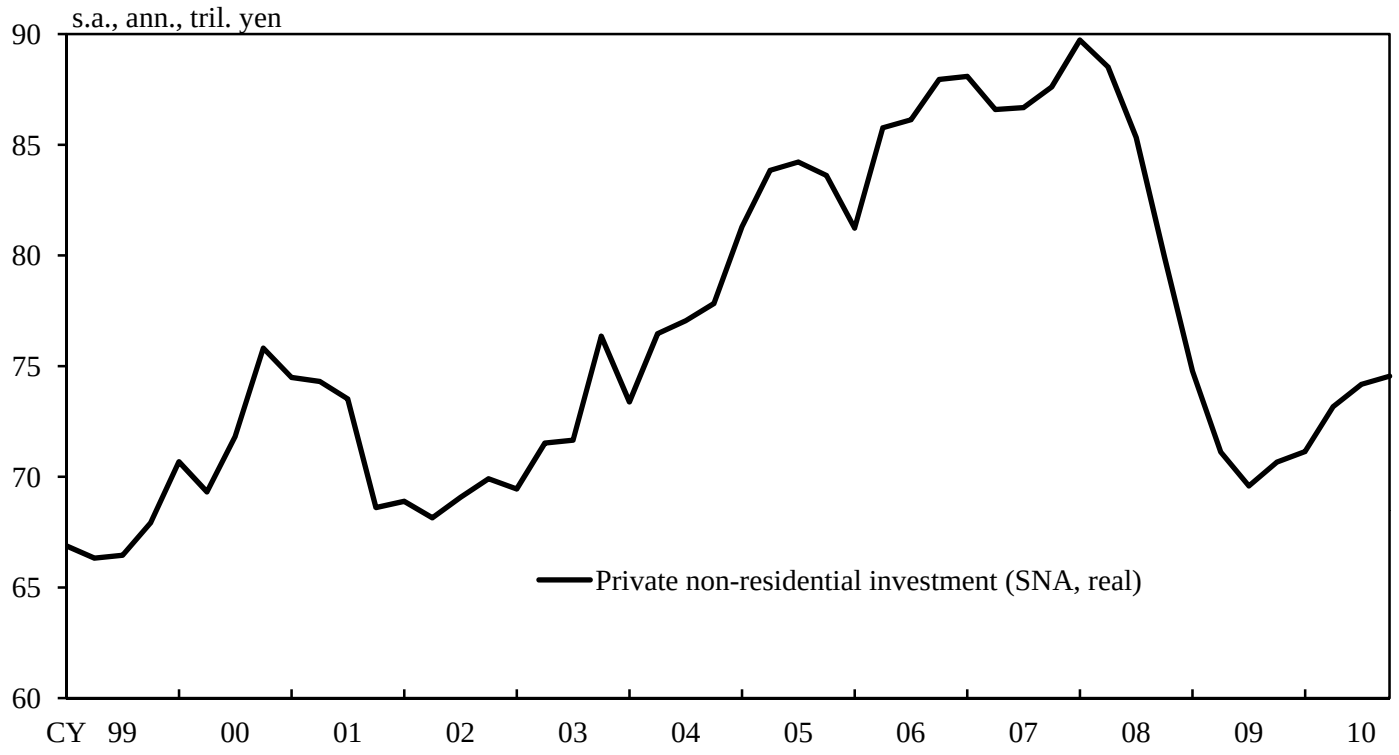
# Corporate Profits and Fixed Investment

(1) Corporate Profits




Notes: 1. Based on all-size enterprises and all industries.
2. Taken from the "Financial Statements Statistics of Corporations by Industry, Quarterly." Figures exclude finance and insurance.

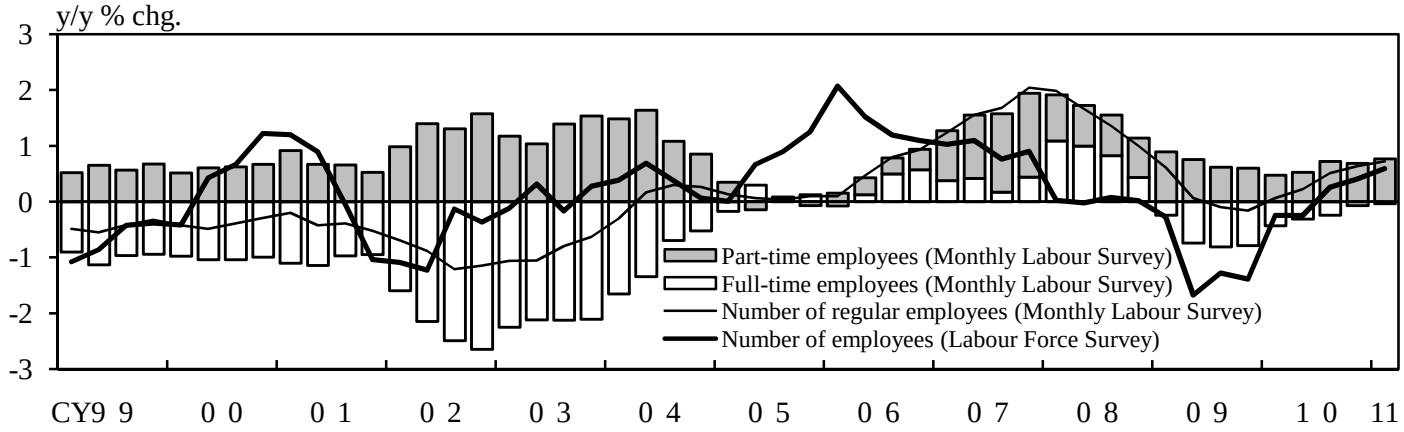
(2) Fixed Investment



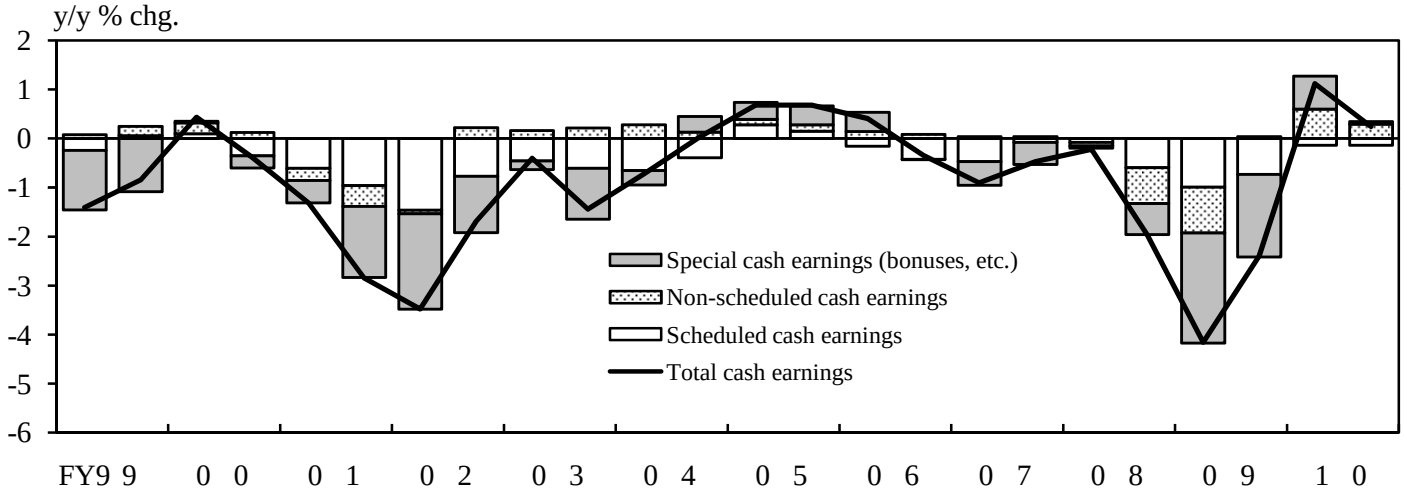

Sources: Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Quarterly";
Cabinet Office, "National Accounts."

# Employee Income

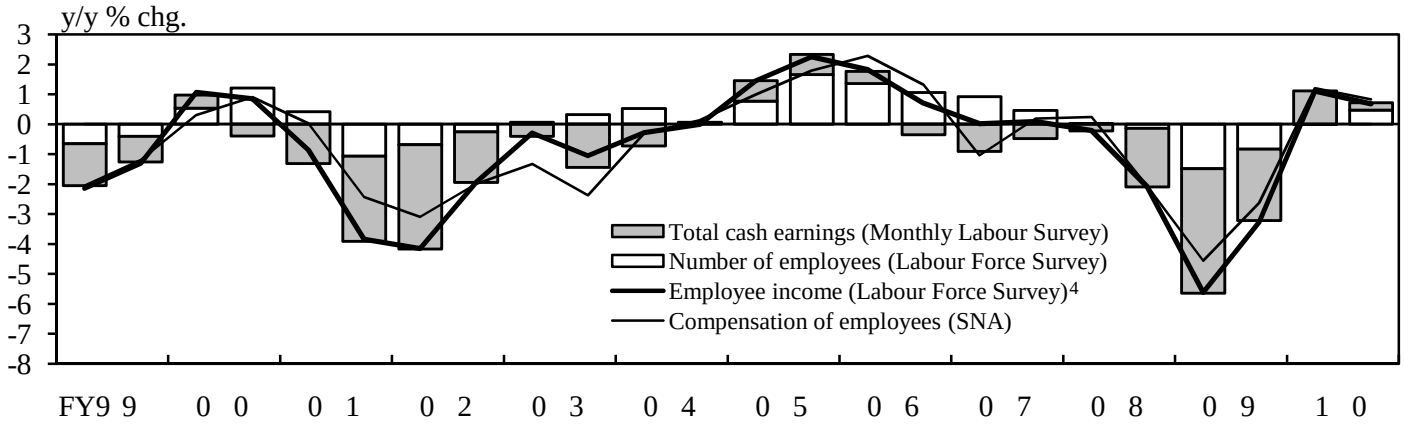
(1) Number of Employees[1,2]




(2) Total Cash Earnings (Monthly Labour Survey)[1,3]




(3) Employee Income[1,3]

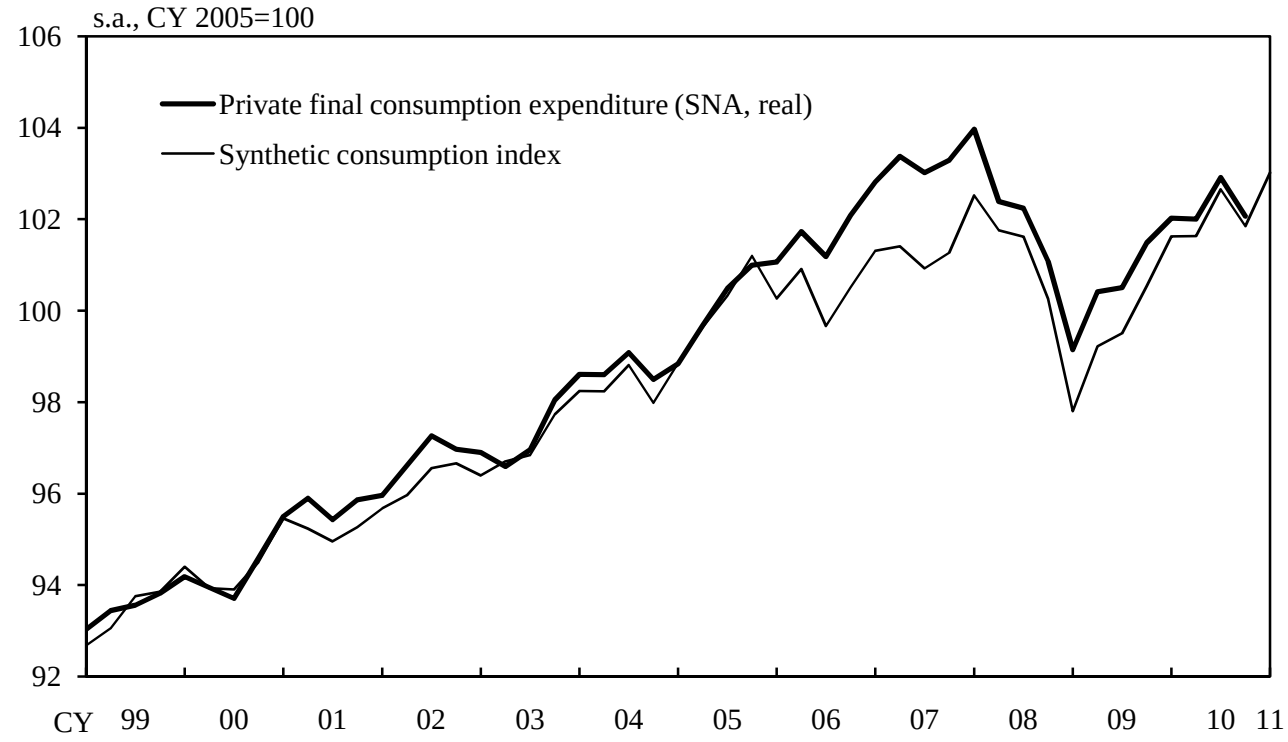



Notes: 1. Data from "Monthly Labour Survey" are for establishments with at least five employees.
2. Figures for 2011/Q1 are January-February averages.
3. Figures for the second half of fiscal 2010 are October 2010-February 2011 averages, except for the figure for compensation of employees, which is using the 2010/Q4 figure.
4. Calculated as the number of employees (Labour Force Survey) multiplied by total cash earnings (Monthly Labour Survey).

Sources: Ministry of Internal Affairs and Communications, "Labour Force Survey";
Ministry of Health, Labour and Welfare, "Monthly Labour Survey";
Cabinet Office, "National Accounts."

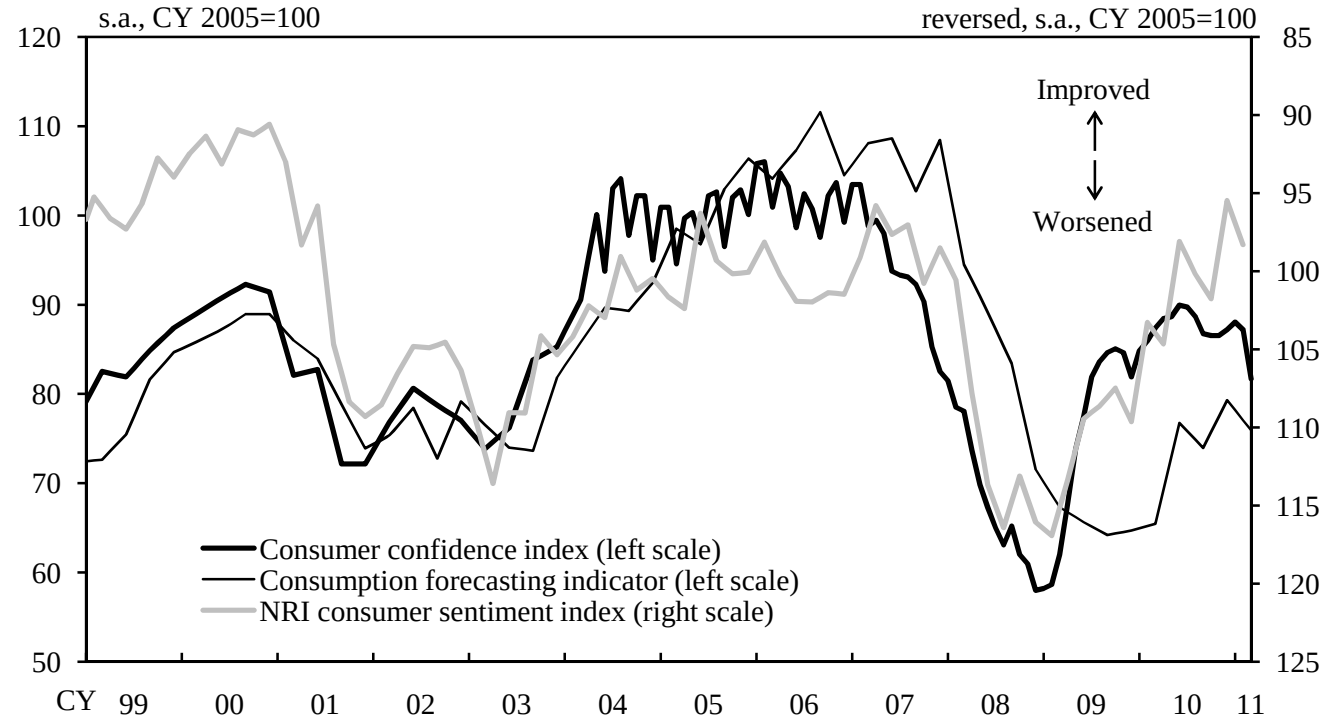
# Private Consumption

(1) Private Final Consumption Expenditure and Synthetic Consumption Index




Note: The figure of synthetic consumption index for 2011/Q1 is the January-February average in quarterly amount.

(2) Consumer Confidence

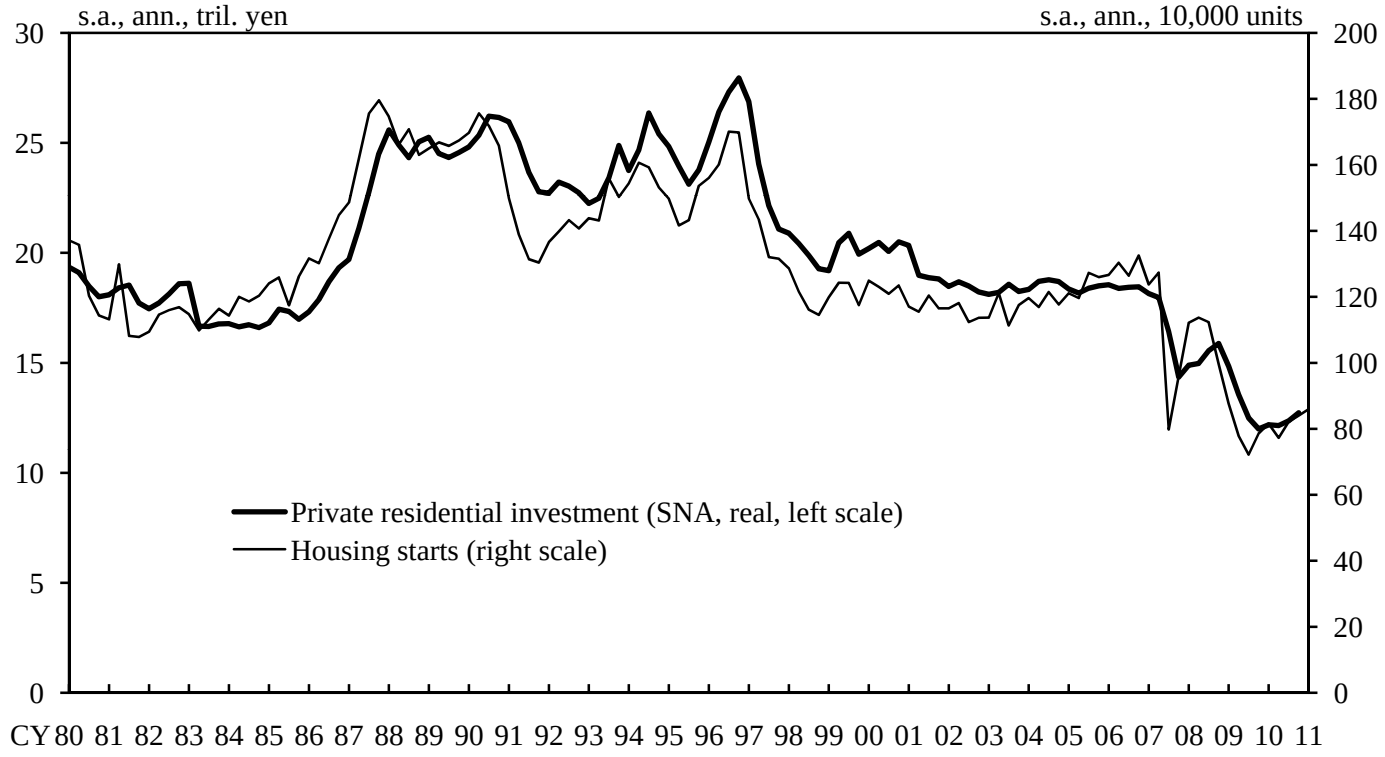



Note: Figures are plotted for each surveyed month and the data for the intervening months are linearly interpolated.

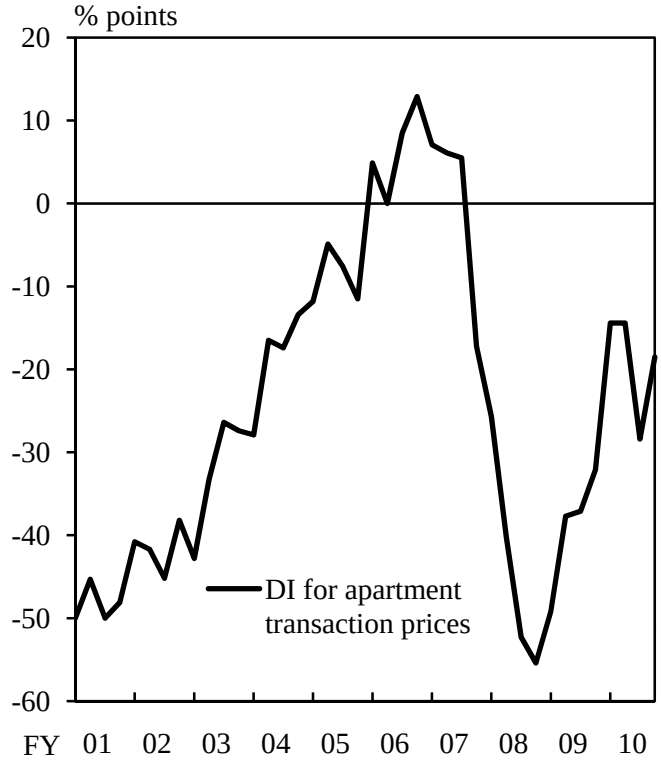
Sources: Cabinet Office, "National Accounts," "Consumer Confidence Survey," "Synthetic Consumption Index"; Nikkei Inc., "Consumption Forecasting Indicator"; Nippon Research Institute (NRI), "Consumer Sentiment Survey."

# Housing Investment

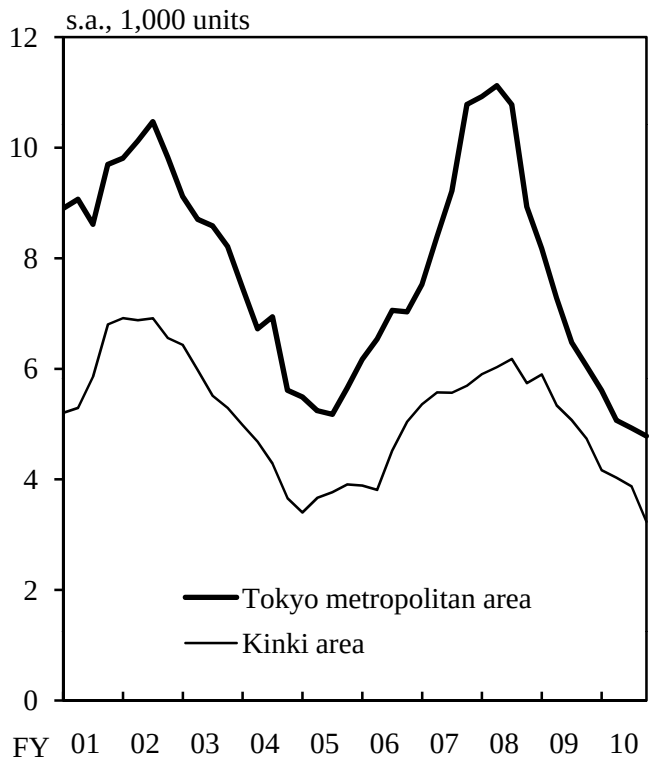
(1) Housing Starts and Private Residential Investment[1]




(2) Real Estate Industry Diffusion Index (DI)[2]




(3) Apartment Stock

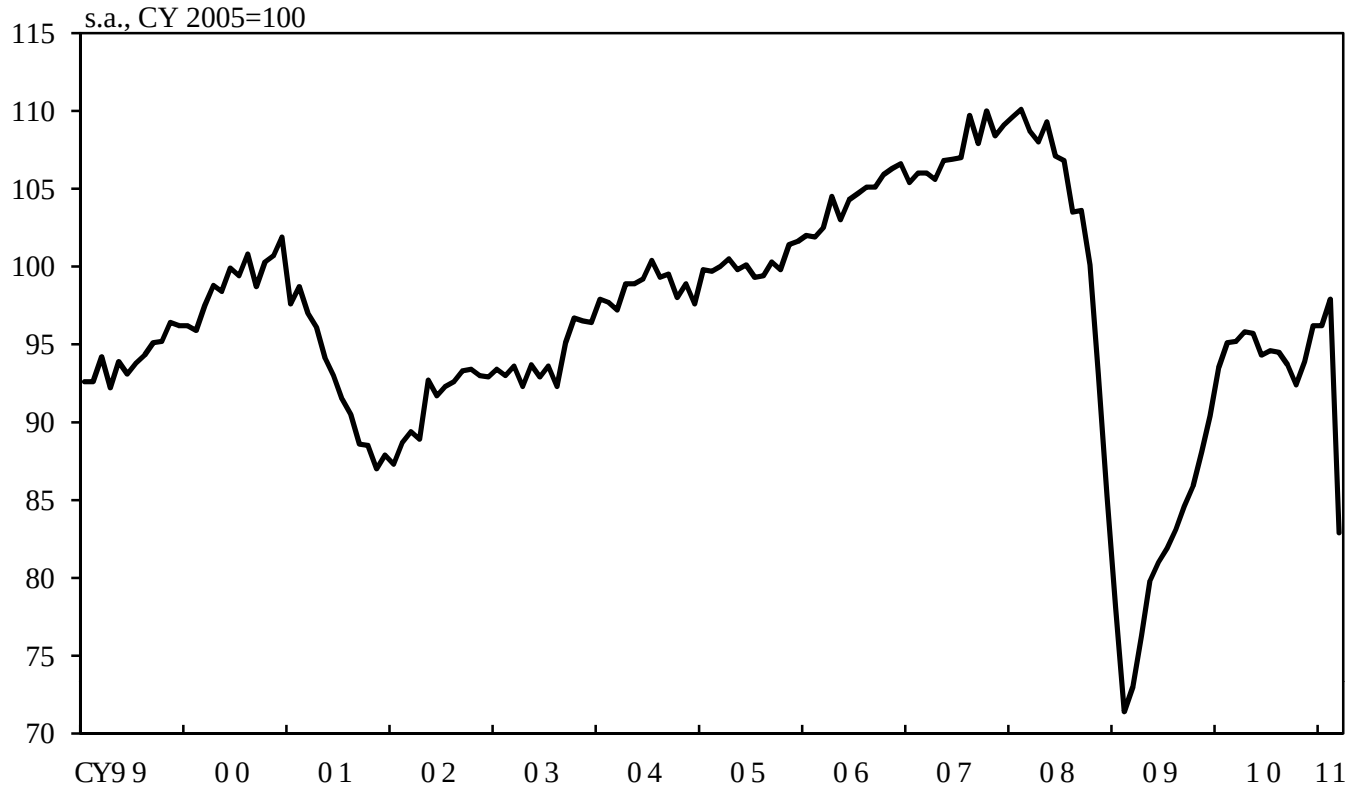



Notes: 1. Figures of housing starts for 2011/Q1 are January-February averages.
2. DI = [("rise" × 2 + "slightly rise") - ("slightly fall" + "fall" × 2)] / 2 / total × 100

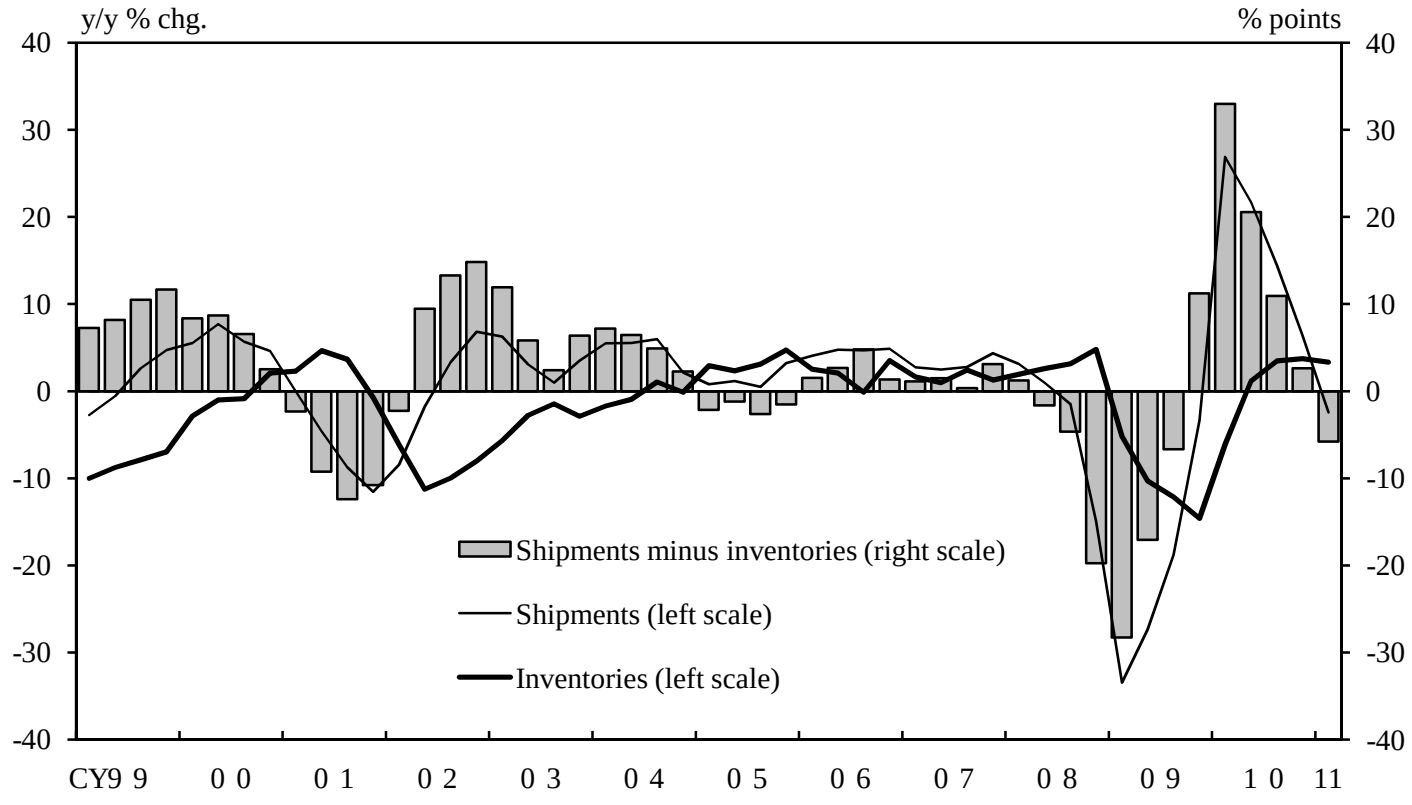
Sources: Ministry of Land, Infrastructure, Transport and Tourism, "Statistics on Building Construction Starts";
Cabinet Office, "National Accounts"; The Land Institute of Japan;
Real Estate Economic Institute Co., Ltd.

# Production

(1) Industrial Production



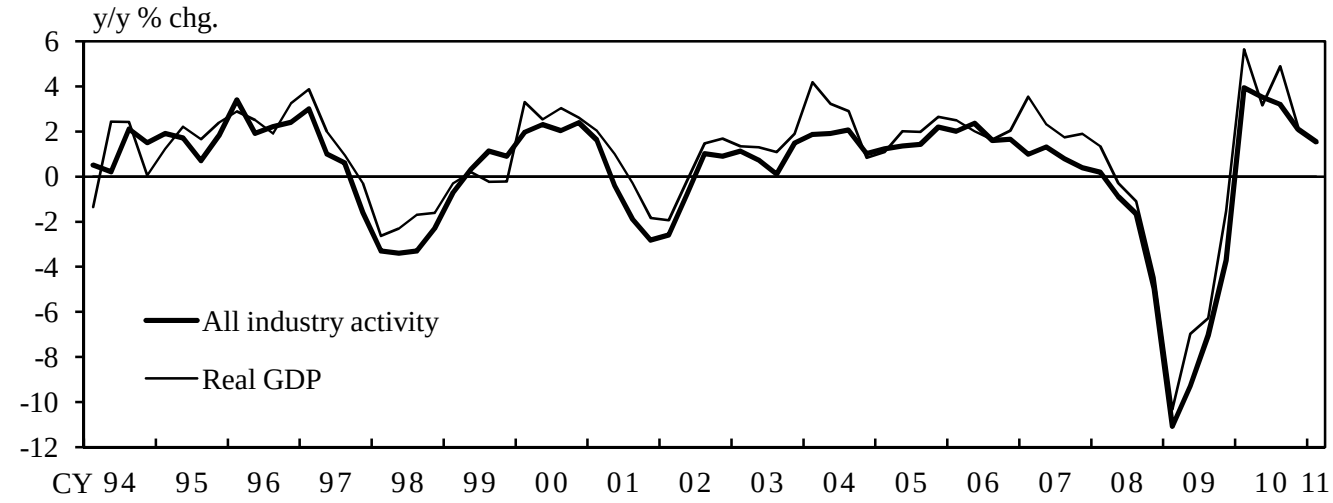

(2) Shipment-Inventory Balance (Mining and Manufacturing)



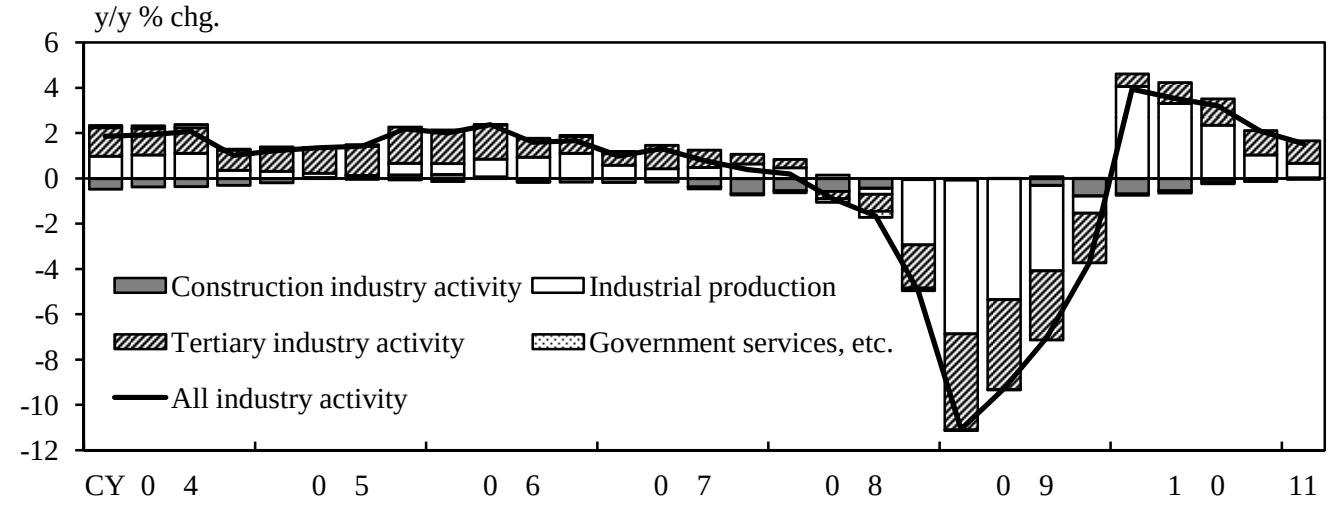

Source: Ministry of Economy, Trade and Industry, "Indices of Industrial Production."

# All Industry Activity

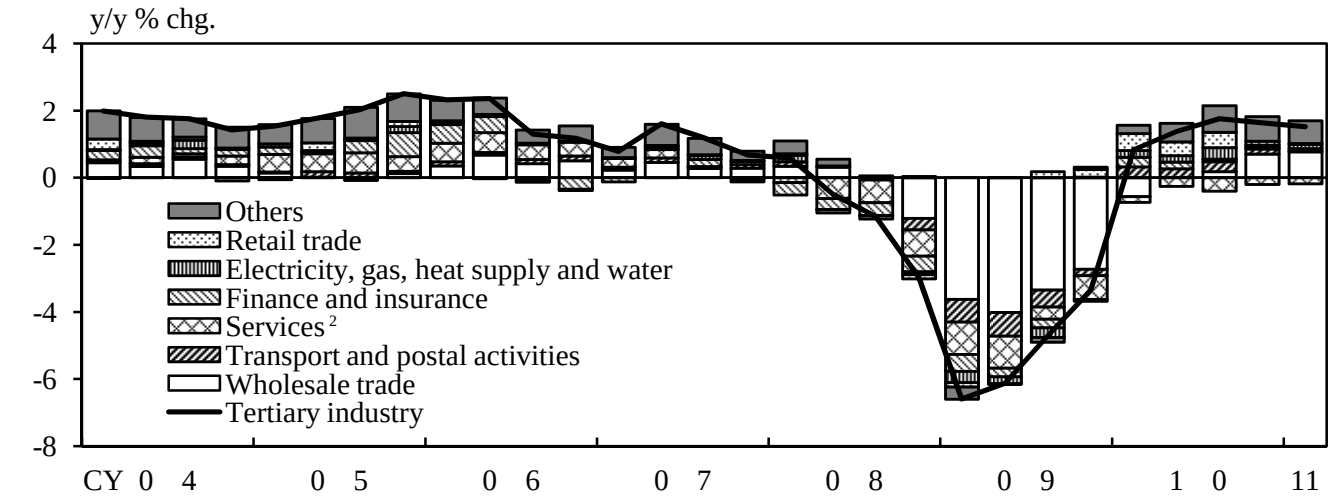
(1) All Industry Activity and Real GDP[1]




(2) All Industry Activity[1]




(3) Tertiary Industry Activity[1]

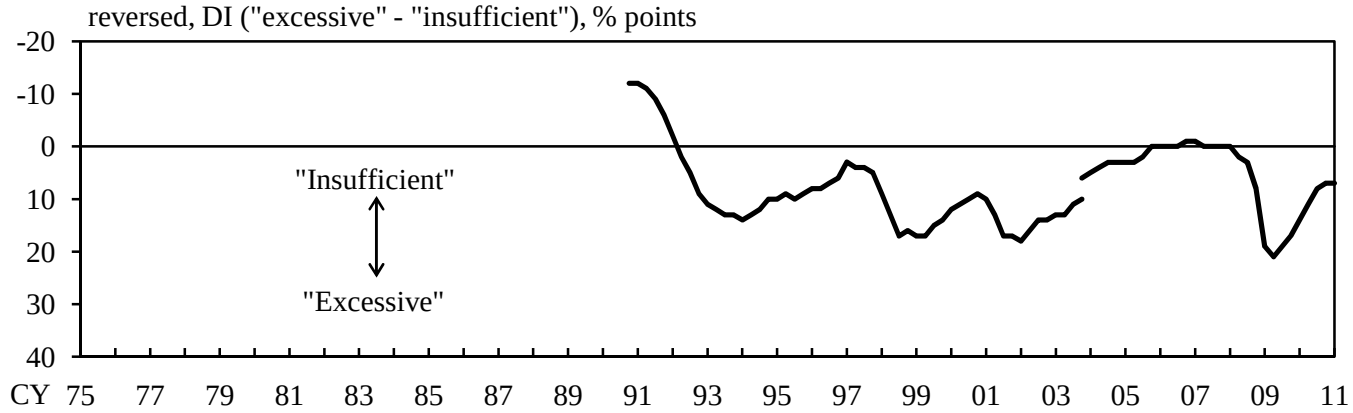



Notes: 1. Figures for 2011/Q1 are January-February averages.
2. Consisting of scientific research, professional and technical services; living-related and personal services and amusement services; and miscellaneous services (except government services, etc.).

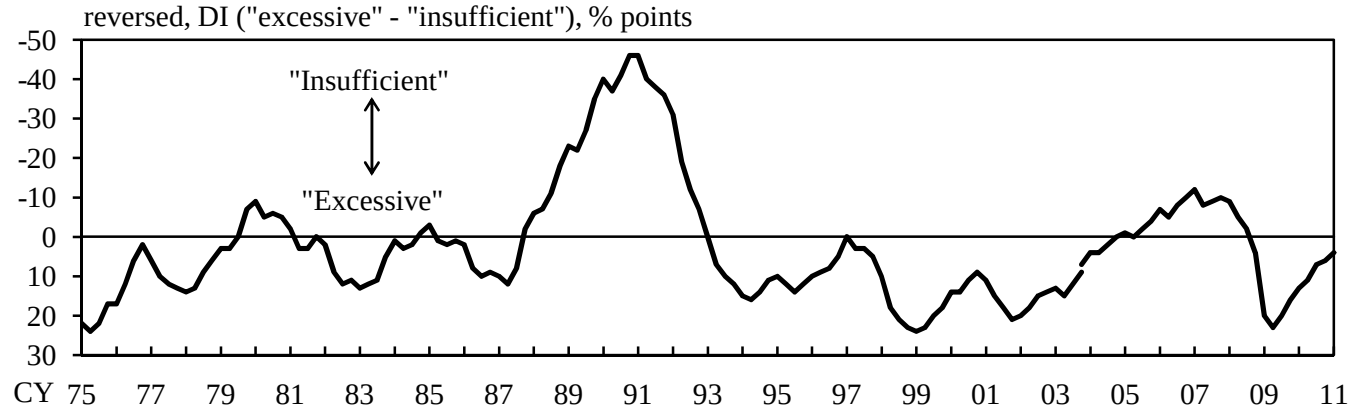
Sources: Ministry of Economy, Trade and Industry, "Indices of All Industry Activity," "Indices of Tertiary Industry Activity"; Cabinet Office, "National Accounts."

# Resource Utilization

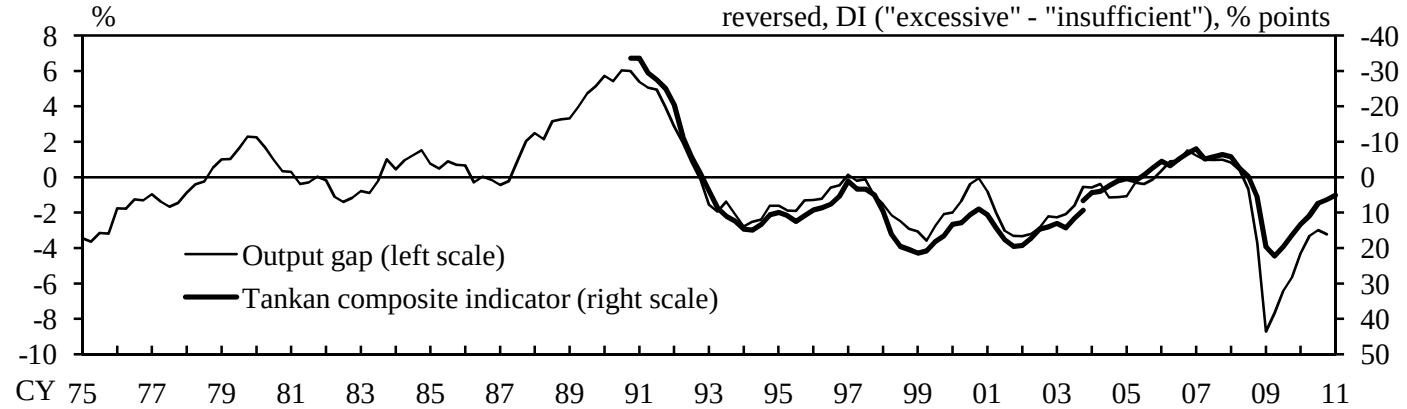
(1) Production Capacity DI




(2) Employment Conditions DI




(3) Tankan Composite Indicator and Output Gap

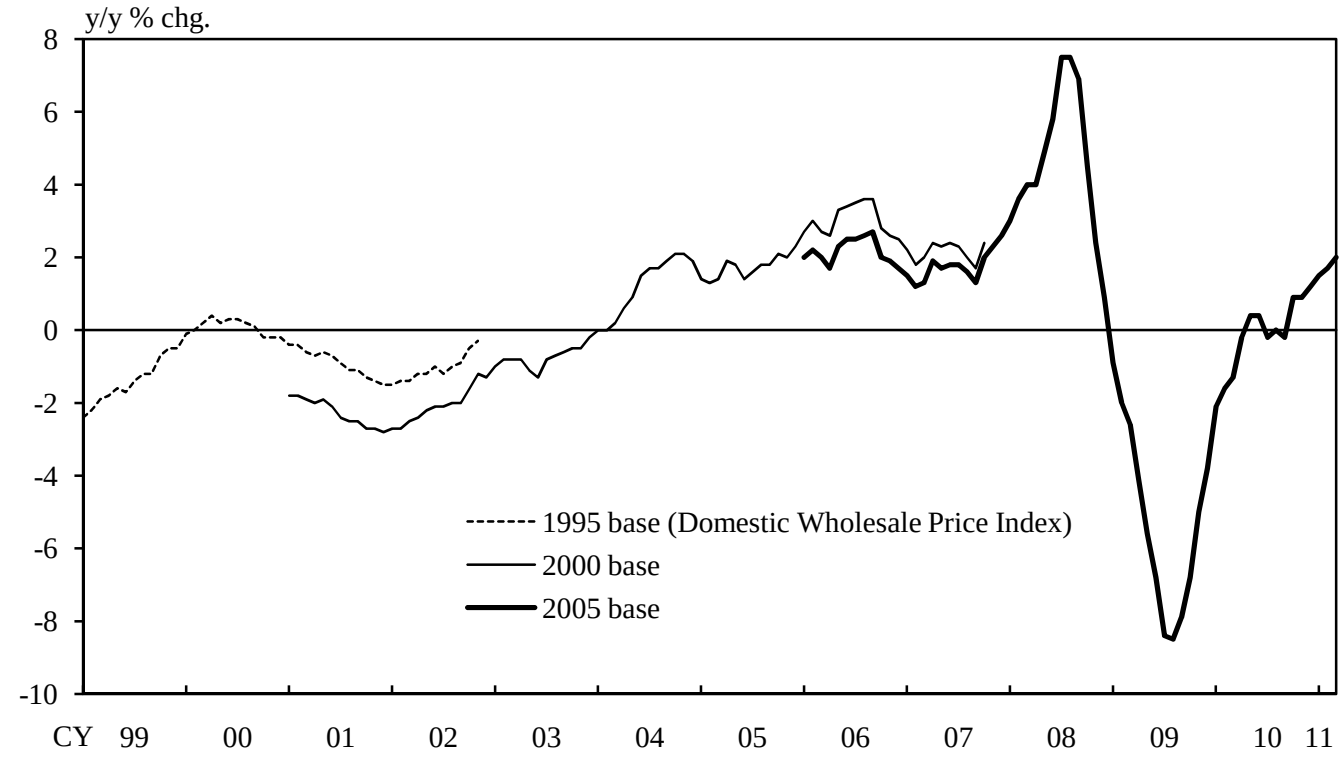



Notes: 1. Figures of the DI are based on all-size enterprises and all industries.
2. Figures of the Tankan composite indicator are weighted averages of the production capacity DI and employment conditions DI. The fiscal 1990-2009 averages of capital and labor shares in the National Accounts are used as the weight. The output gap is estimated by the Research and Statistics Department, Bank of Japan. For the estimation procedures, see "The New Estimates of Output Gap and Potential Growth Rate," Bank of Japan Review Series, 2006-E-3.
3. The "Tankan" has been revised from the March 2004 survey. Figures up to the December 2003 survey are based on the previous data sets. Figures from the December 2003 survey are on the new basis.

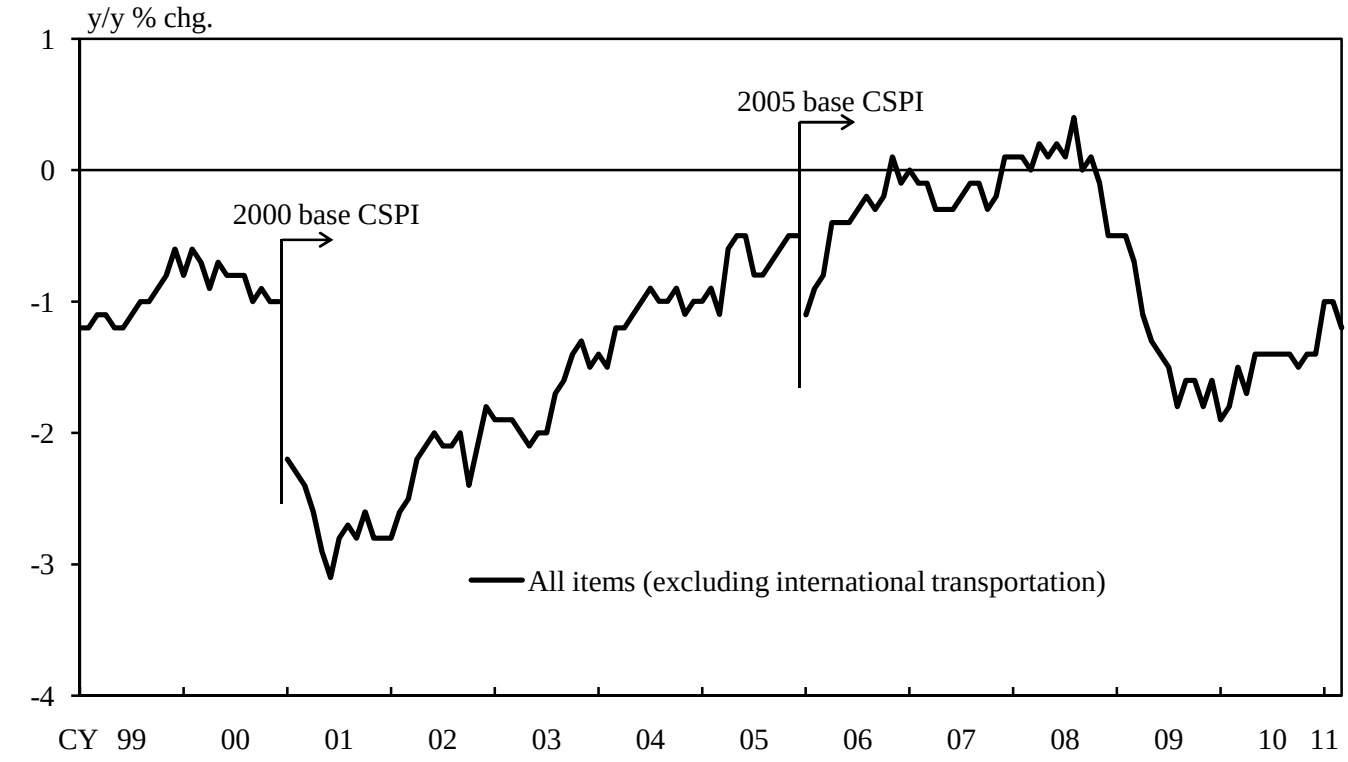
Sources: Cabinet Office, "National Accounts"; Cabinet Office and Ministry of Finance, "Business Outlook Survey"; Ministry of Internal Affairs and Communications, "Labour Force Survey"; Ministry of Health, Labour and Welfare, "Monthly Labour Survey," "Report on Employment Service"; Ministry of Economy, Trade and Industry, "Indices of Industrial Production"; Bank of Japan, "*Tankan,* Short-Term Economic Survey of Enterprises in Japan," etc.

# Corporate Prices

(1) Domestic Corporate Goods Price Index



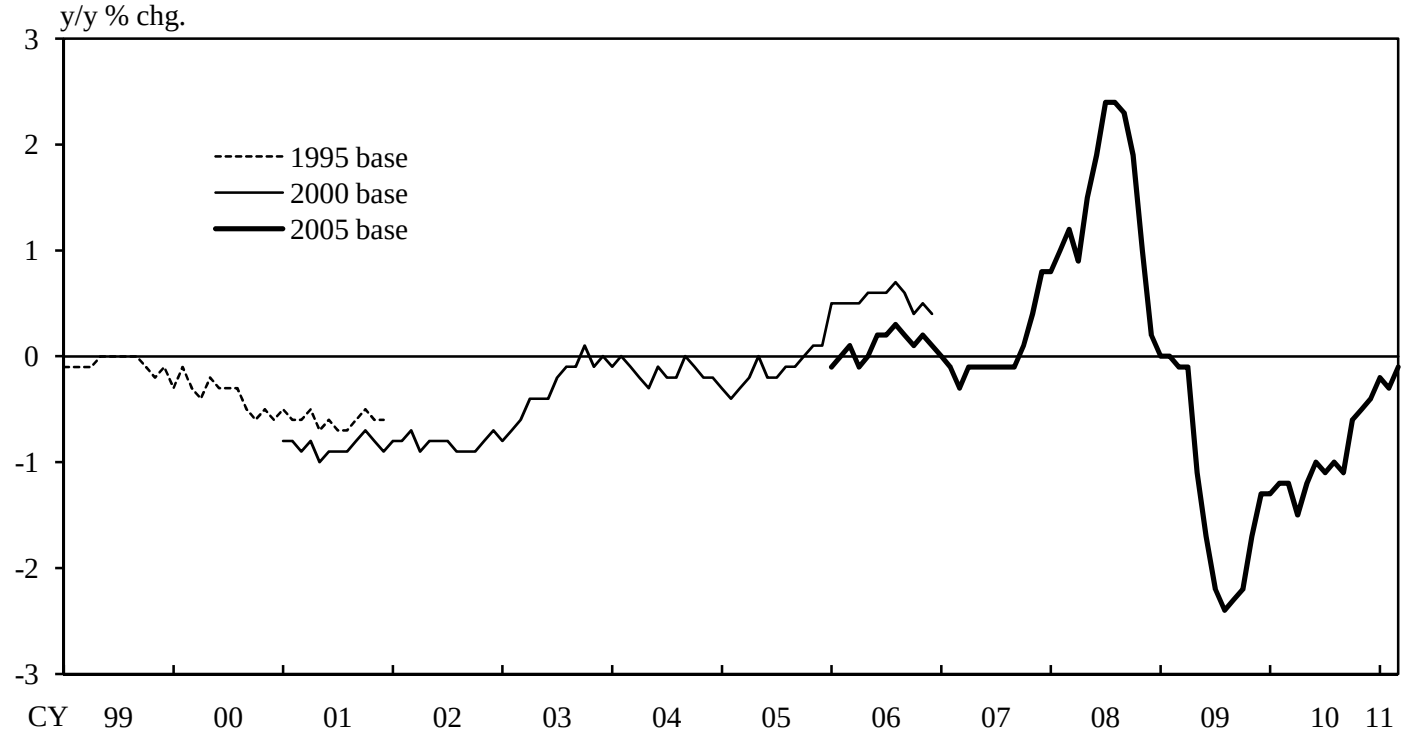

(2) Corporate Services Price Index




Source: Bank of Japan, "Corporate Goods Price Index," "Wholesale Price Index," "Corporate Services Price Index."

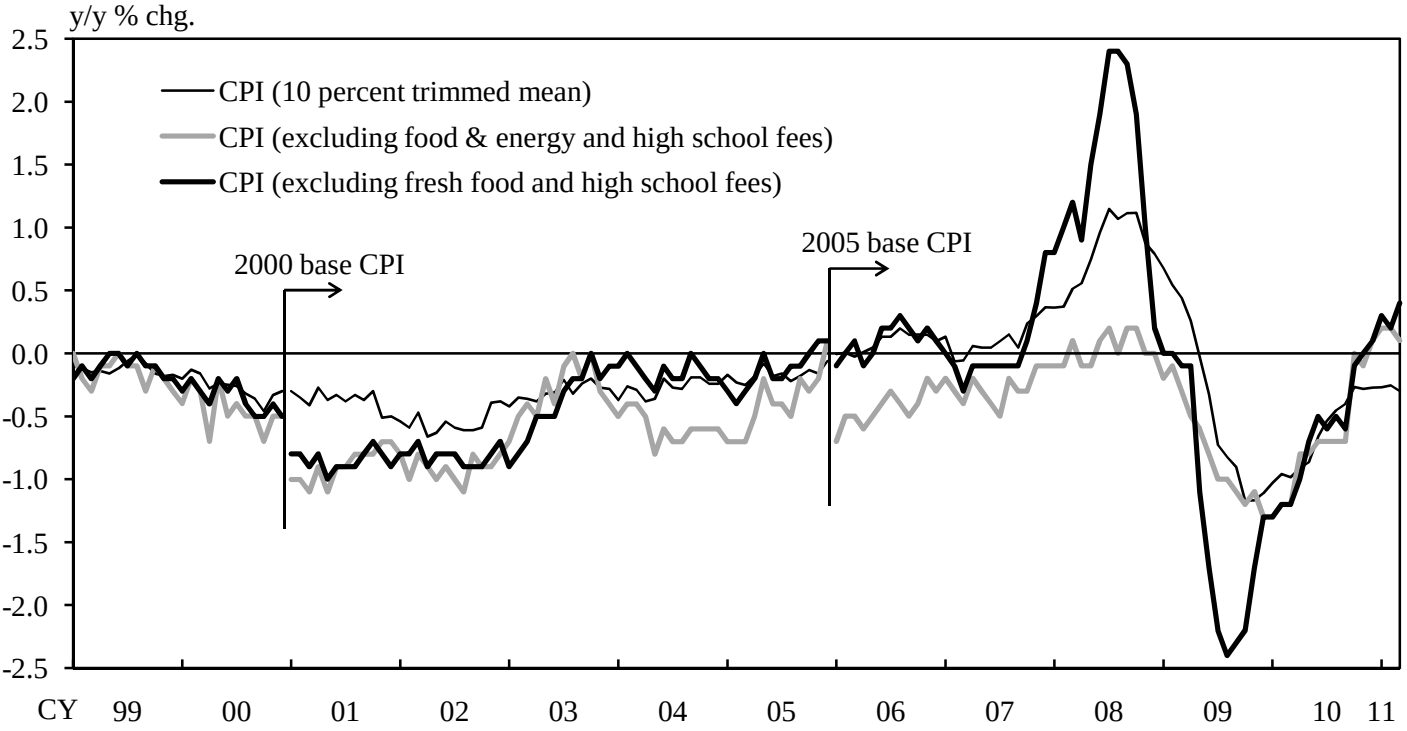
# Consumer Price Index (1)

(1) Consumer Price Index




Note: Excluding fresh food.

(2) Trend Changes in Consumer Prices

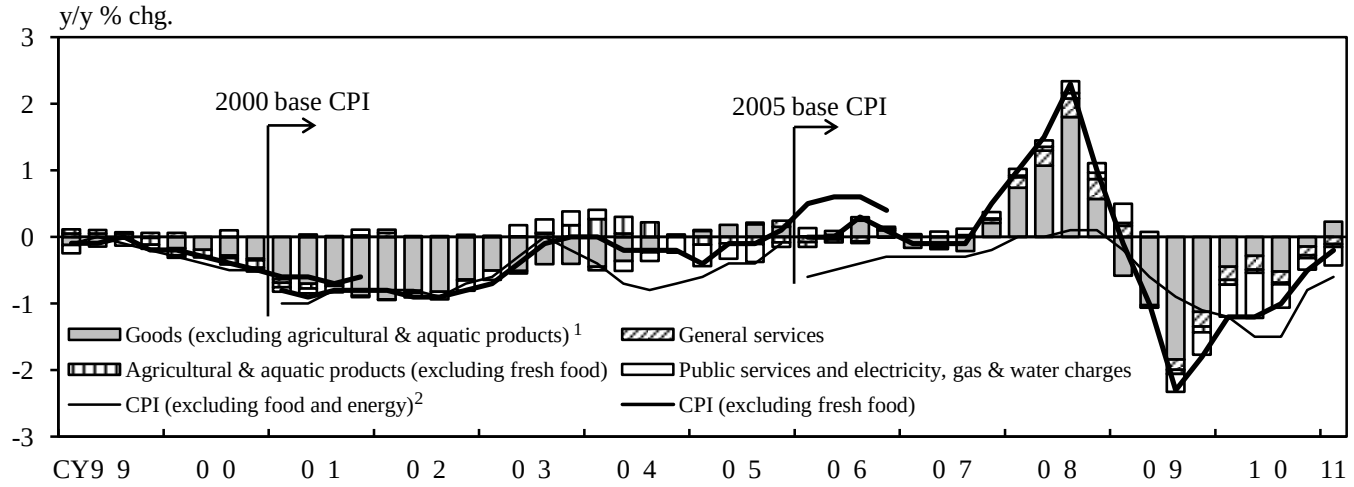



Notes: 1. Alcoholic beverages are excluded from food.
2. High school fees: high school fees (public) and high school fees (private).
3. Figures for the 10 percent trimmed mean are weighted averages of items; these items are obtained by rearranging year-on-year rates of price change in ascending order and then excluding (trimming) items in both the upper and lower 10 percent tails by weight.

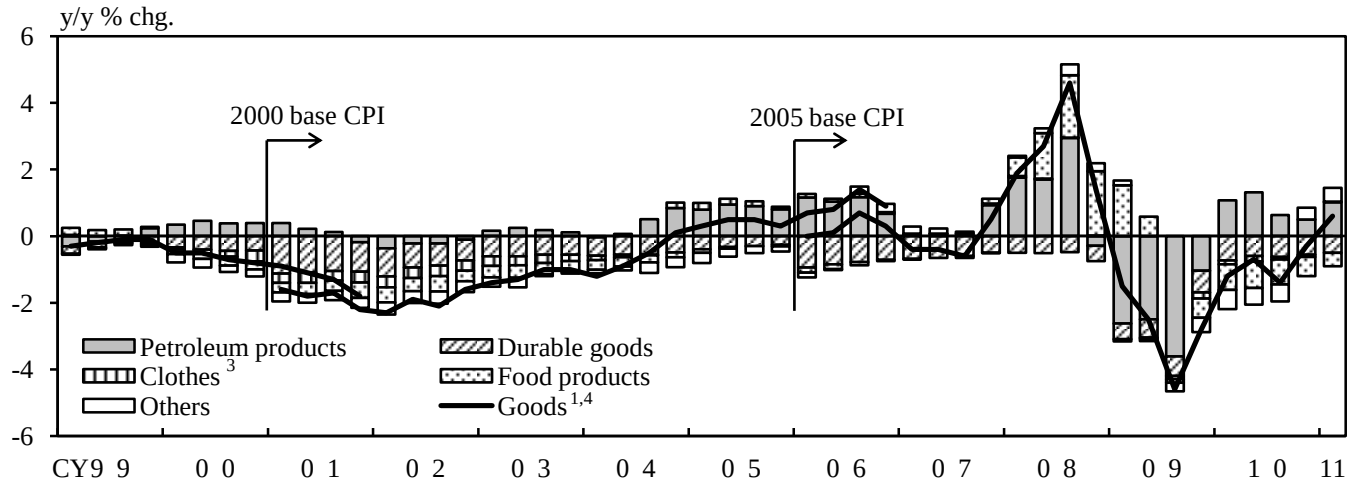
Source: Ministry of Internal Affairs and Communications, "Consumer Price Index."

# Consumer Price Index (2)

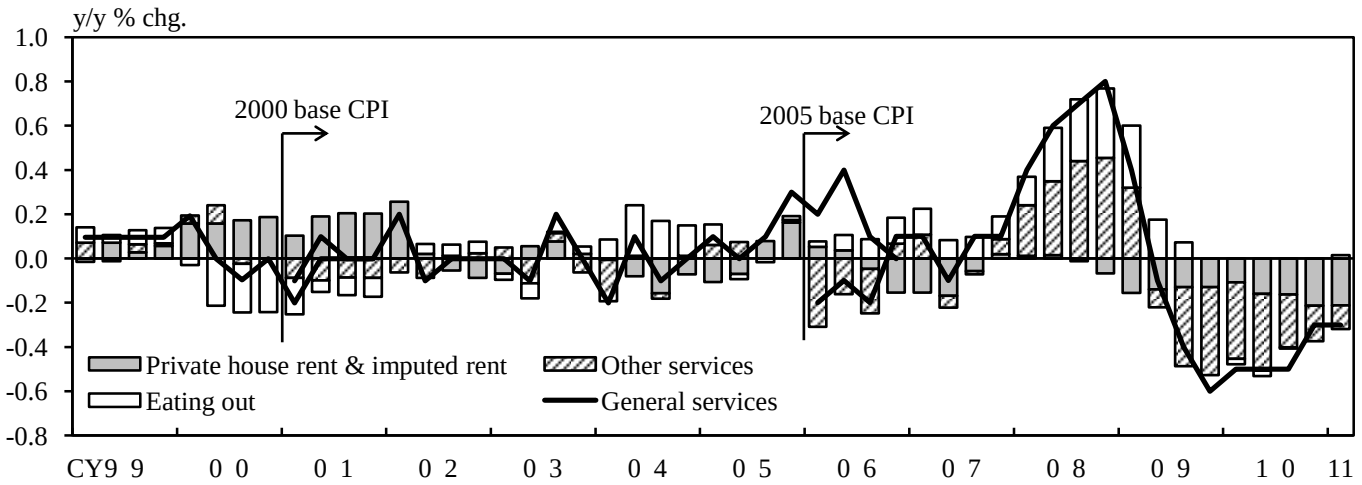
(1) Consumer Price Index Excluding Fresh Food




(2) Goods Excluding Agricultural and Aquatic Products[1]




(3) General Services

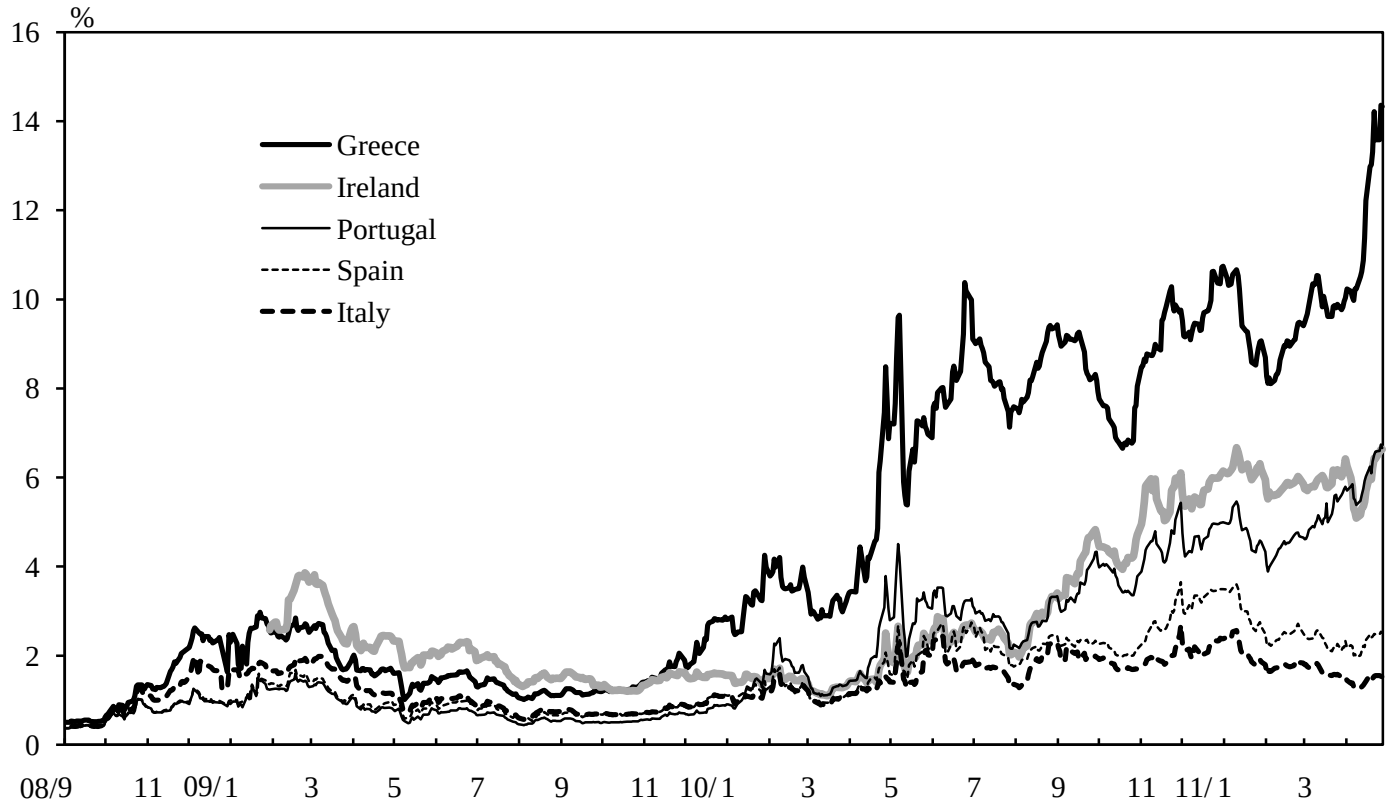



Notes: 1. The items are basically the same as those defined by the Ministry of Internal Affairs and Communications. However, electricity, gas & water charges are excluded from goods.
2. Alcoholic beverages are excluded from food.
3. Including shirts, sweaters & underwear.
4. Excluding agricultural & aquatic products.

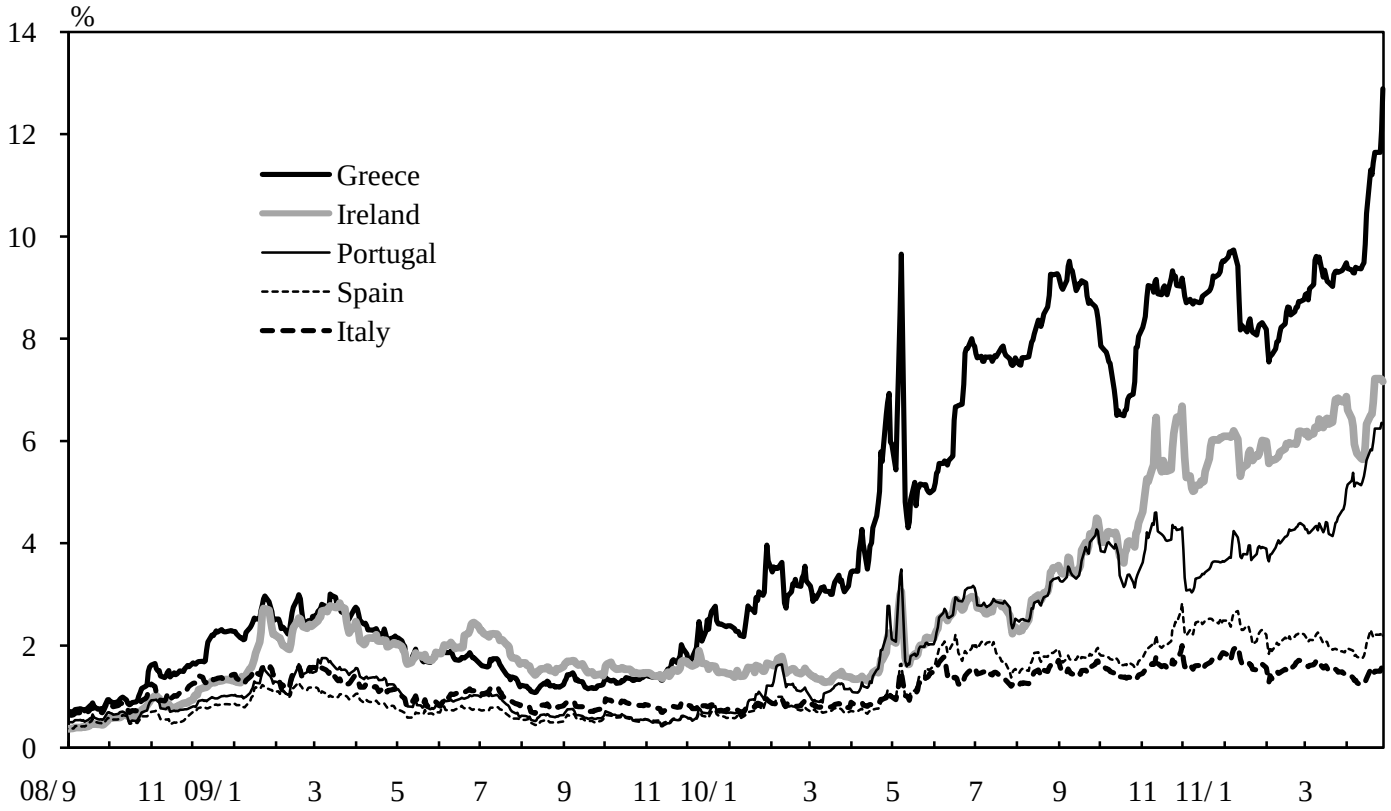
Source: Ministry of Internal Affairs and Communications, "Consumer Price Index."

# Sovereign Risk Premiums

(1) 5-Year Sovereign CDS Premiums




(2) Spreads for European Government Bonds



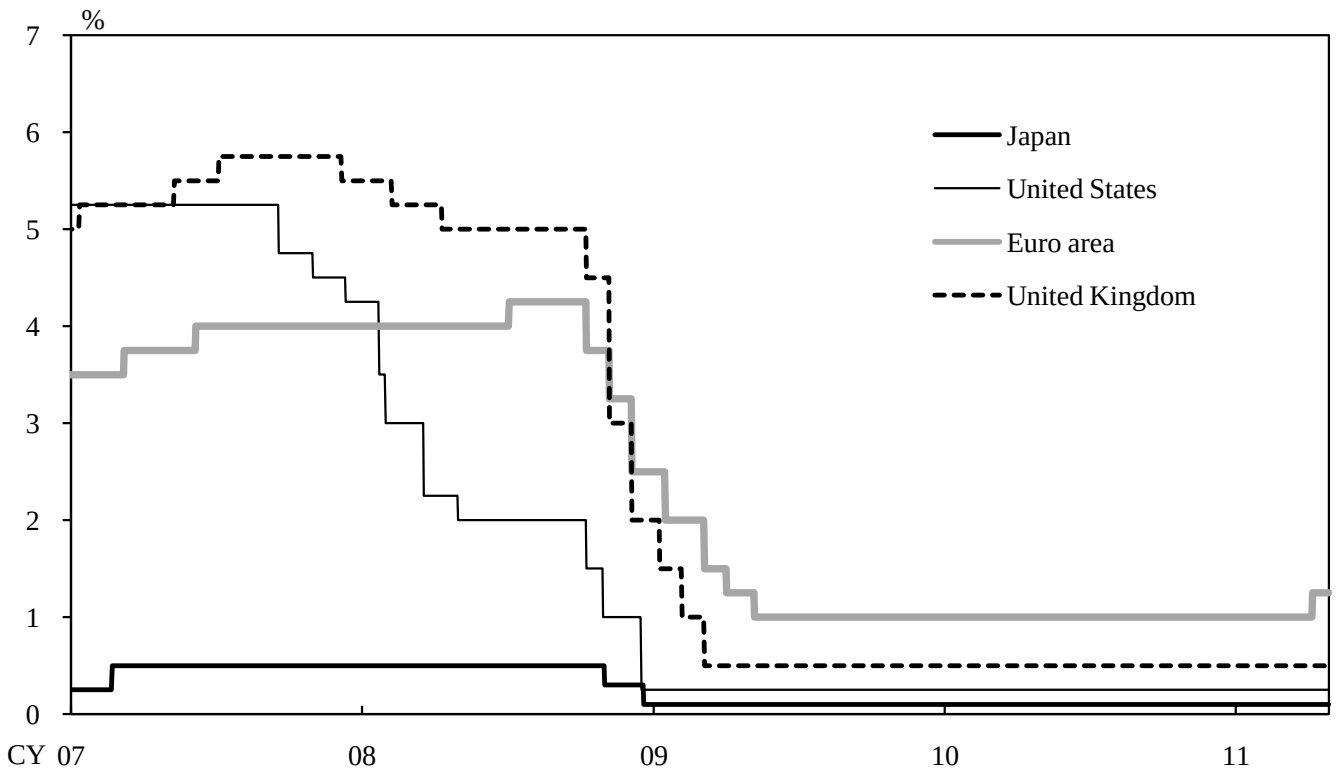

Note: The yield spreads for 10-year government bonds issued by European countries minus those issued by Germany.

Source: Bloomberg.

Chart 14

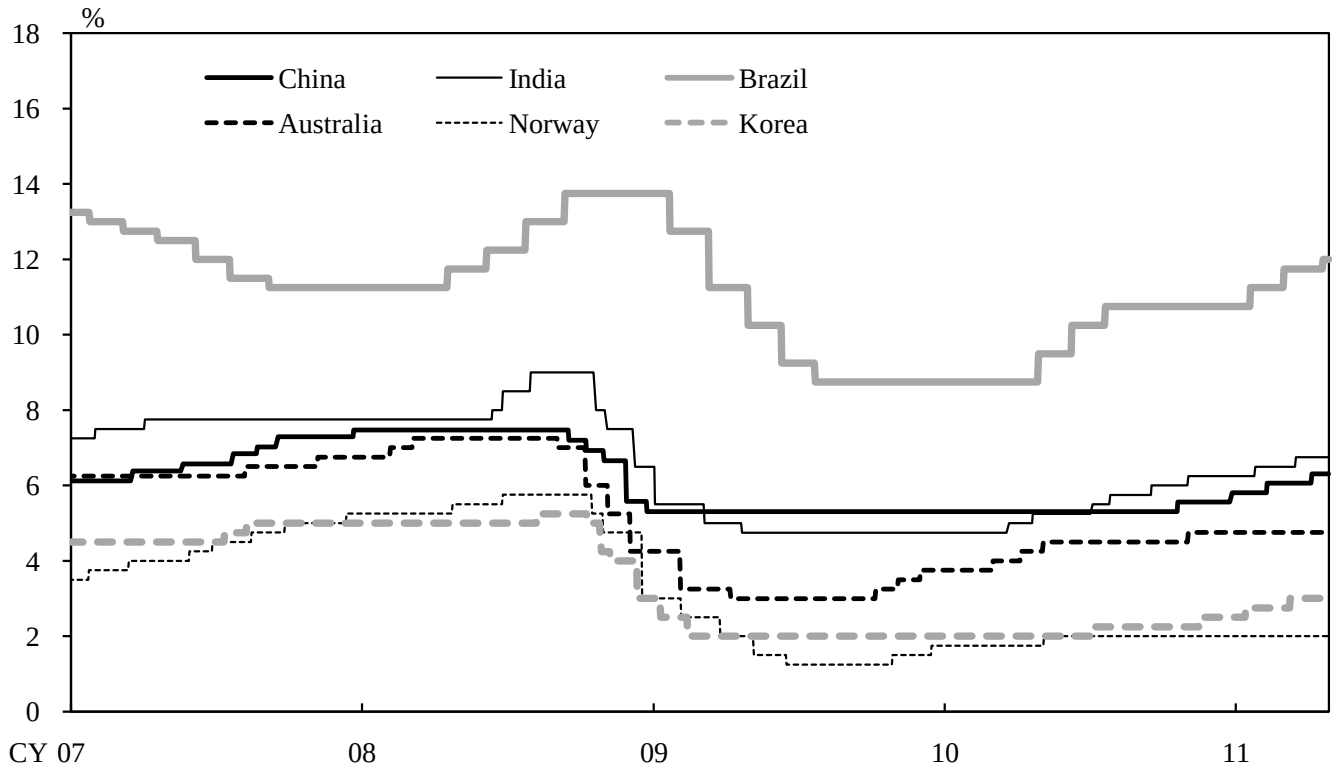
# Policy Interest Rates

(1) Advanced Economies




Note: In the United States, from December 16, 2008, the target range for the federal funds rate is 0 to 0.25 percent and the interest rate applied to reserve balances is 0.25 percent. In Japan, from October 5, 2010, the Bank encouraged the uncollateralized overnight call rate to remain at around 0 to 0.1 percent and the interest rate applied to the complementary deposit facility is 0.1 percent.

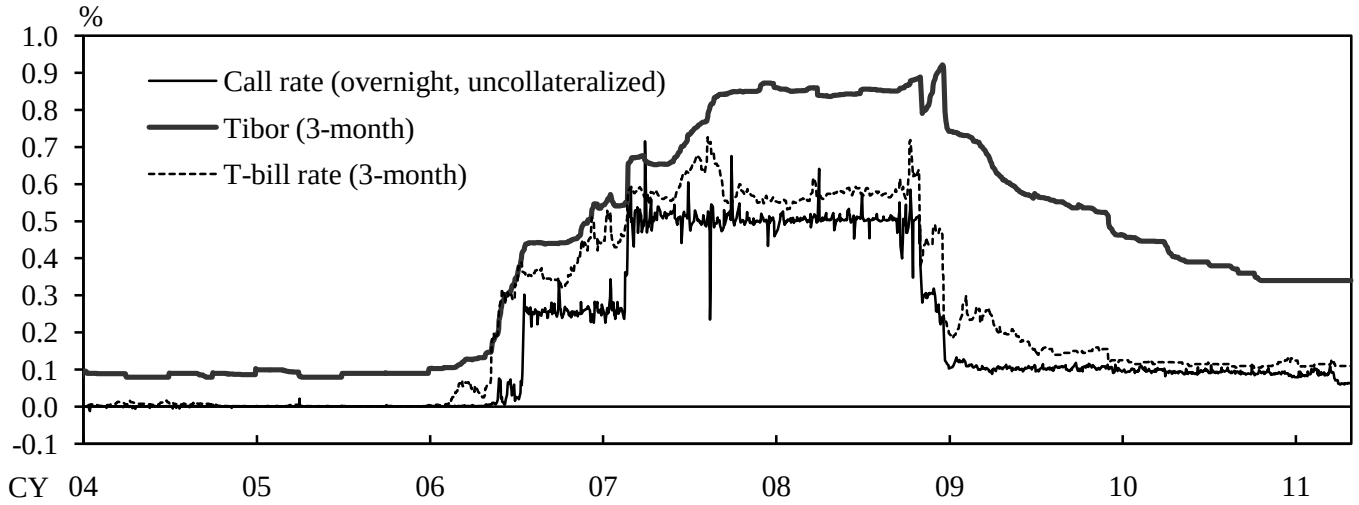
(2) Emerging and Commodity-Exporting Economies



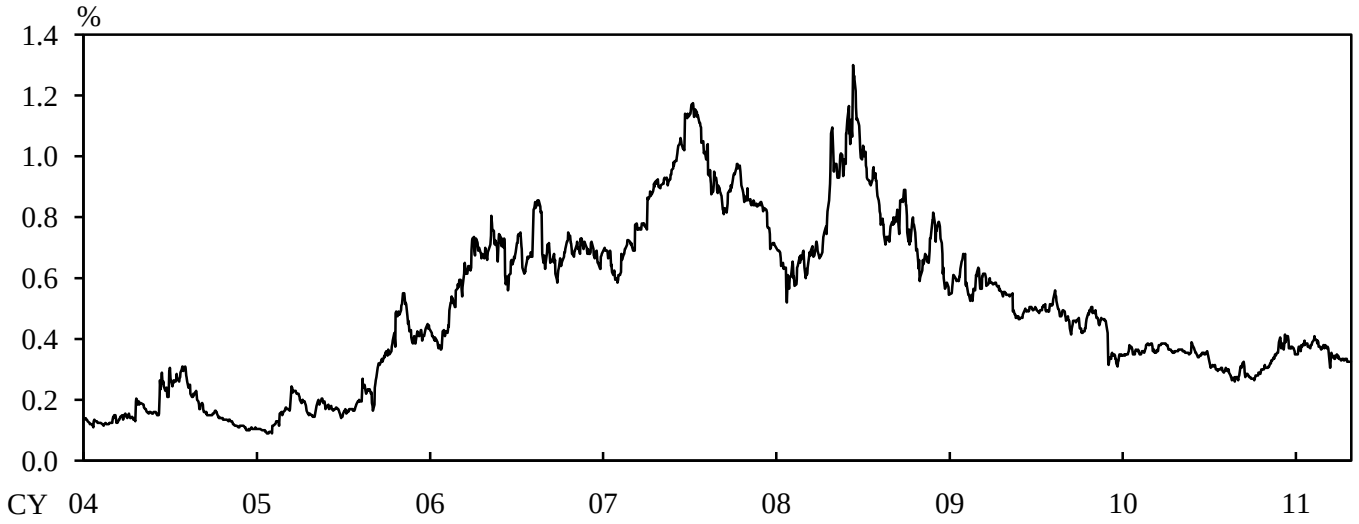

Sources: Bank of Japan; Bloomberg.

# Short-Term Interest Rates

(1) Short-Term Interest Rates

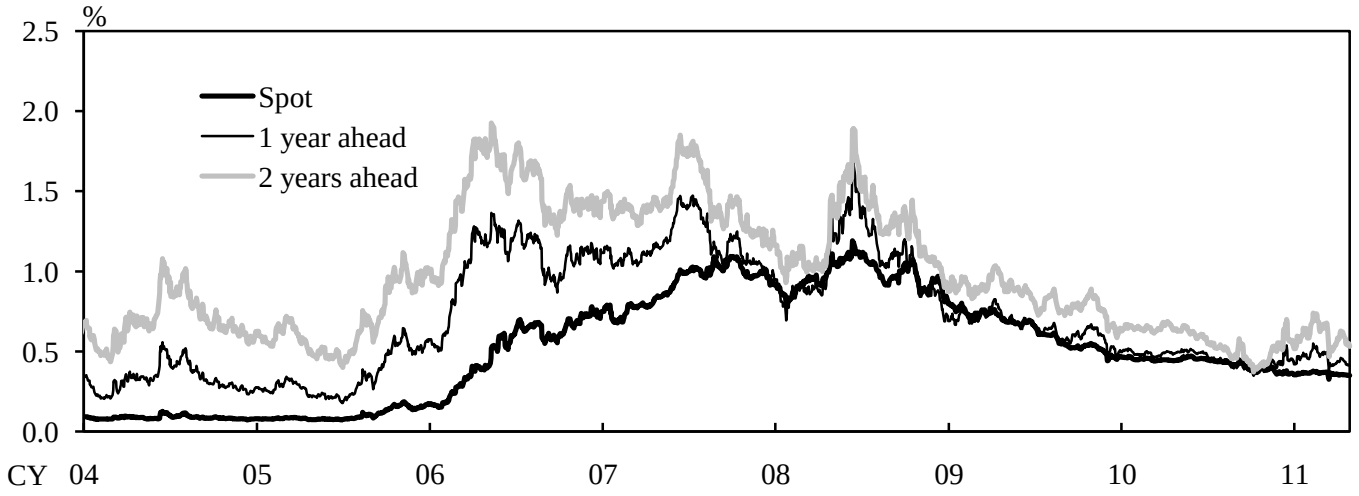



(2) Euroyen Interest Rate Futures




Note: Calculated from those for 3-month, leading contract months.

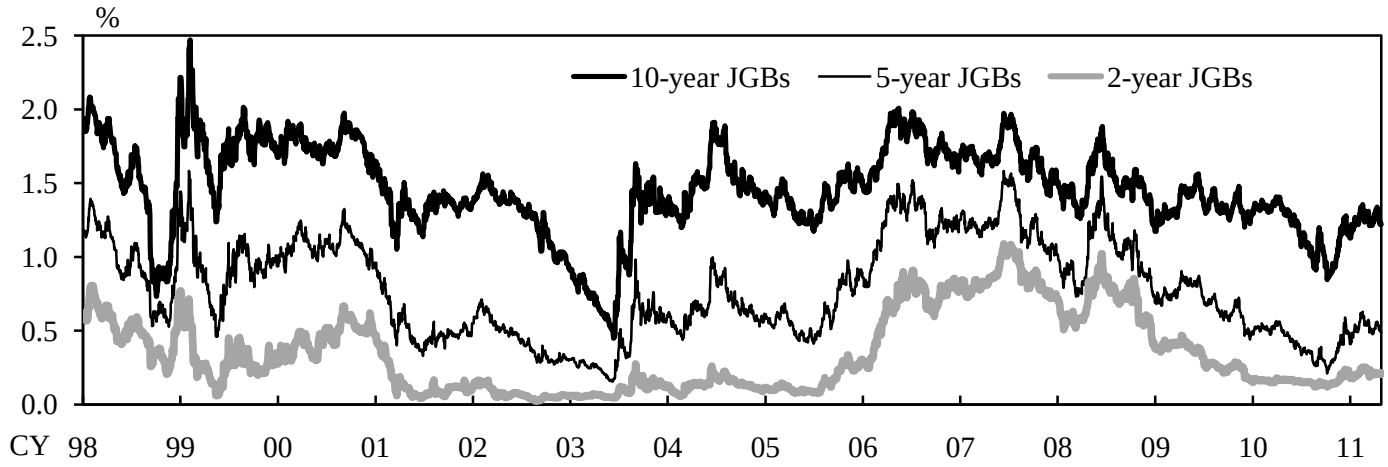
(3) Implied Forward Rates (1-Year)



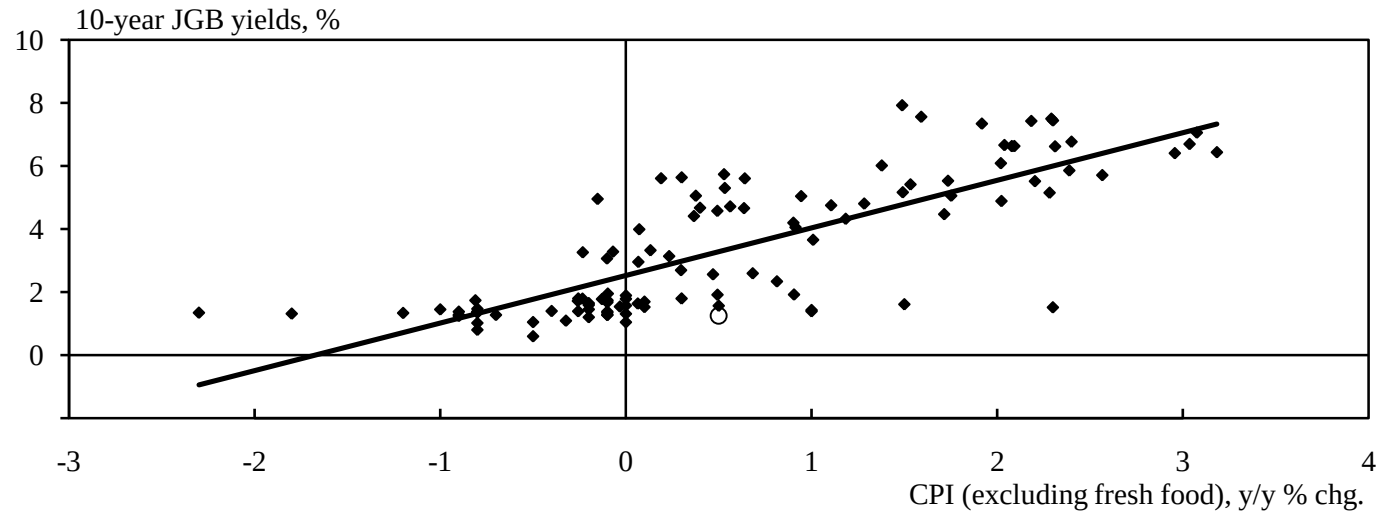

Note: Calculated from yen-yen swap rates.
Sources: Bank of Japan; Tokyo Financial Exchange; Bloomberg.

# Long-Term Interest Rates

(1) Government Bond Yields

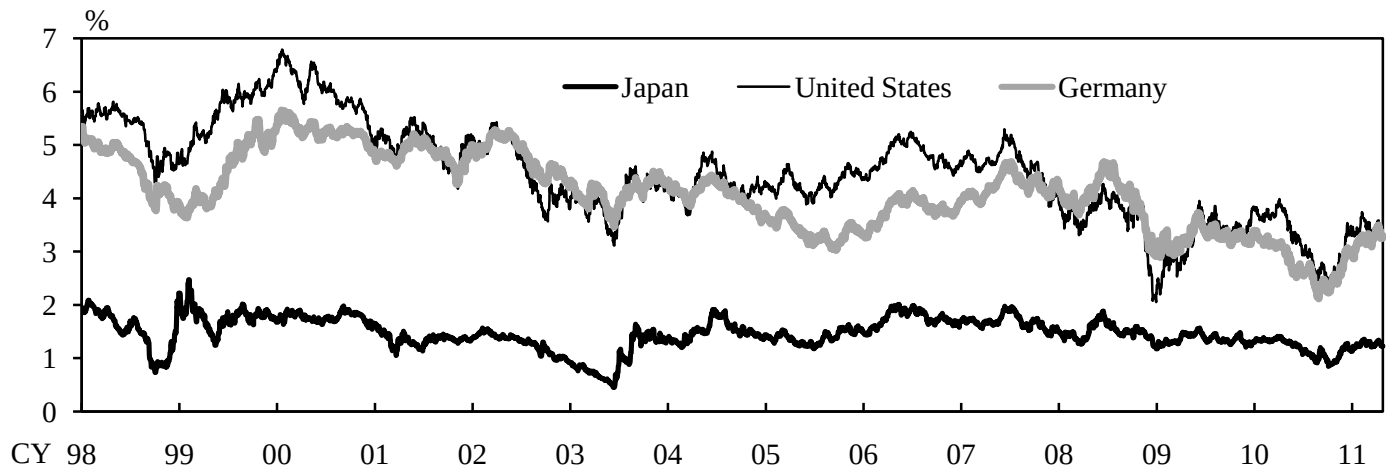



(2) Long-Term Interest Rates and Change in the CPI




Notes: 1. The CPI is adjusted to exclude the effects of changes in the consumption tax rate. From 2001/Q1 onward, high school fees are excluded.
2. The sample period is 1983/Q3-2011/Q1. The figure for 2011/Q1 is the January-February average, indicated by the white circle.

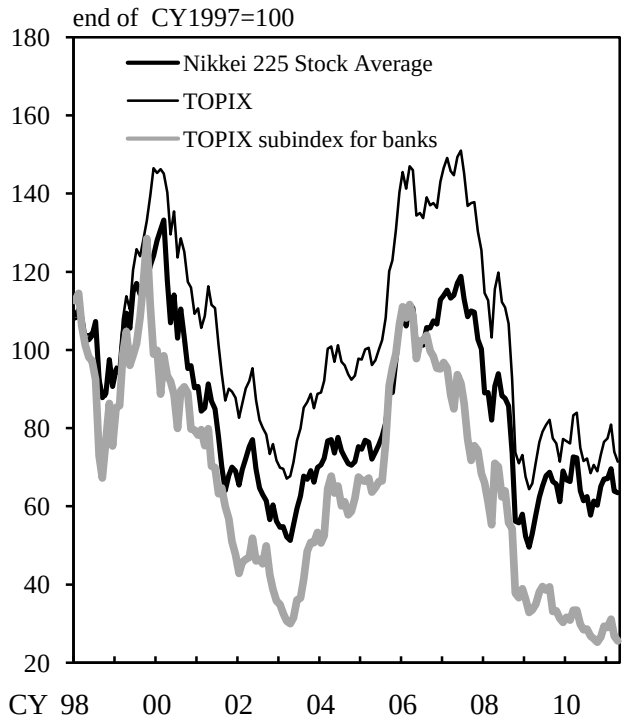
(3) Long-Term Interest Rates in Major Countries (10-Year Government Bond Yields)




Sources: Ministry of Internal Affairs and Communications, "Consumer Price Index";
Japan Bond Trading Co., Ltd.; Bloomberg.

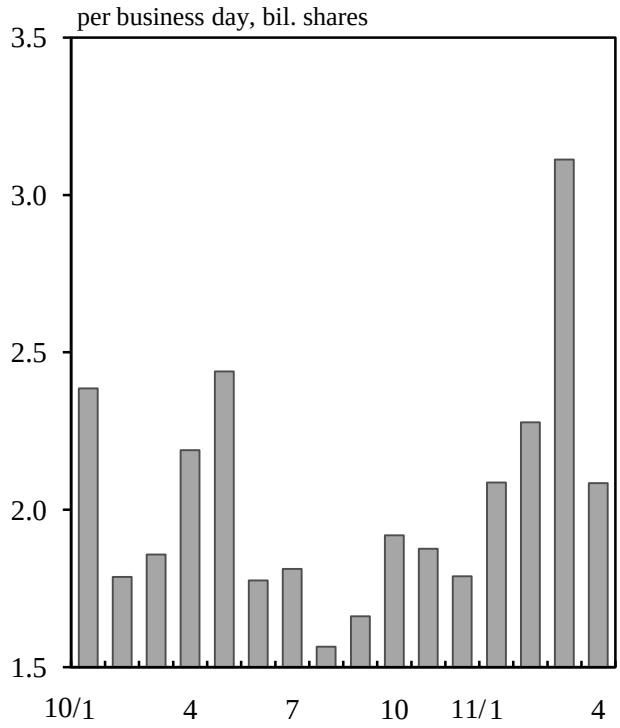
# Stock Prices

(1) Stock Prices



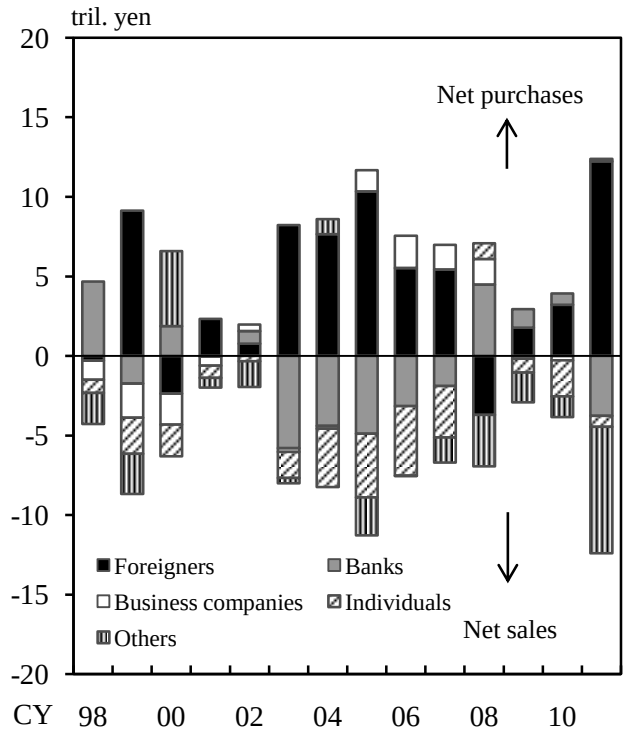

Note: The data are as of month-end.

(2) Trading Volume of the TSE First Section



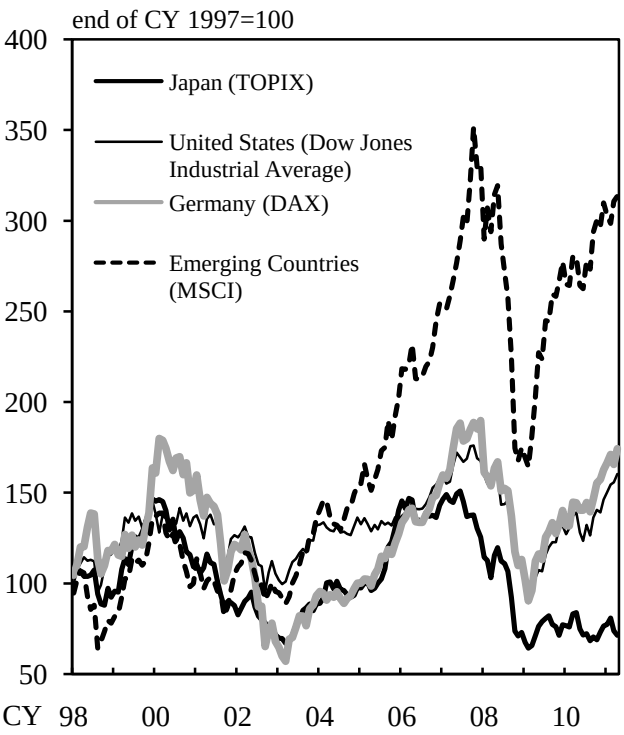

Note: Floor trading only.

(3) Trading Volume by Investor Type




Notes: 1. Figures are the sum of the first and second sections of the Tokyo, Osaka, and Nagoya stock exchanges.
2. Figures for 2011 are those of January-March in terms of annual amount.

(4) Stock Prices in Major Countries

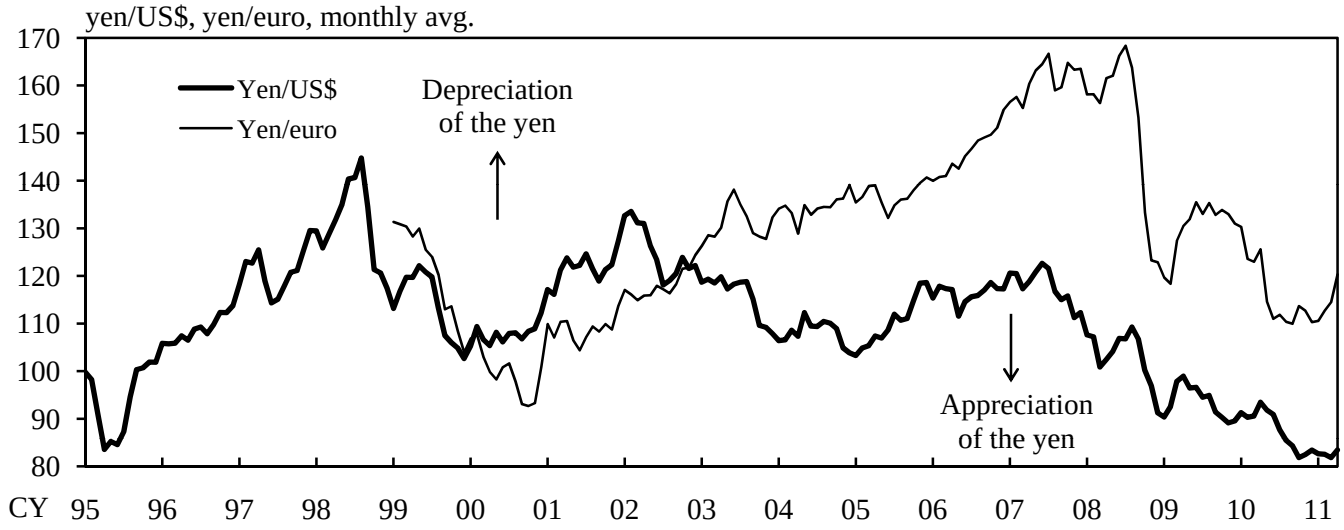



Notes: 1. The data are as of month-end.
2. The data for emerging countries use the MSCI Emerging Markets Index denominated in the local currencies.

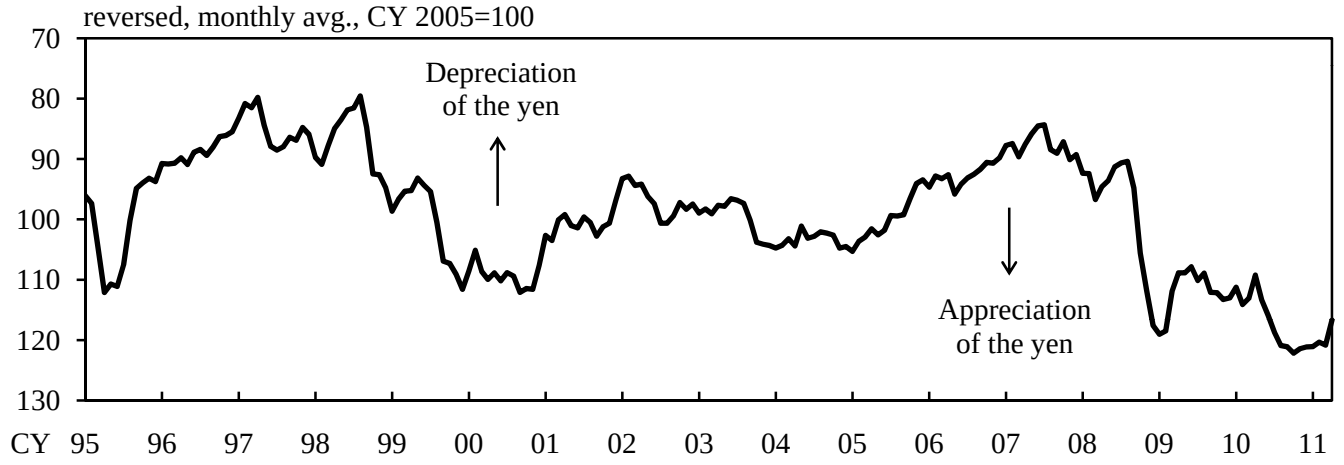
Sources: Nikkei Inc.; Tokyo Stock Exchange; Bloomberg.

# Exchange Rates

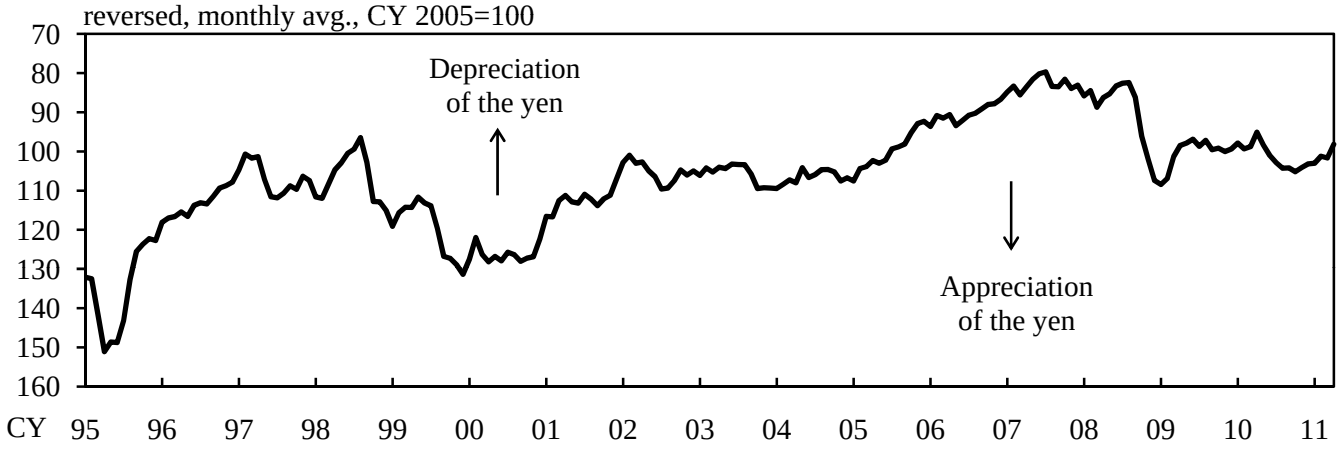
(1) Yen/US$ and Yen/Euro




(2) Yen's Nominal Effective Exchange Rate




(3) Yen's Real Effective Exchange Rate




Note: The effective exchange rates are based on the broad indices of the BIS effective exchange rate. Figures for April 2011 are calculated using the Bank of Japan's nominal effective exchange rate of the yen.

Sources: Bank for International Settlements; Bank of Japan.

# Pursuing Powerful Monetary Easing

## Expansion of the fixed-rate operation (August 30, 2010)

- Introduction of six-month fund provisioning
- Substantial increase in the amount of funds to be provided through the operation to about 30 trillion yen in total (about 20 trillion and about 10 trillion yen for three-month and six-month fund provisioning, respectively)

## Introduction of comprehensive monetary easing (October 5, 2010)

- Change in the guideline for money market operations (clarification of adopting a virtually zero interest rate policy)
  - "Around 0.1 %" ⇨ "Around 0 to 0.1%"
- Clarification of the policy time horizon based on the "understanding of medium- to long-term price stability"
  - Maintaining the virtually zero interest rate policy until the Bank judges, on the basis of the "understanding," that price stability is in sight.
    - On condition that no problem is identified in examining risk factors, including the accumulation of financial imbalances.
- Establishment of the Asset Purchase Program (about 35 trillion yen in total)
  - A temporary measure to purchase various financial assets and conduct the fixed-rate operation.

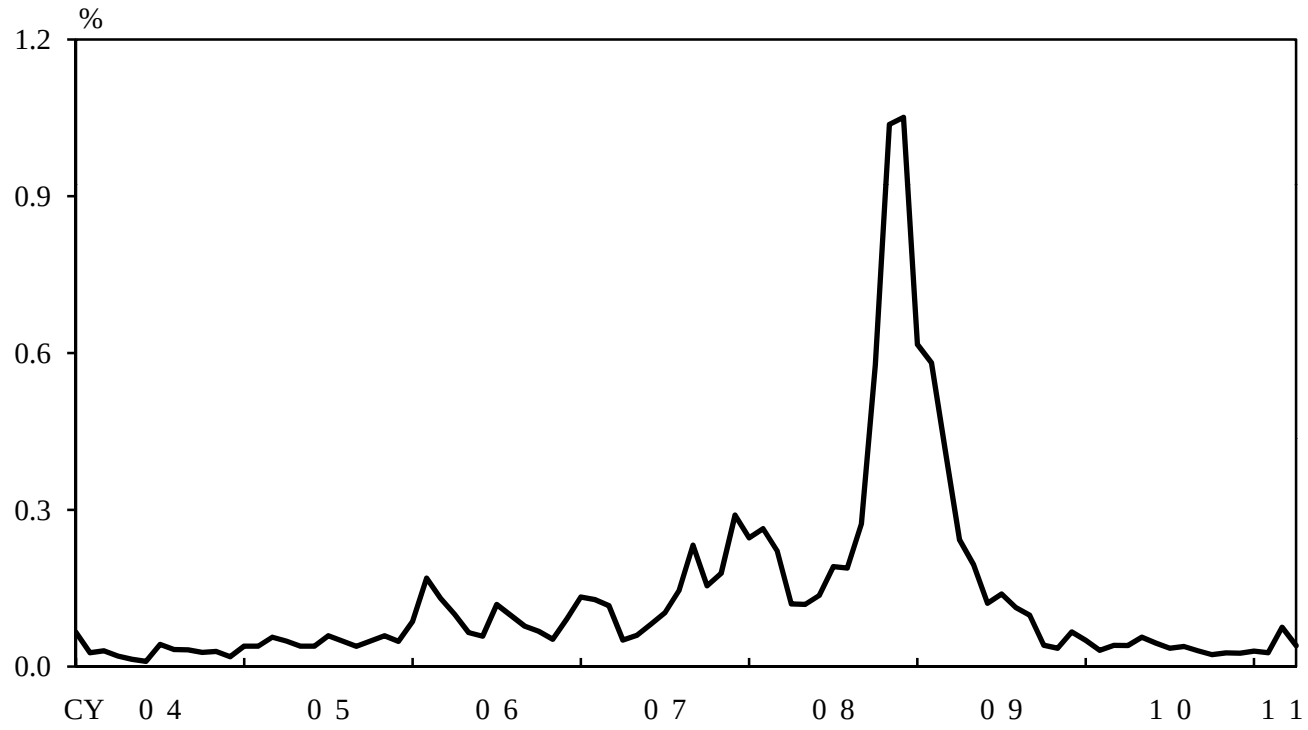
Assets to be purchased:
Long-term government bonds, treasury discount bills, CP, corporate bonds, exchange-traded funds (ETFs), and Japan real estate investment trusts (J-REITs)

## Increase in the amount of the Asset Purchase Program (March 14, 2011)

- Increase in the amount, mainly of the purchases of risk assets, by about 5 trillion yen to about 40 trillion yen in total

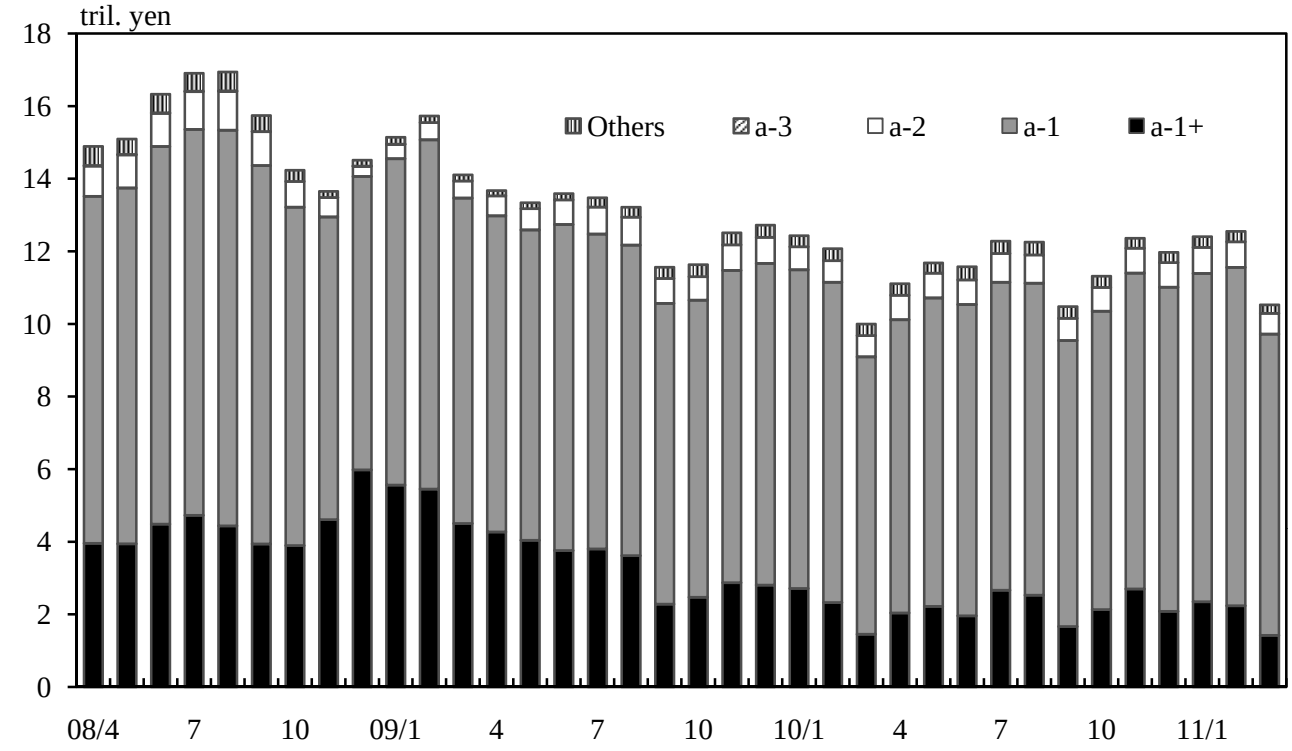
# CP Market

(1) Spreads for CP




Note: Figures up to September 2009 are the average issuance rate of CP (3-month, rated a-1 or higher) minus the yield on treasury discount bills (3-month). Figures from October 2009 are the average issuance rate of CP (3-month, rated a-1) minus the yield on treasury discount bills (3-month).

(2) Amount Outstanding of CP

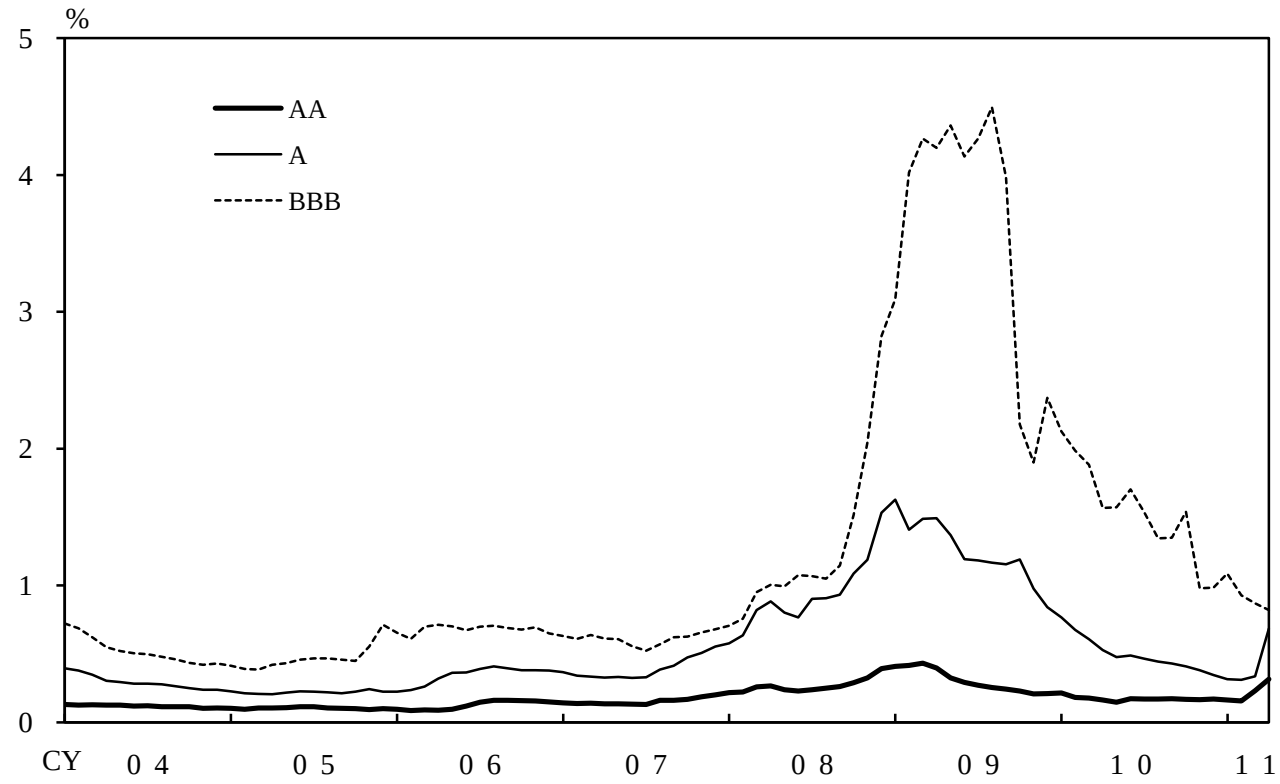



Note: The ratings are of R&I and JCR.

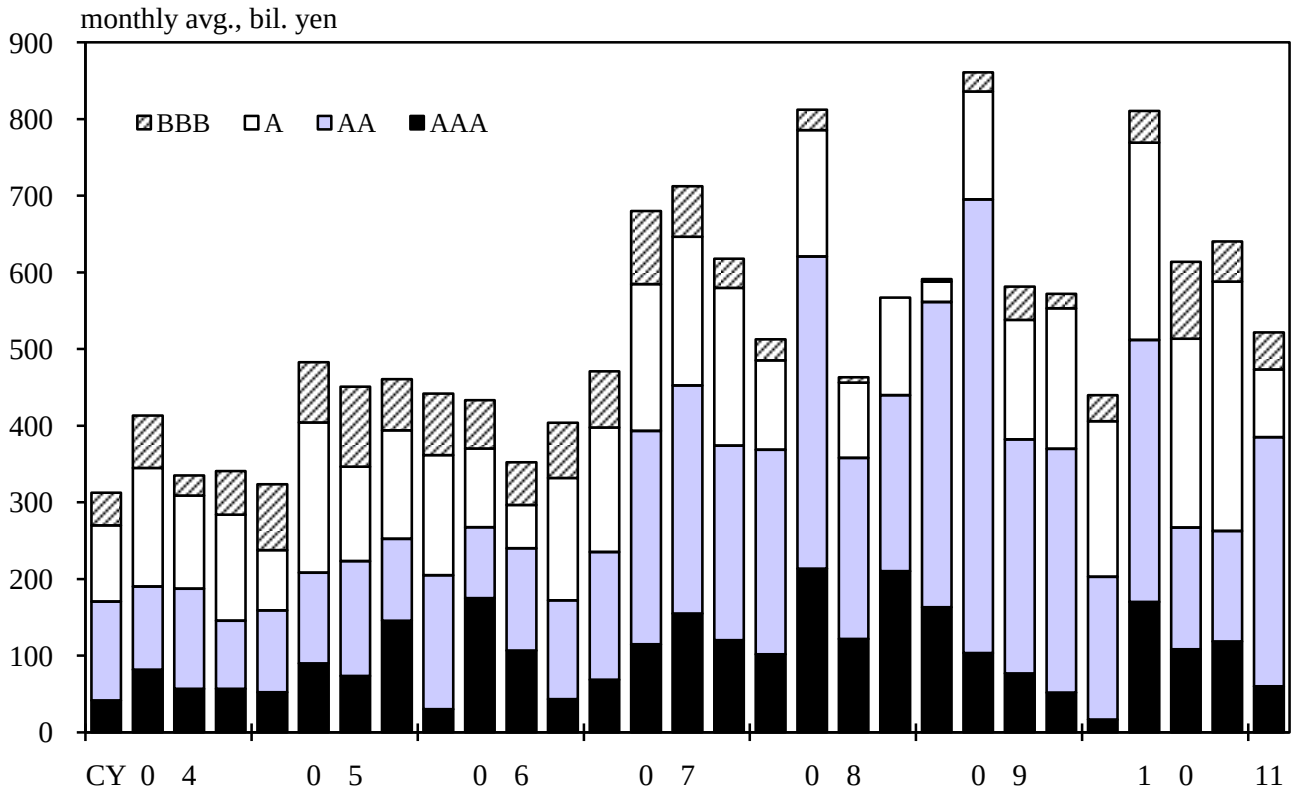
Sources: Bank of Japan, "Average Yields on Newly Issued Domestic Commercial Paper"; Japan Securities Depository Center; Bloomberg; Finance Facsimile News.

# Corporate Bond Market

(1) Spreads for Corporate Bonds[1,2]




(2) Amount of Corporate Bonds[3,4]



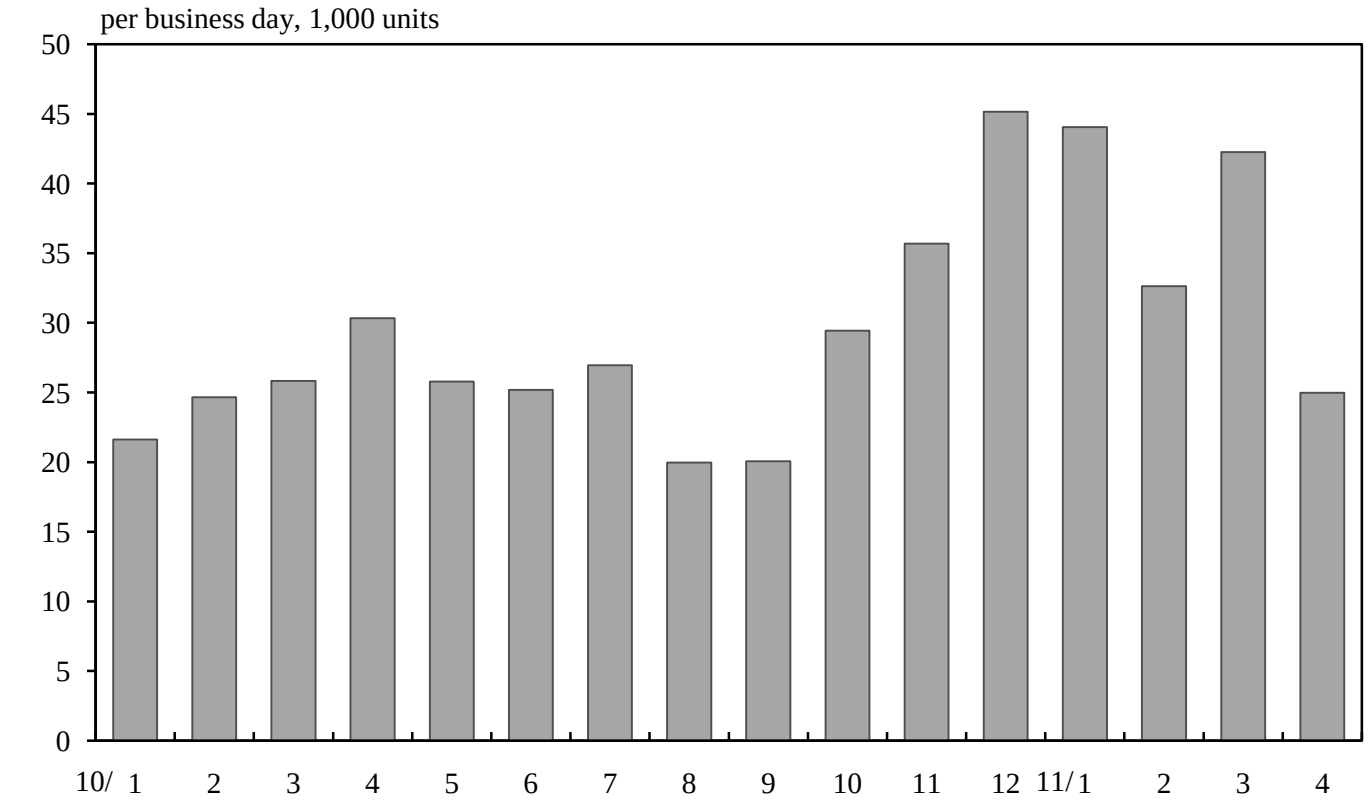

Notes: 1. The spreads for corporate bonds are the corporate bond (5-year) yields minus the government bond (5-year) yield.
2. The indicated ratings of corporate bonds are of R&I.
3. Figures are the sum of straight bonds issued in domestic markets, based on the launch date.
4. Bonds issued by banks are excluded.

Sources: Japan Securities Dealers Association; I-N Information Systems; Bloomberg.

# J-REIT Market

(1) TSE REIT Index

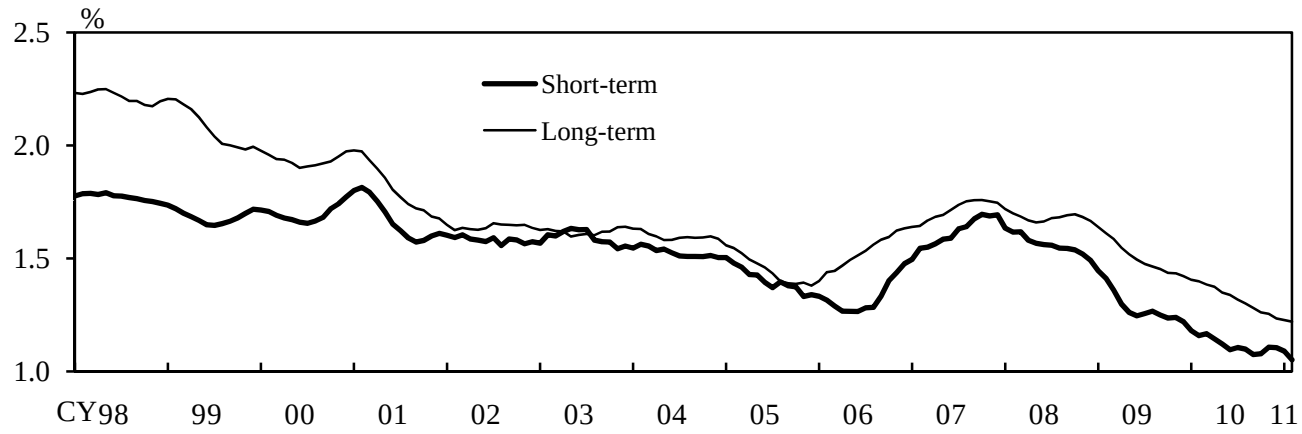

(2) Trading Volume of J-REIT




Note: Floor trading only.
Source: Bloomberg.

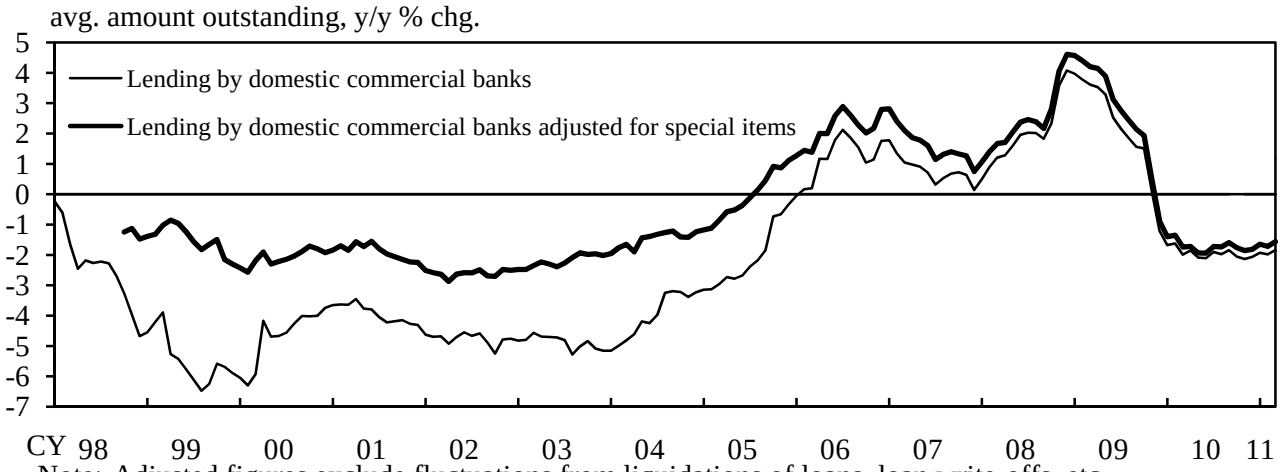
# Bank Lending and Money Stock

(1) Average Contracted Interest Rates on New Loans and Discounts



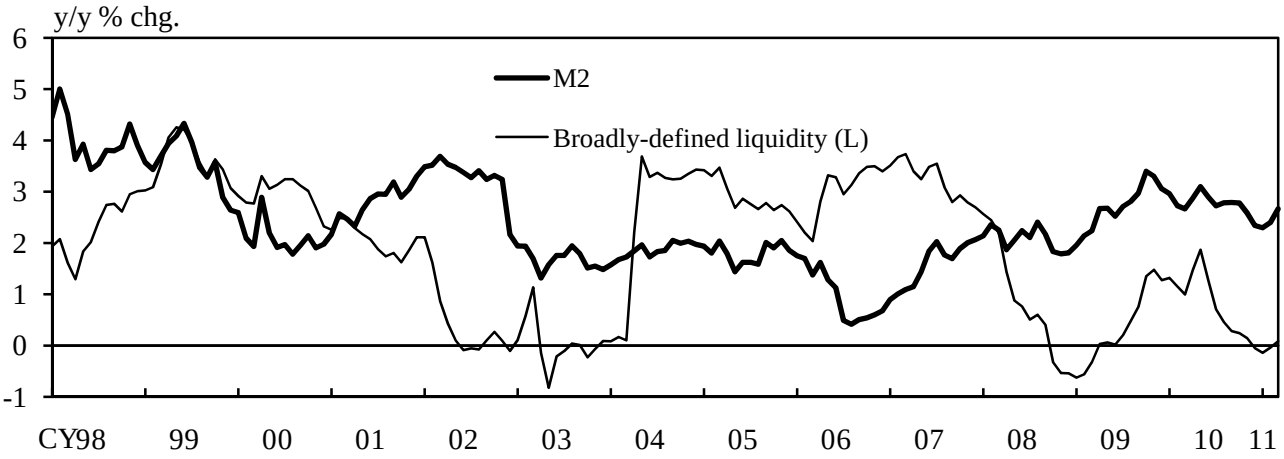

Note: Figures are the six-month backward moving average.

(2) Lending by Domestic Commercial Banks




Note: Adjusted figures exclude fluctuations from liquidations of loans, loan write-offs, etc.

(3) Money Stock

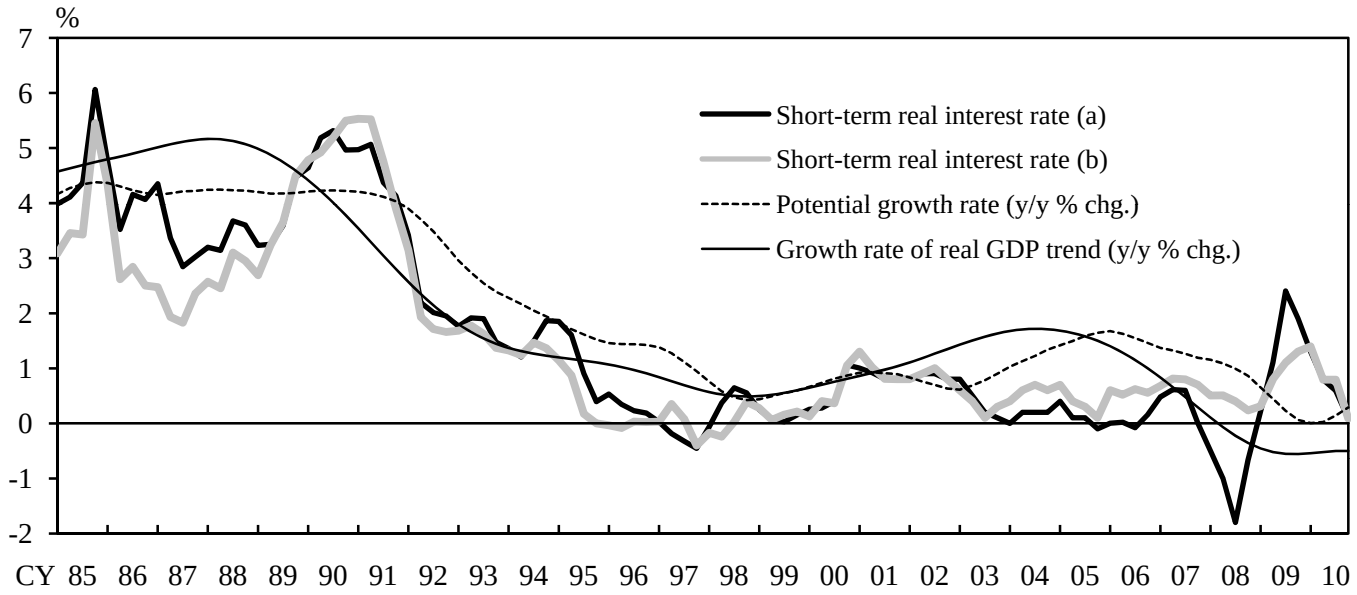



Notes: 1. Figures for M2 up to March 2004 are the former series of the figures for M2+CDs.
2. Figures for broadly-defined liquidity up to March 2004 are the former series of the figures for broadly-defined liquidity, subtracting the figures for repurchase agreements and those for securities lending with cash collateral transactions.

Source: Bank of Japan, "Principal Figures of Financial Institutions," "Money Stock," "Average Contracted Interest Rates on Loans and Discounts."

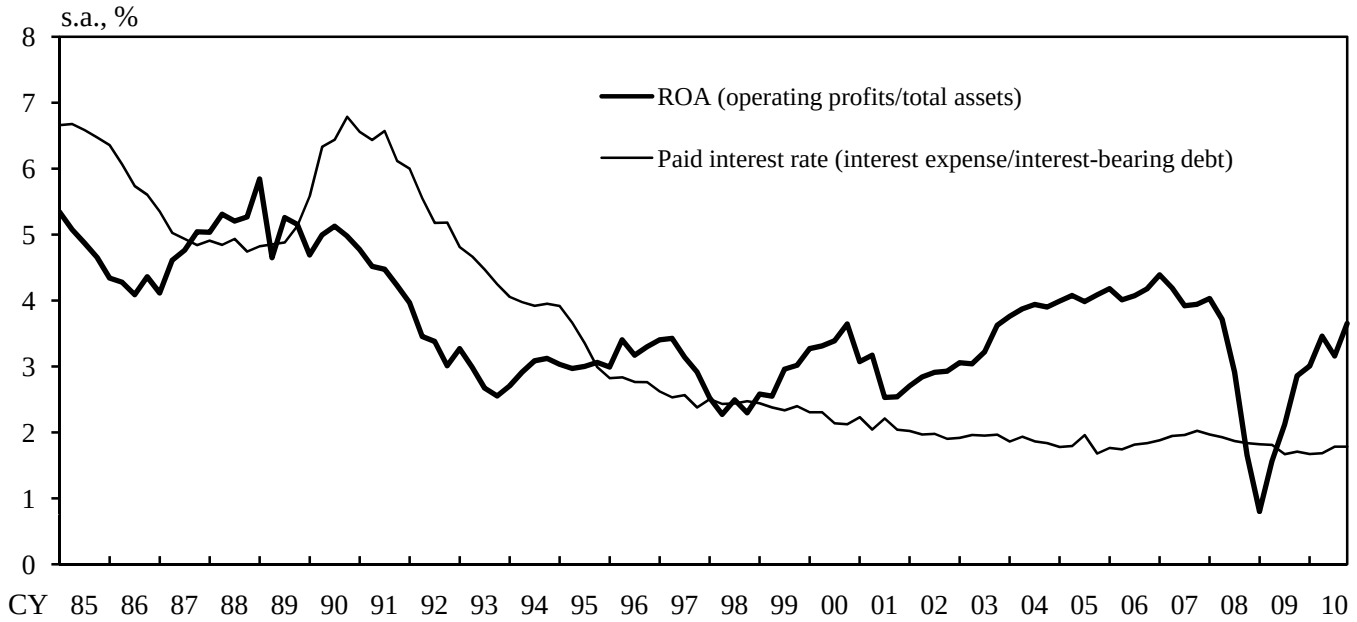
# Interest Rates and Economic Activity

## (1) Short-Term Real Interest Rate and Real GDP Growth Rate




Notes: 1. Short-term real interest rate (a) = call rate (overnight, uncollateralized) - year-on-year percentage change in the CPI (excluding fresh food)
2. Short-term real interest rate (b) = call rate (overnight, uncollateralized) - year-on-year percentage change in the CPI (excluding food [alcoholic beverages are excluded from food] and energy)
3. Figures for the CPI are adjusted to exclude the effects of changes in the consumption tax rate. From 2001/Q1, high school fees are excluded.
4. The potential growth rate is estimated by the Research and Statistics Department, Bank of Japan.
5. Real GDP trend is calculated by applying the HP filter.

## (2) ROA and Paid Interest Rate



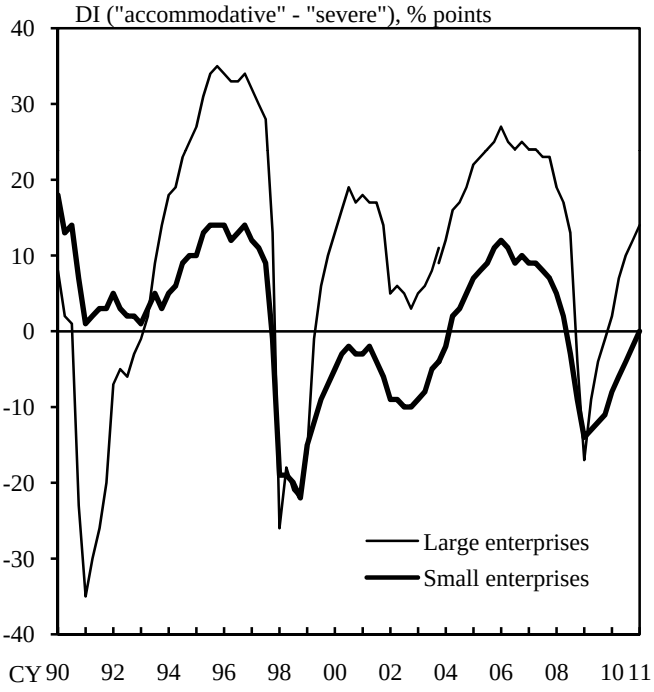

Notes: 1. Taken from the "Financial Statements Statistics of Corporations by Industry, Quarterly." Based on all-size enterprises and all industries. Figures exclude finance and insurance.
2. Interest-bearing debt is the sum of long- and short-term borrowings, corporate bonds, and bills receivable discounted outstanding.

Sources: Cabinet Office, "National Accounts"; Ministry of Internal Affairs and Communications, "Consumer Price Index"; Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Quarterly"; Bank of Japan.

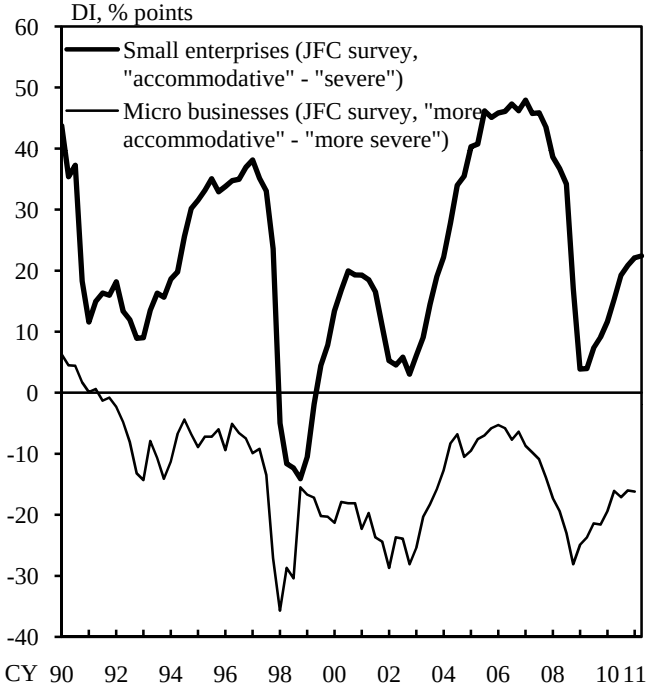
# Corporate Finance-Related Indicators

(1) Lending Attitude of Financial Institutions as Perceived by Firms

(a) *Tankan*

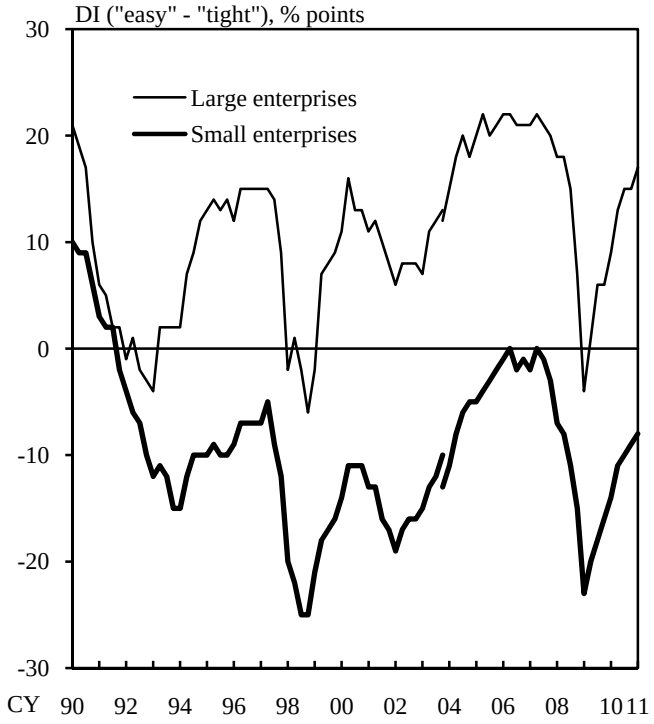



(b) Other Surveys

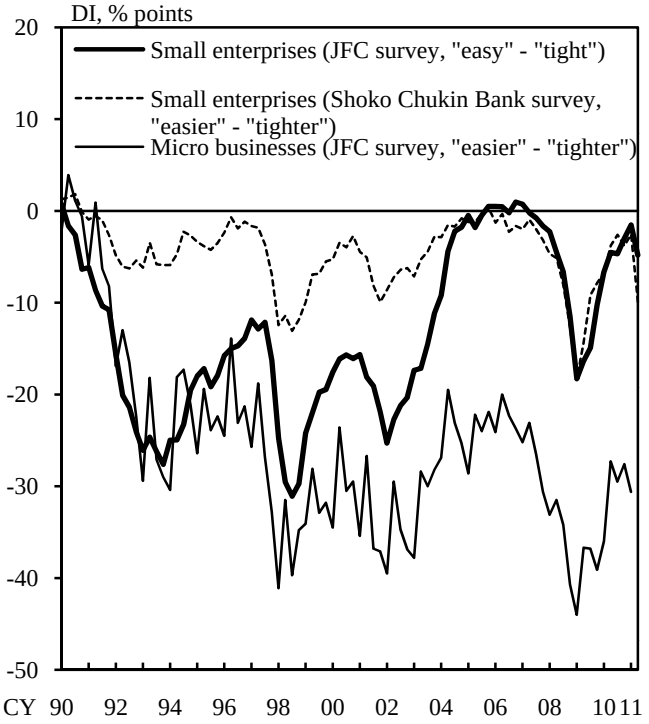



(2) Financial Position

(a) *Tankan*




(b) Other Surveys



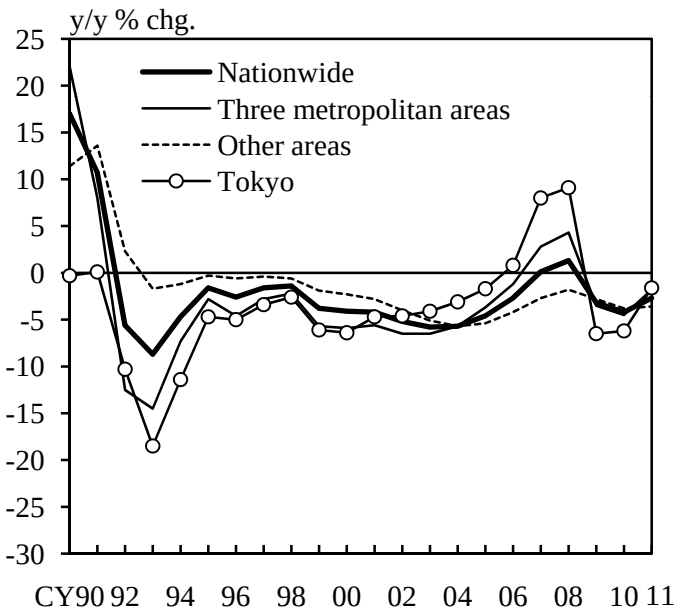

Note: Data of the "Tankan" are based on all industries. The "Tankan" has been revised from the March 2004 survey. Figures up to the December 2003 survey are based on the previous data sets. Figures from the December 2003 survey are on the new basis.

Sources: Bank of Japan, "*Tankan*, Short-Term Economic Survey of Enterprises in Japan";
Shoko Chukin Bank, Ltd., "Business Survey Index for Small and Medium-Sized Businesses";
Japan Finance Corporation (JFC), "Monthly Survey of Small Businesses in Japan," "Quarterly Survey of Small Businesses in Japan (For Micro Businesses)."

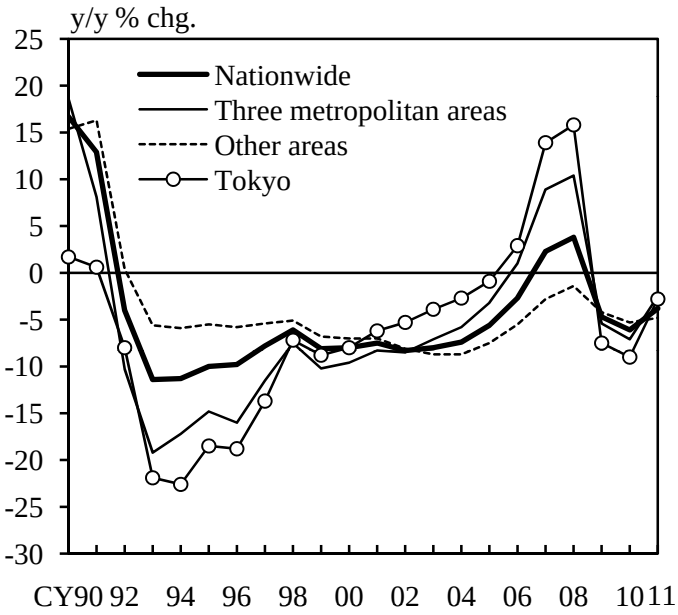
# Land Prices

(1) Public Notice of Land Prices

(a) Residential Land

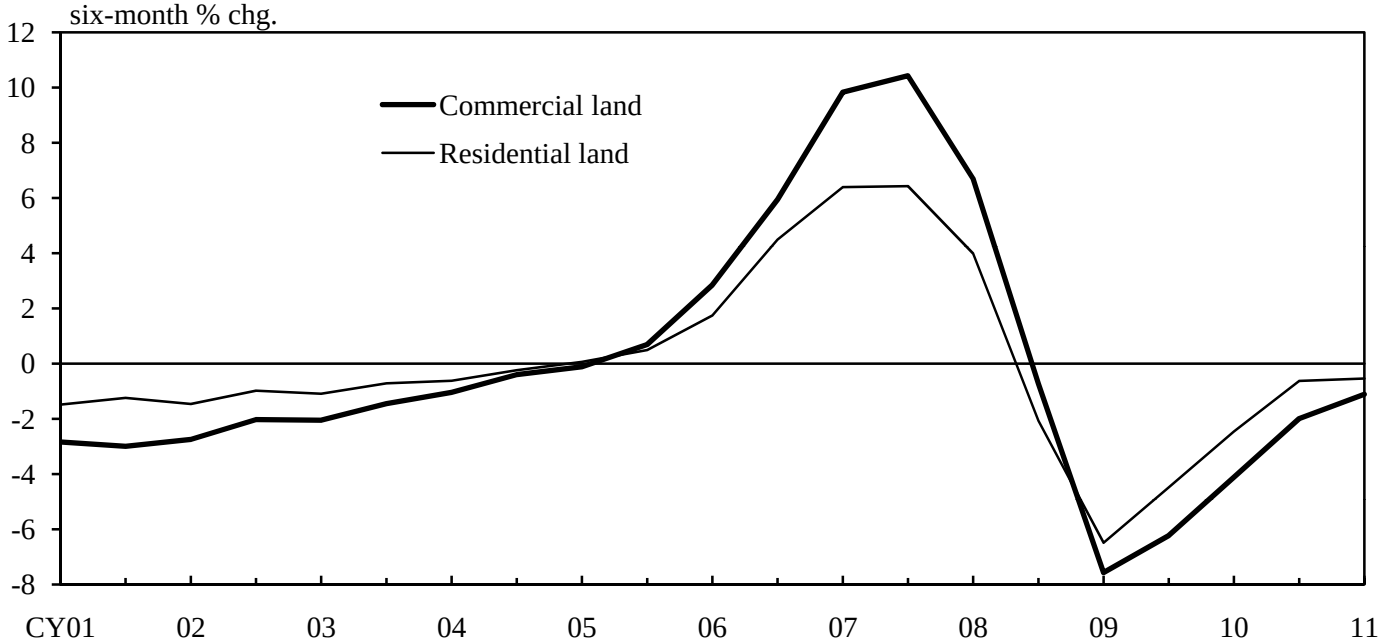



(b) Commercial Land




Notes: 1. Figures are as of January 1.
2. Three metropolitan areas: the Tokyo area (Tokyo, Kanagawa, Saitama, Chiba, and Ibaraki prefectures), the Osaka area (Osaka, Hyogo, Kyoto, and Nara prefectures), and the Nagoya area (Aichi and Mie prefectures). Other areas: Other than the three metropolitan areas.

(2) Land Prices in the 23 Wards of Tokyo




Note: Figures in the chart are six-month percentage change in land prices available in both "Public Notice of Land Prices" and "Land Price Survey by Prefectural Governments" (residential: 48 points; commercial: 38 points).

Source: Ministry of Land, Infrastructure, Transport and Tourism, "Public Notice of Land Prices," "Land Price Survey by Prefectural Governments."

# Impact of Earthquake Disasters

## (1) Economic Situation in the Disaster Area

| | Great East Japan Earthquake (March 11, 2011) | | | | Great Hanshin-Awaji Earthquake (January 17, 1995) | |
|---|---|---|---|---|---|---|
| | Disaster area | | Iwate, Miyagi, and Fukushima prefectures | | Hyogo Prefecture | |
| Population (10 thous. persons) | 2,177 | [17.0%] | 571 | [4.5%] | 547 | [4.4%] |
| Prefectural GDP (nominal, tril. yen) | 74.3 | [14.7%] | 20.3 | [4.0%] | 19.7 | [4.0%] |
| Social capital (tril. yen) | 133.2 | [20.1%] | 35.5 | [5.4%] | 15.8 | [4.2%] |

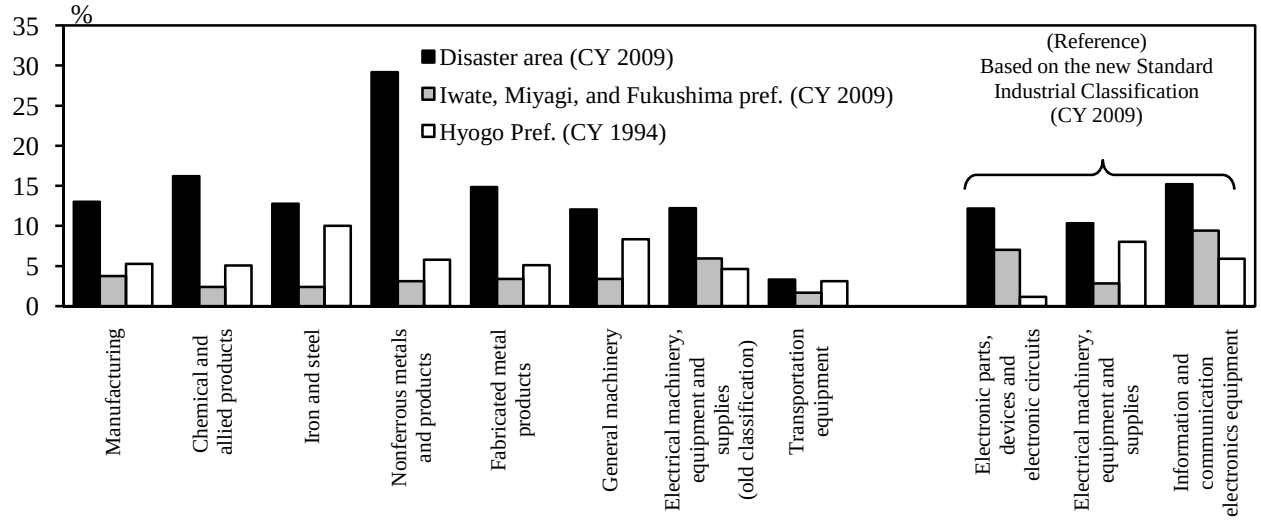
Notes: 1. Figures in brackets show the shares among Japan's total.
2. The disaster area refers to Hokkaido, Aomori, Iwate, Miyagi, Fukushima, Ibaraki, and Chiba prefectures.
3. For the Great East Japan Earthquake, the population is as of October 1, 2010, prefectural GDP is as of fiscal 2008, and social capital is as of fiscal 2003. For the Great Hanshin-Awaji Earthquake, the population is as of October 1, 1994, prefectural GDP is as of fiscal 1994, and social capital is as of fiscal 1990. Social capital includes capital stock such as roads and harbors.

## (2) Estimate of Damage to the Capital Stock

| | Great East Japan Earthquake | | Great Hanshin-Awaji Earthquake |
|---|---|---|---|
| | Disaster area | Iwate, Miyagi, and Fukushima prefectures | Hyogo Prefecture |
| Case 1 | Approx. 16 tril. yen | Approx. 14 tril. yen | Approx. 9.9 tril. yen |
| Case 2 | Approx. 25 tril. yen | Approx. 23 tril. yen | |

Notes: 1. The impact on capital stock of the Great East Japan Earthquake is estimated by the Cabinet Office (as of March 23). In case 1, the damage ratio in the areas hit by the tsunami (Iwate, Miyagi, and Fukushima prefectures) is assumed to be twice as large as that for the Great Hanshin-Awaji Earthquake. In case 2, the damage ratio for buildings is assumed to be even larger as a result of greater damage caused by the tsunami. Capital stock includes social capital, housing, and private plant and equipment.
2. The impact on capital stock caused by the Great Hanshin-Awaji Earthquake is estimated by Hyogo Prefecture.

## (3) Shares of the Value Added of the Disaster Area among Japan's Total

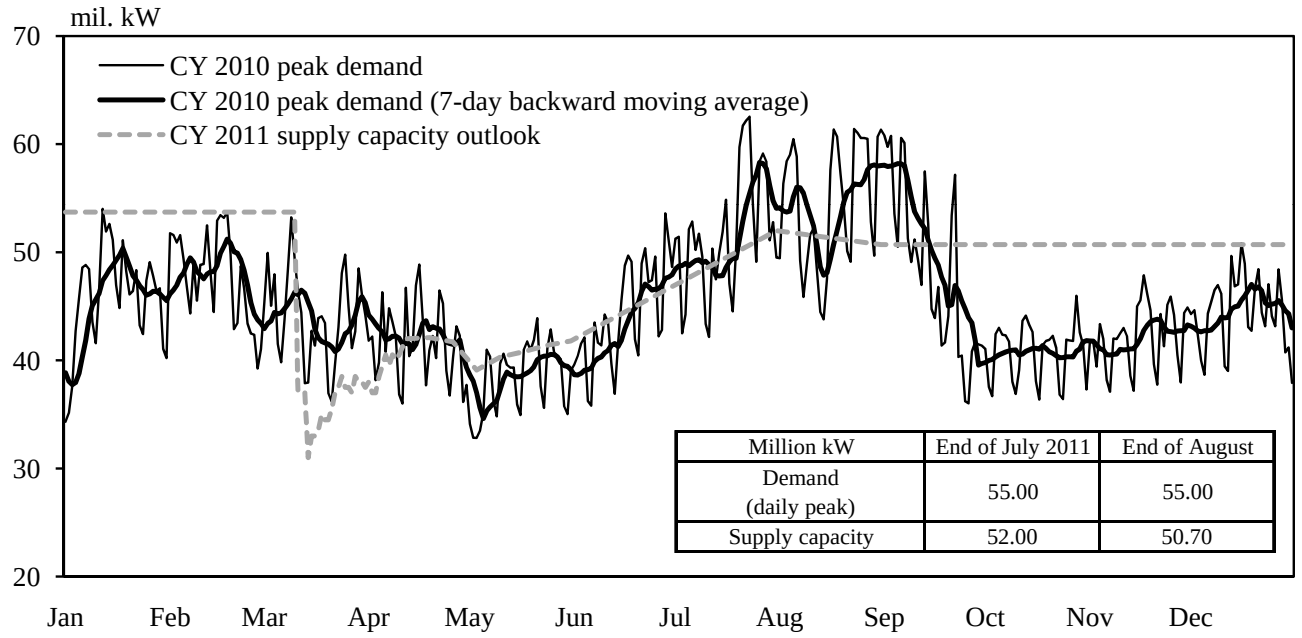



Notes: 1. "Electrical machinery, equipment and supplies (old classification)" for calendar 2009 is the sum of "electronic parts, devices and electronic circuits," "electrical machinery, equipment and supplies," and "information and communication electronics equipment" in the new Standard Industrial Classification.
2. "General machinery" for calendar 2009 is the sum of "general purpose machinery," "production machinery," and "business-oriented machinery." For calendar 1994, it is the sum of "general machinery" and "precision instruments and machinery."
3. The data are based on the establishments with four or more employees.

Sources: Cabinet Office, "Analysis of the Macroeconomic Impact of the Tohoku-Pacific Ocean Earthquake," "Annual Report on Prefectural Accounts"; Director General, Cabinet Office, "Social Capital of Japan 2007"; Ministry of Economy, Trade and Industry, "Census of Manufactures"; Ministry of Internal Affairs and Communications, "Population Census," "Population Estimates"; Hyogo Prefecture, "Hanshin-Awaji Daishinsai-shi" (available in Japanese only).

# Power Supply and Demand and Production Activity

(1) Power Supply and Peak Demand in the Tokyo Electric Power Company (TEPCO) Service Area

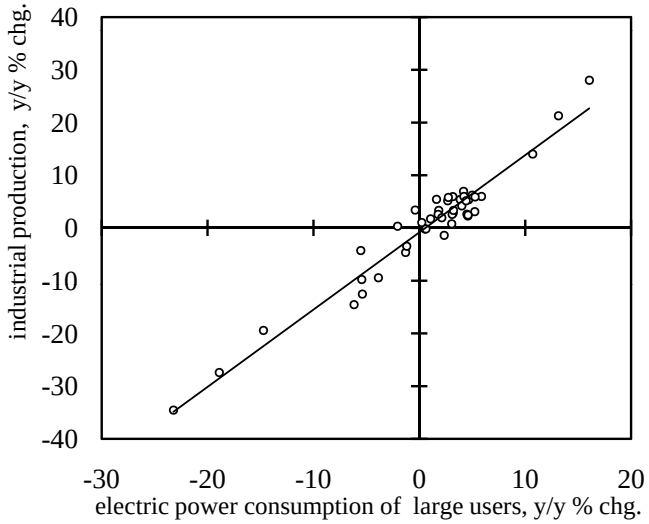



| Million kW | End of July 2011 | End of August |
|---|---|---|
| Demand (daily peak) | 55.00 | 55.00 |
| Supply capacity | 52.00 | 50.70 |

Notes: 1. Calendar 2010 peak demand is the daily peak in the TEPCO service area.
2. The outlook for supply capacity is based on TEPCO's press releases on April 8, 2011 and April 15, 2011, which provide weekly predictions until May 28 and predictions as of the end of July and as of the end of August. The capacity is assumed to be constant from September in the above chart.

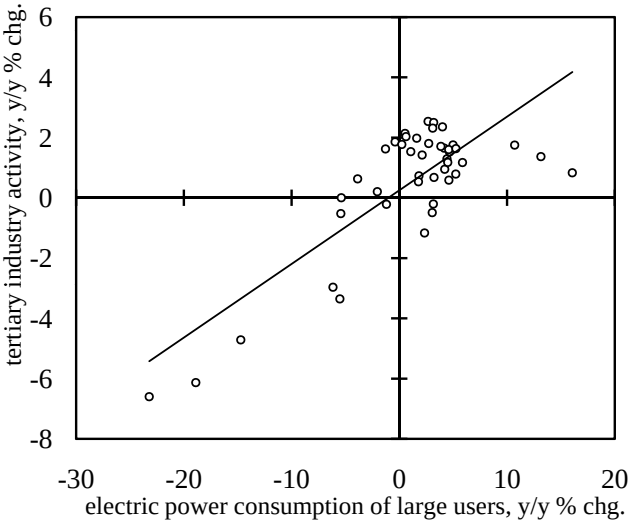
(2) Electric Power Consumption and Production Activity

(a) Electric Power Consumption of Large Users and Industrial Production




Industrial production
= -0.85 + 1.47 × electric power consumption
(-2.15) (26.1)
$R^2$=0.94, standard error of regression: 2.59

(b) Electric Power Consumption of Large Users and Tertiary Industry Activity



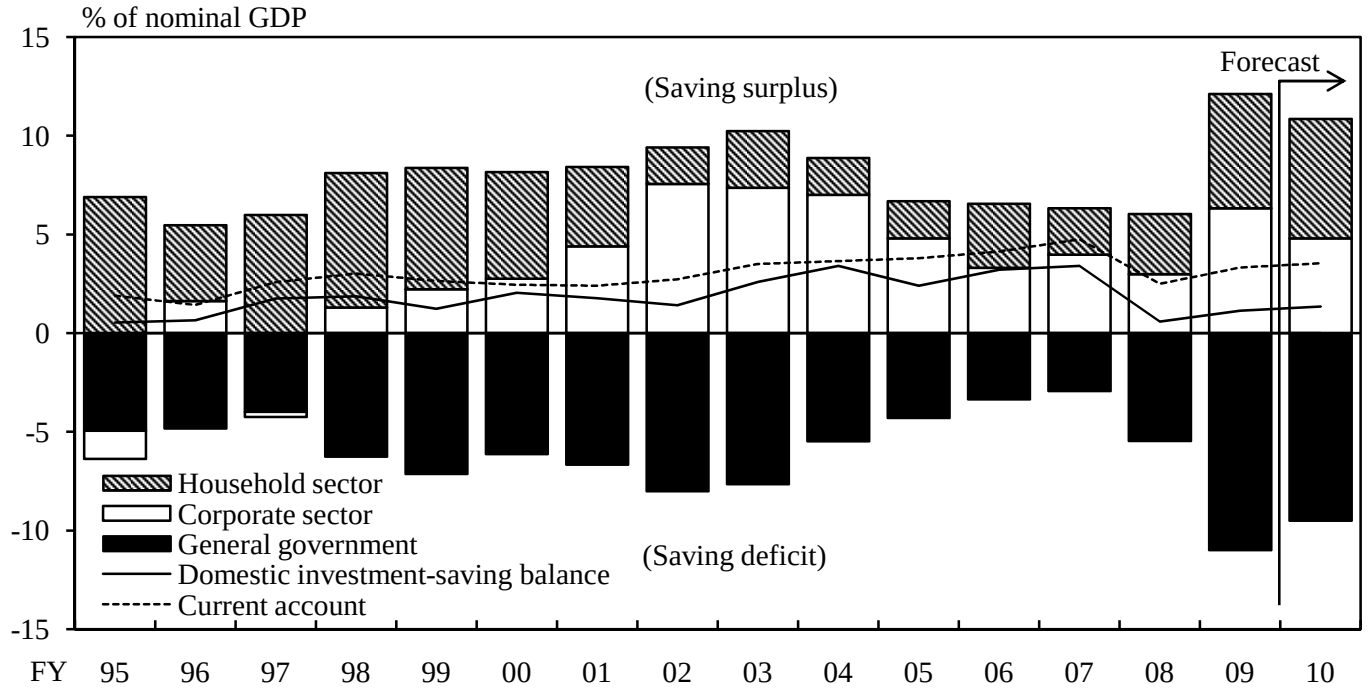

Tertiary industry activity
= 0.25 + 0.24 × electric power consumption
(1.27) (8.73)
$R^2$=0.64, standard error of regression: 1.29

Note: The estimation periods are 2000/Q1-2010/Q4. Figures in parentheses are *t* -values.

Sources: Electric Power System Council of Japan, "Power Demand";
The Federation of Electric Power Companies of Japan, "Electricity Demand";
Tokyo Electric Power Company; Ministry of Economy, Trade and Industry,
"Indices of Industrial Production," "Indices of Tertiary Industry Activity."

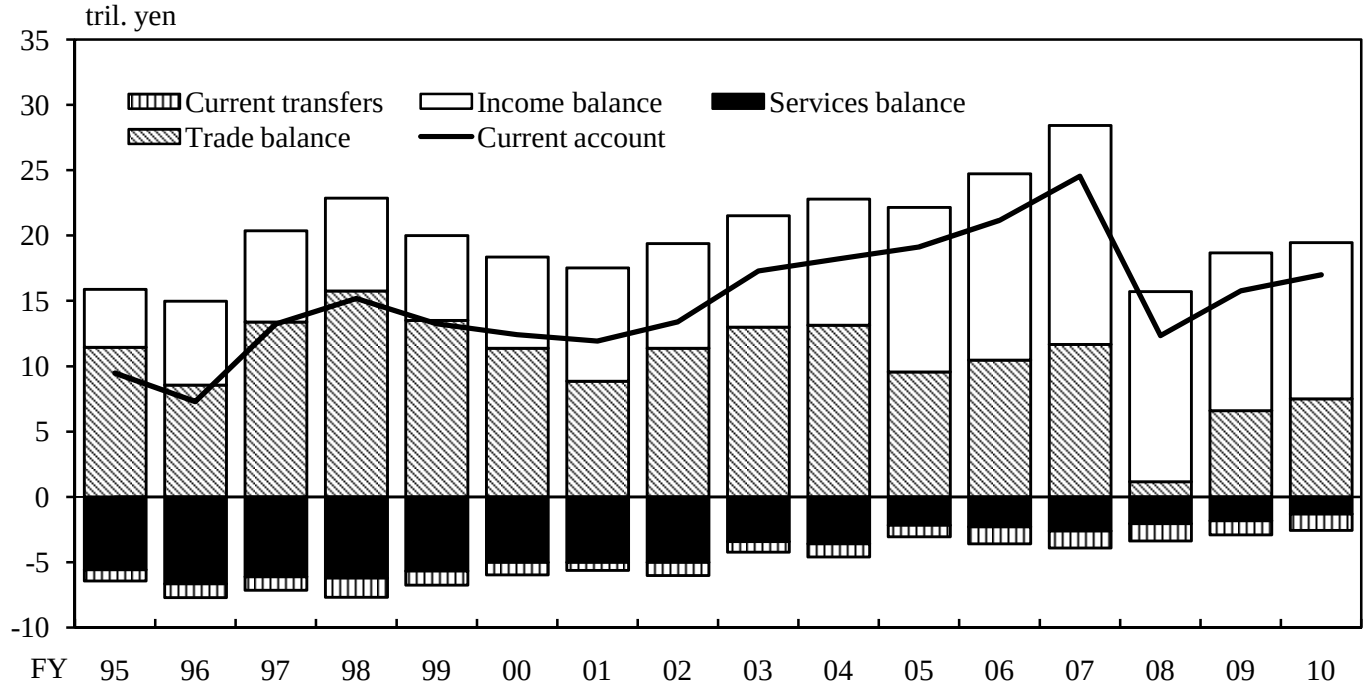
# Investment-Saving Balance

(1) Investment-Saving Balance




Note: The forecast is made by the Research and Statistics Department, Bank of Japan. For the forecasting procedure, see Chart 25 in "Outlook for Economic Activity and Prices (April 2009)." For the forecast of fiscal 2010, "Economic and Fiscal Projections for Medium to Long Term Analysis (January 2011)" is referred to for the general government, and nominal disposable income estimated in Chart 40 is used for the household sector.

(2) Current Account

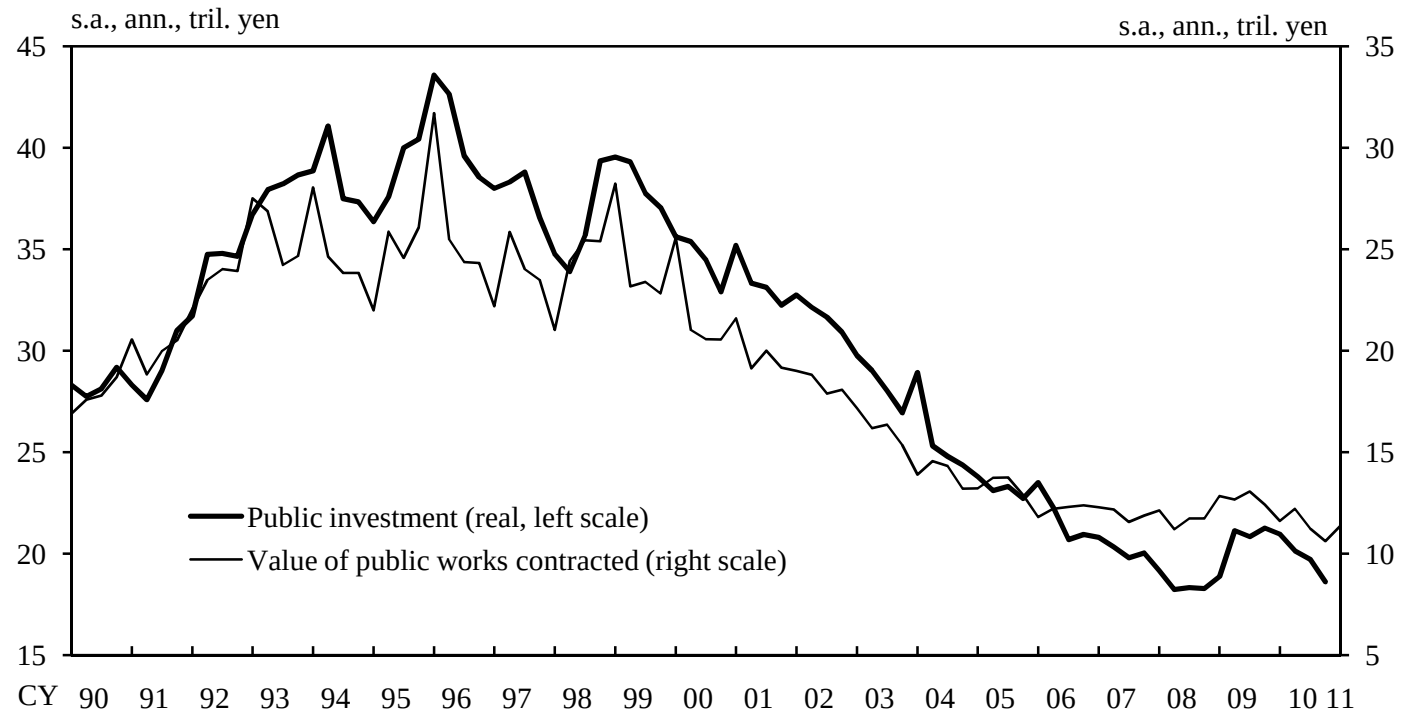



Note: Figures for fiscal 2010 are calculated by use of the average year-on-year rate of change in the period from April 2010 to February 2011.

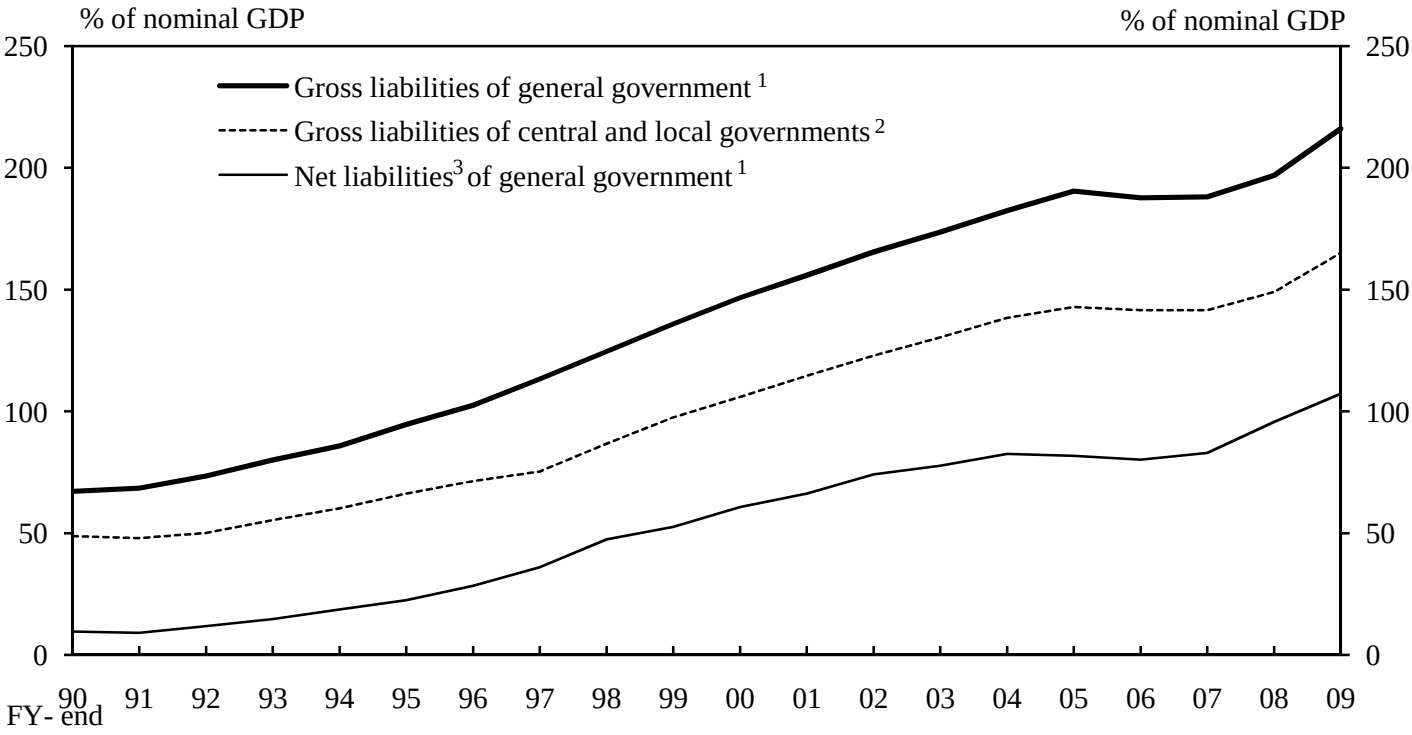
Sources: Cabinet Office, "National Accounts," "Economic and Fiscal Projections for Medium to Long Term Analysis"; Ministry of Finance and Bank of Japan, "Balance of Payments."

# Public Investment and Government Liabilities

(1) Public Investment




(2) Government Liabilities

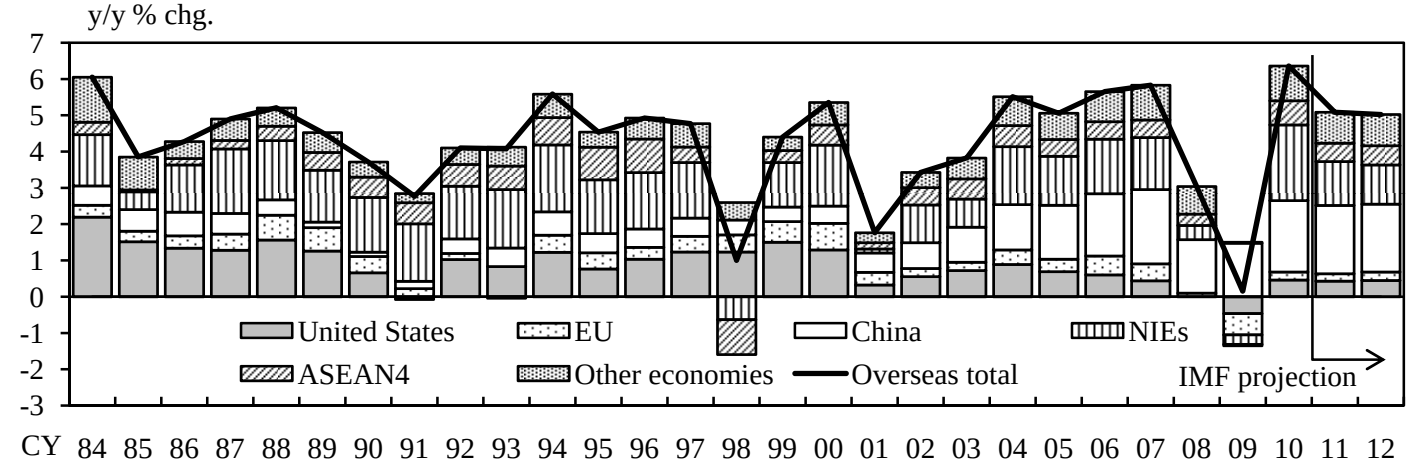



Notes: 1. Consisting of central government, local governments, and social security funds.
2. Outstanding debt in "Economic and Fiscal Projections for Medium to Long Term Analysis (January 2011)."
3. Gross liabilities minus financial assets.

Sources: Cabinet Office, "National Accounts," "Economic and Fiscal Projections for Medium to Long Term Analysis"; East Japan Construction Surety etc., "Public Works Prepayment Surety Statistics."

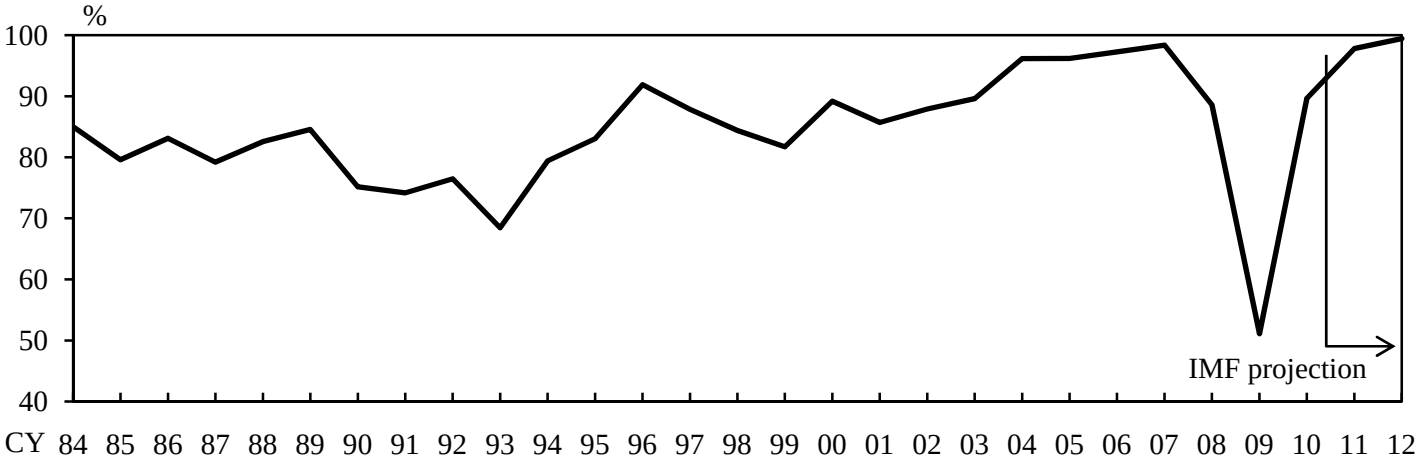
# Overseas Economies

(1) Real GDP Growth Rates of Overseas Economies

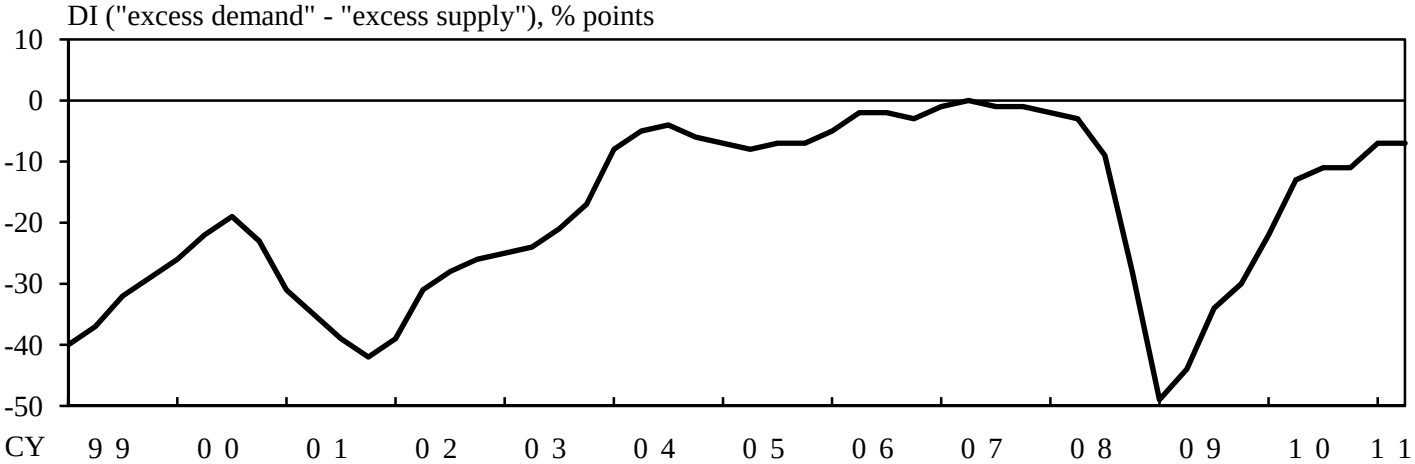



Note: Real GDP growth rate of the overseas total is the weighted average of real GDP growth rates by value of exports from Japan to each economy.

(2) Percentage Shares of the Number of Economies Recording Positive Real GDP Growth




(3) Overseas Supply and Demand Conditions for Products DI

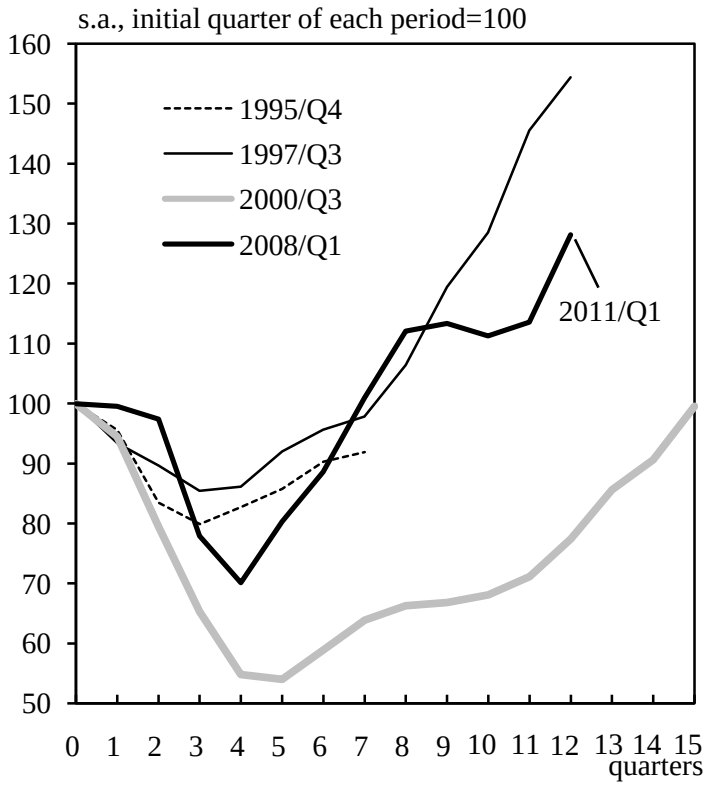



Notes: 1. Figures are based on all-size enterprises and all industries in the "Tankan."
2. The figure for 2011/Q2 is the forecast in the March 2011 survey.

Sources: IMF, "World Economic Outlook"; Ministry of Finance, "Trade Statistics";
Bank of Japan, "*Tankan*, Short-Term Economic Survey of Enterprises in Japan."

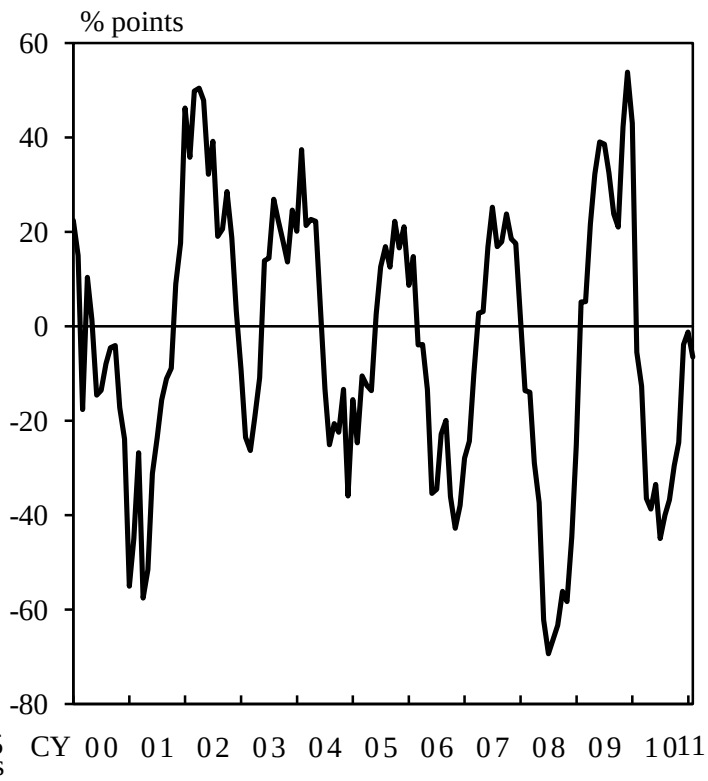
# Cycle of Global Demand for IT-Related Goods

(1) Comparisons of World Semiconductor Shipments in Business Cycles



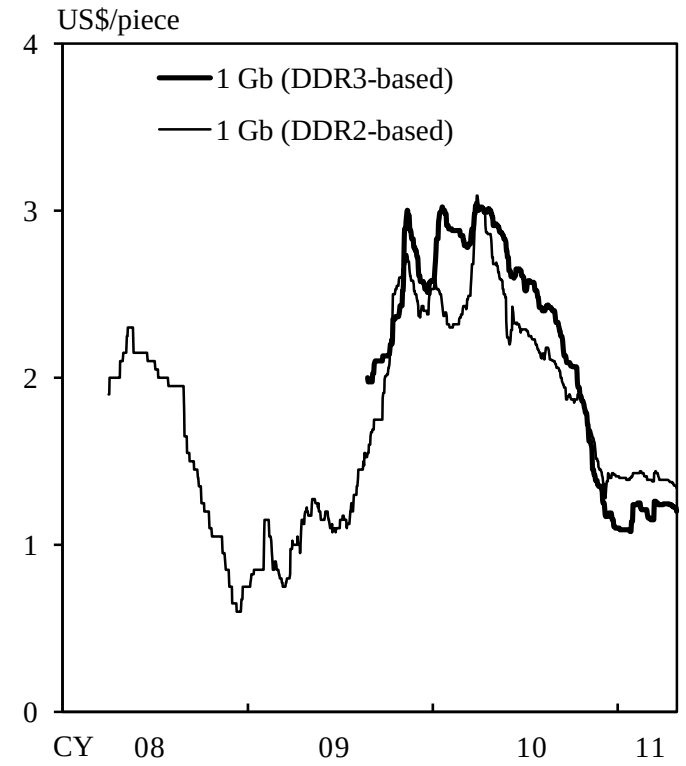

Note: Figures for 2011/Q1 are January-February averages converted into a quarterly amount.

(2) Shipment-Inventory Balance of IT-Related Goods in Korea

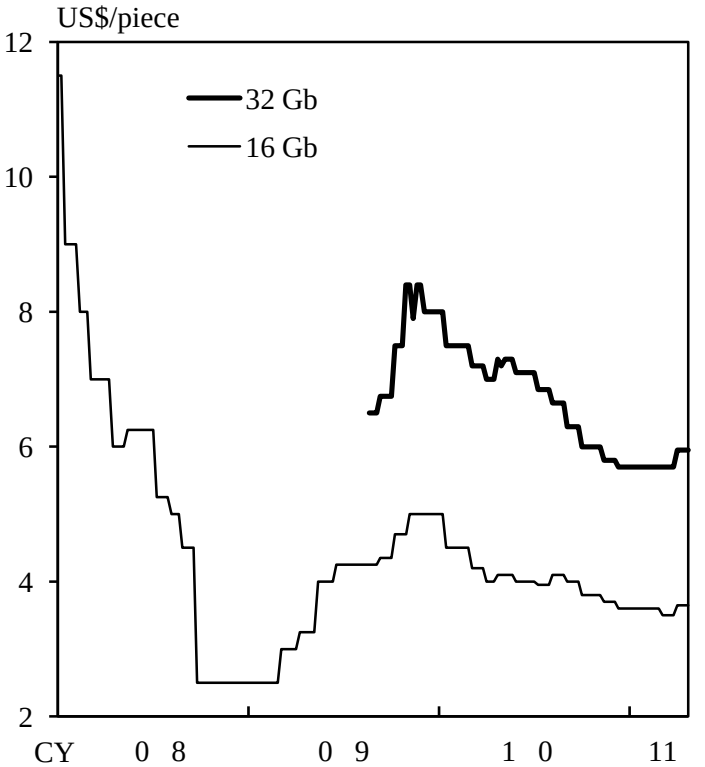



Note: Year-on-year changes in shipments minus those in inventories.

(3) DRAM Spot Prices



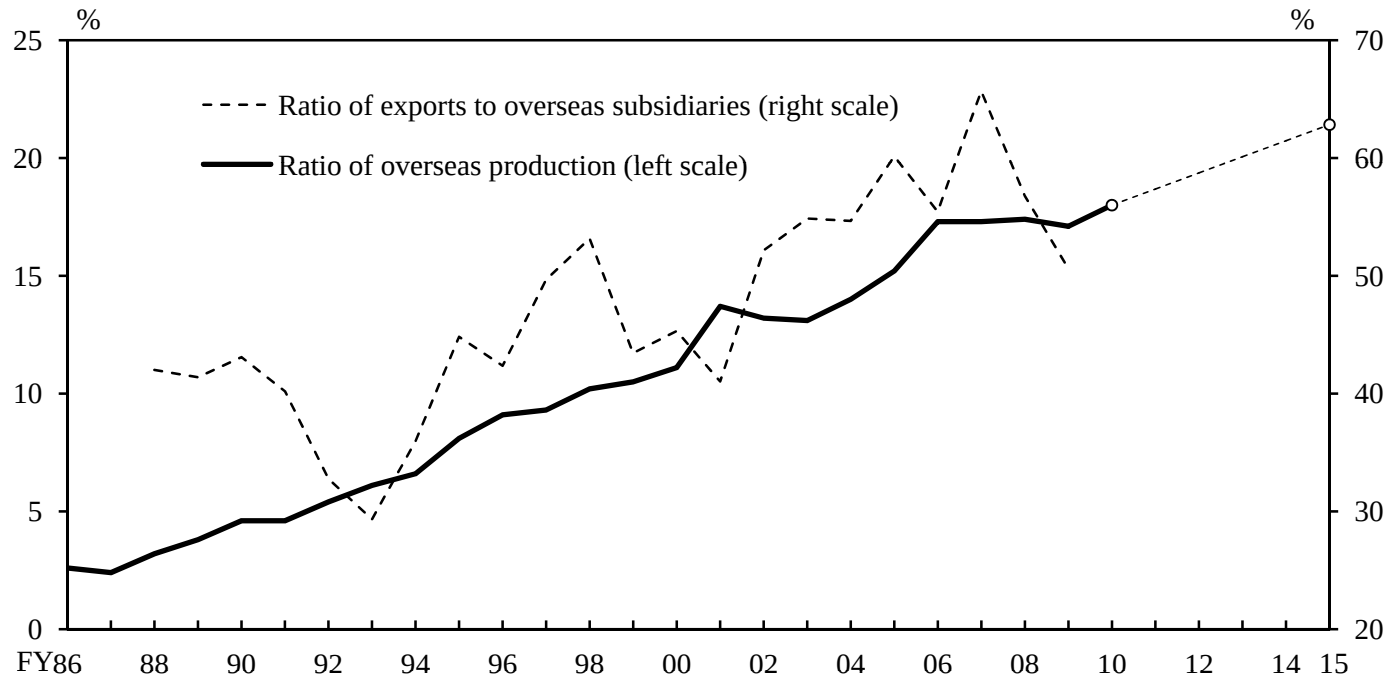

(4) NAND Flash Prices



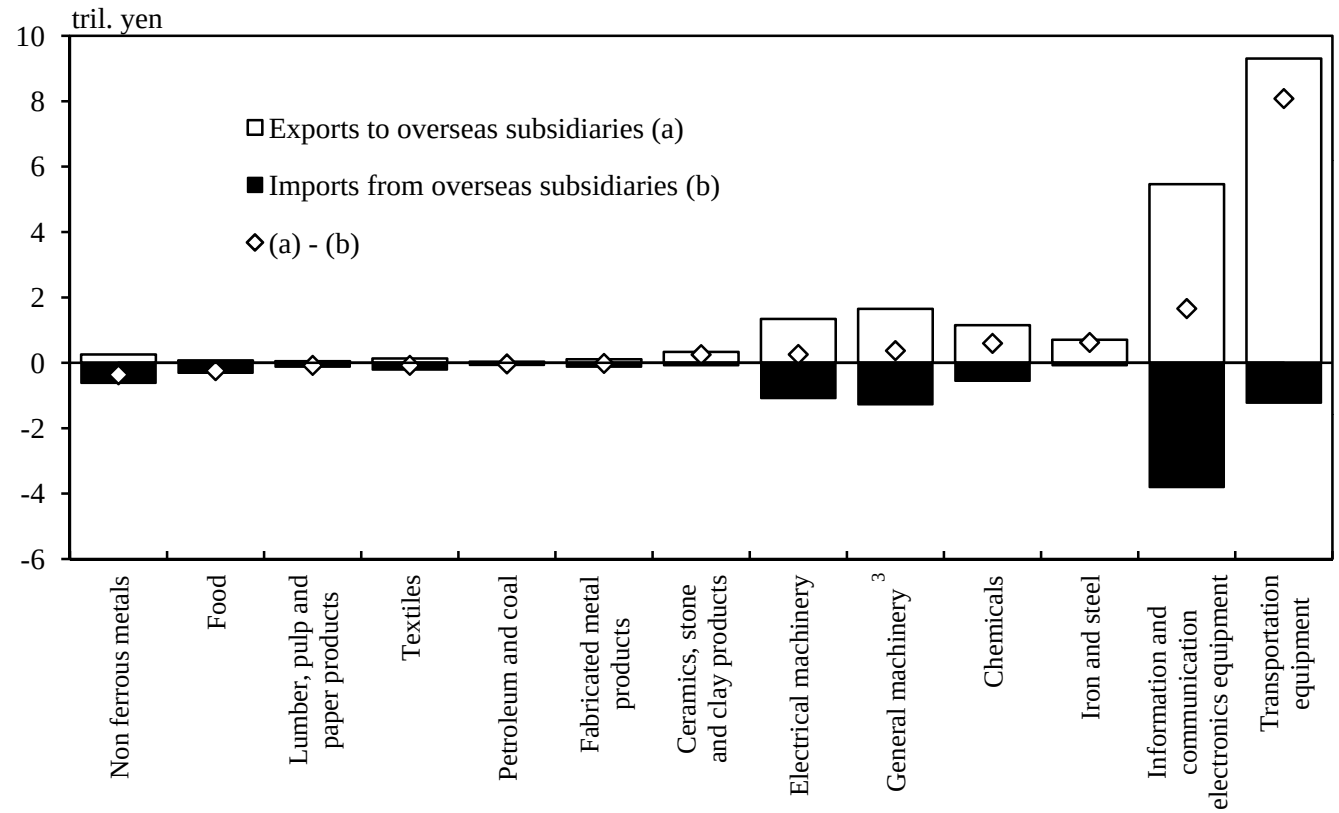

Sources: WSTS; CEIC; Nikkei Financial QUEST.

# Expansion of the International Production Network

(1) Ratio of Overseas Production and Export Inducement Effect[1]




(2) Exports to and Imports from Overseas Subsidiaries[2]

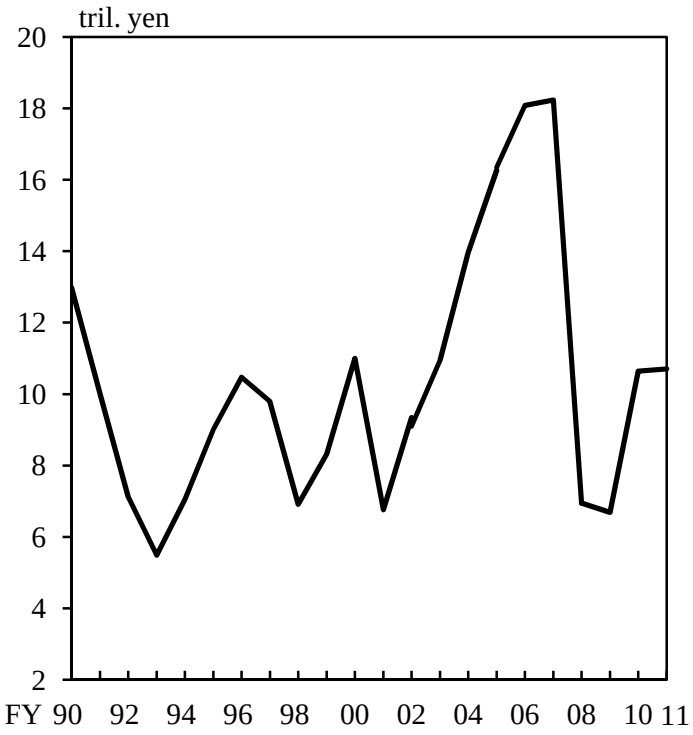



Notes: 1. Figures are the total for manufacturing industry. As for the ratio of overseas production, the figure for fiscal 2010 is the forecast and figures from fiscal 2011 are linearly interpolated by using the fiscal 2015 outlook.
2. Figures are fiscal 2007-09 averages.
3. Including general purpose machinery, production machinery, and business-oriented machinery.

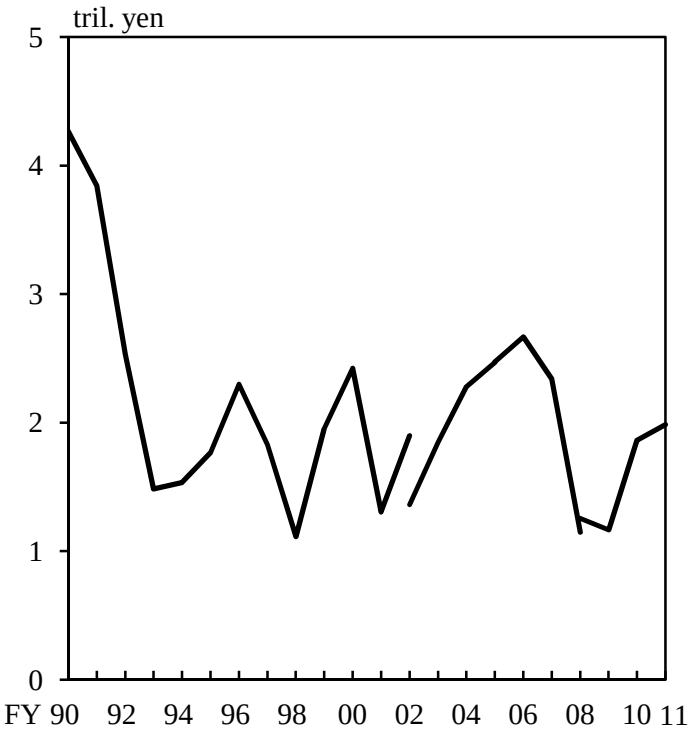
Sources: Ministry of Economy, Trade and Industry, "Survey of Overseas Business Activities";
Cabinet Office, "Annual Survey of Corporate Behavior."

# Corporate Profits

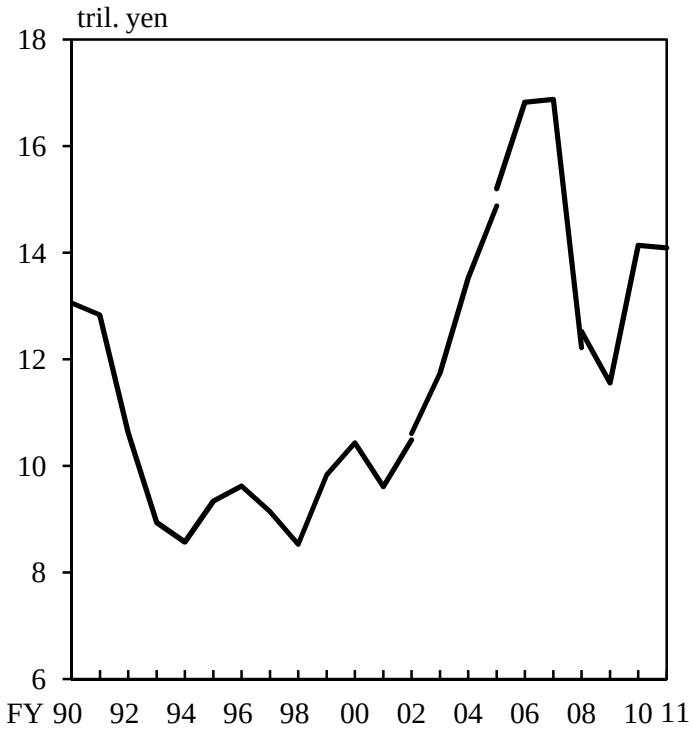
(1) Large Manufacturing Enterprises




(2) Small Manufacturing Enterprises




(3) Large Nonmanufacturing Enterprises



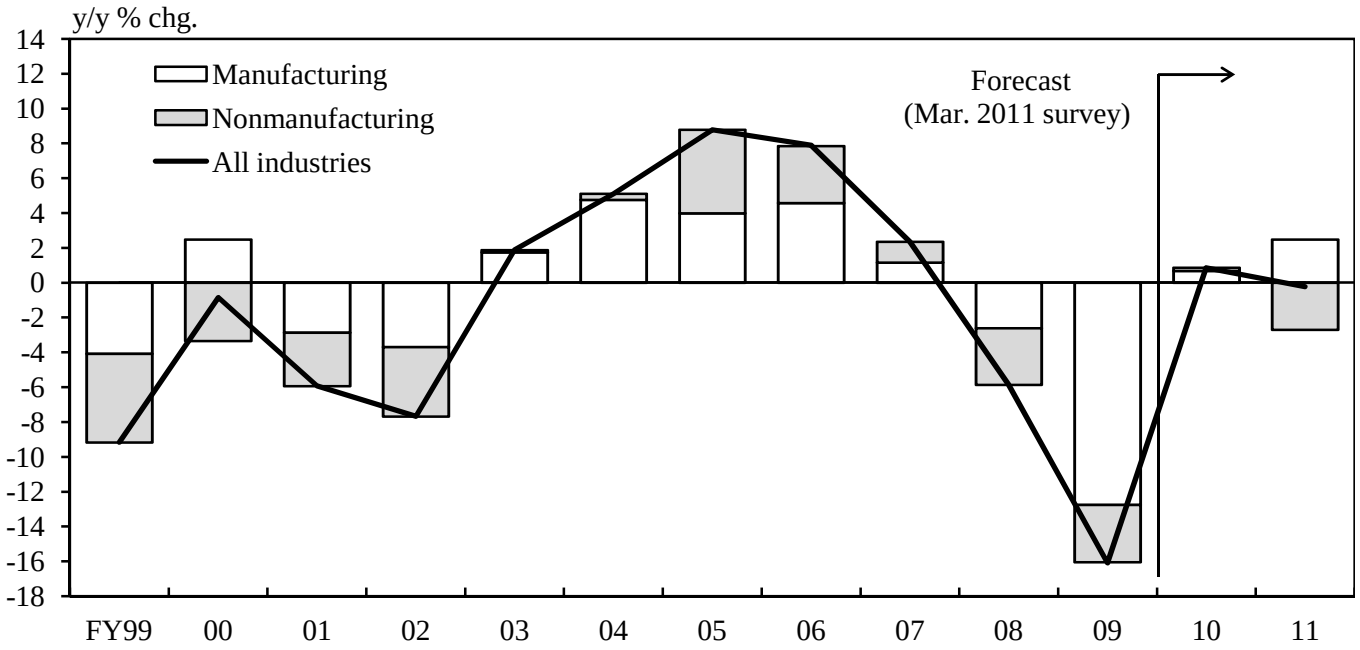

(4) Small Nonmanufacturing Enterprises


Notes: 1. Based on current profits.
2. Figures for fiscal 2010 and fiscal 2011 are the forecasts in the March 2011 survey.
3. In the March 2004 survey, the "Tankan" underwent major revisions, including the addition of new sample enterprises to the survey. In the March 2007 and March 2010 surveys, regular revisions were made to the sample enterprises. The data show some discontinuities that coincided with these timings.

Source: Bank of Japan, "*Tankan,* Short-Term Economic Survey of Enterprises in Japan."

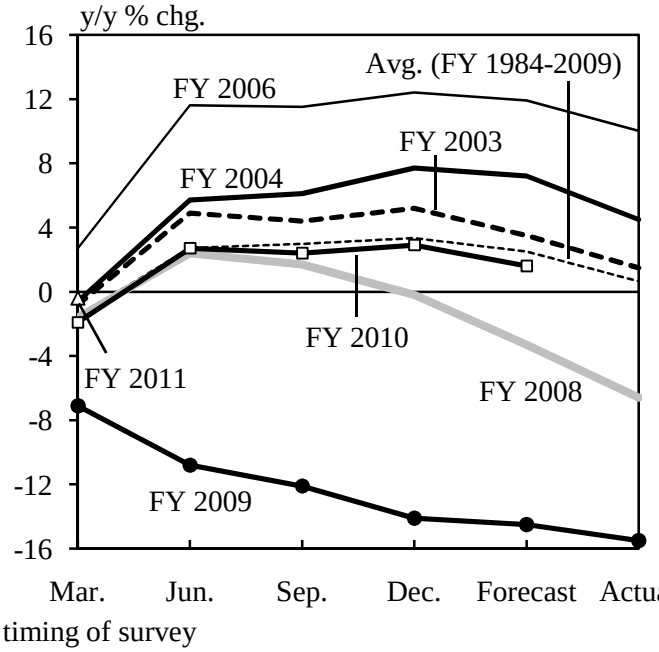
# Fixed Investment Plans

(1) Fixed Investment Plans as Surveyed[1,2,3]

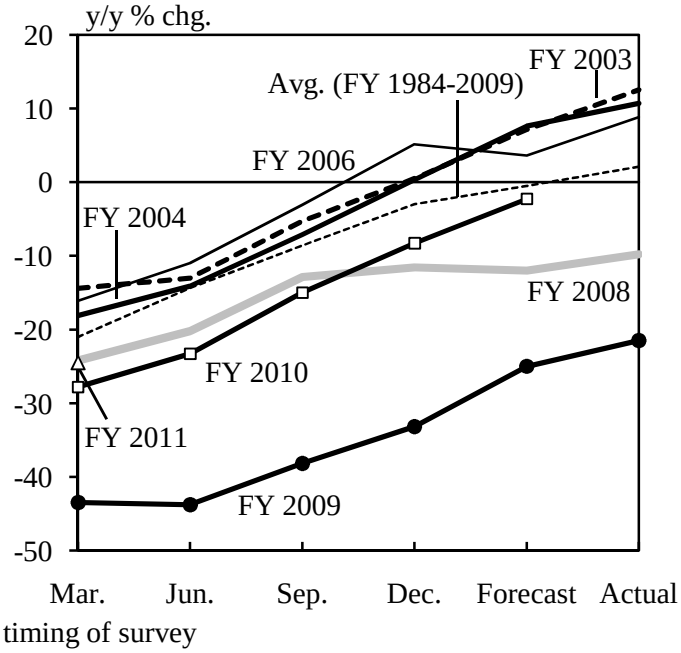



(2) Developments of Fixed Investment Plans[2,4,5,6]

(a) Large Enterprises



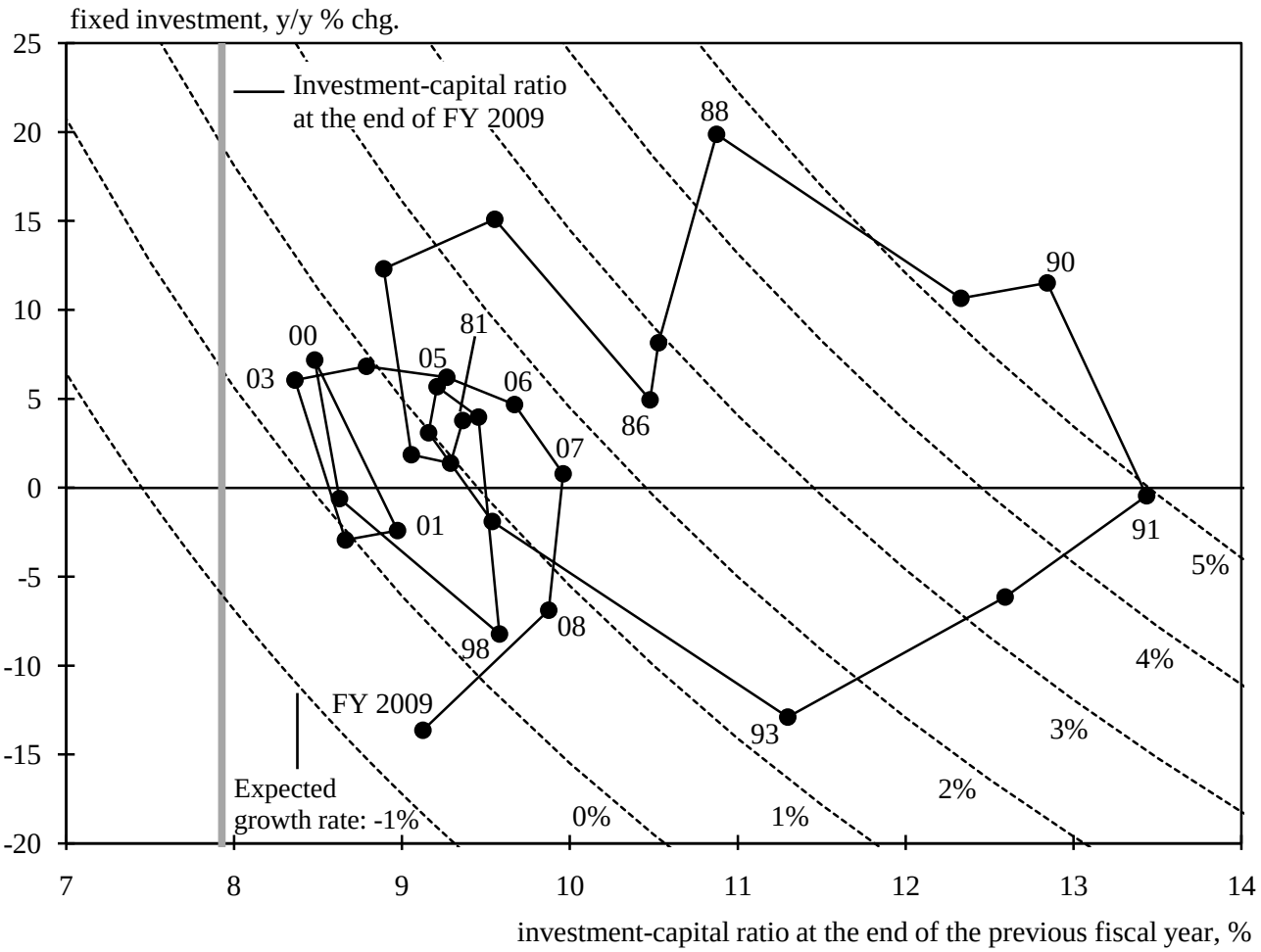

(b) Small Enterprises




Notes: 1. Figures are based on all-size enterprises in the "Tankan."
2. Figures up to fiscal 2008 are based on the previous accounting standard for lease transactions, and figures from fiscal 2009 onward are based on the new standard.
3. Figures up to fiscal 2002 include land purchasing expenses and exclude software investment. Figures from fiscal 2003 exclude land purchasing expenses and include software investment.
4. Figures are based on all industries in the "Tankan."
5. Figures include land purchasing expenses and exclude software investment.
6. Sample enterprises were revised in the March 2004, March 2007, and March 2010 surveys. Therefore, for fiscal 2003, 2006, and 2009, figures up to the December survey are based on the previous data sets, and the figures for "forecast" and "actual" are on the new basis.

Source: Bank of Japan, "*Tankan*, Short-Term Economic Survey of Enterprises in Japan."

# Capital Stock Cycle




1. Capital stock cycle in the chart shows the relationship between the investment-capital ratio and the year-on-year rate of change in fixed investment.

2. As these variables have the following relation, a hyperbolic curve can be drawn for a given expected growth rate.

   Year-on-year rate of change in fixed investment (y-axis) × investment-capital ratio at the end of the previous fiscal year (x-axis) = expected growth rate + trend growth rate of capital coefficient + depreciation rate

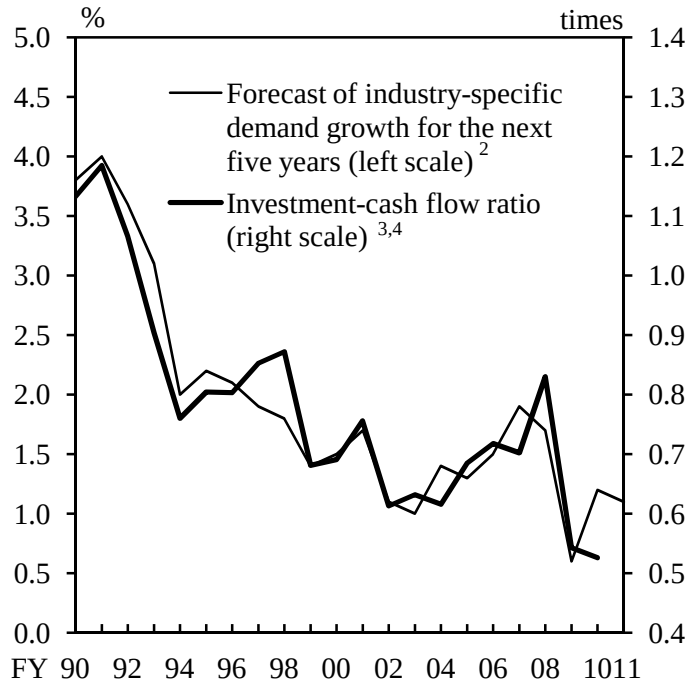
3. The phase of fixed investment at a certain time can be evaluated in relation to the hyperbolic curve corresponding to the expected growth rate at that time.

Sources: Cabinet Office, "National Accounts," "Annual Report on Gross Capital Stock of Private Enterprises";
Research Institute of Economy, Trade and Industry, "Japan Industrial Productivity Database 2010."

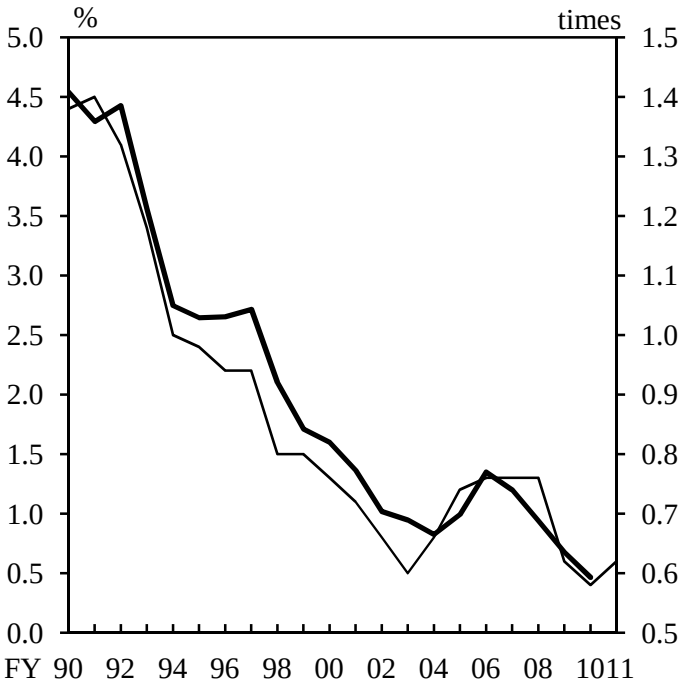
# Cash Flow and Business Fixed Investment

(1) Investment-Cash Flow Ratio and Expected Growth Rate[1]

(a) Manufacturing

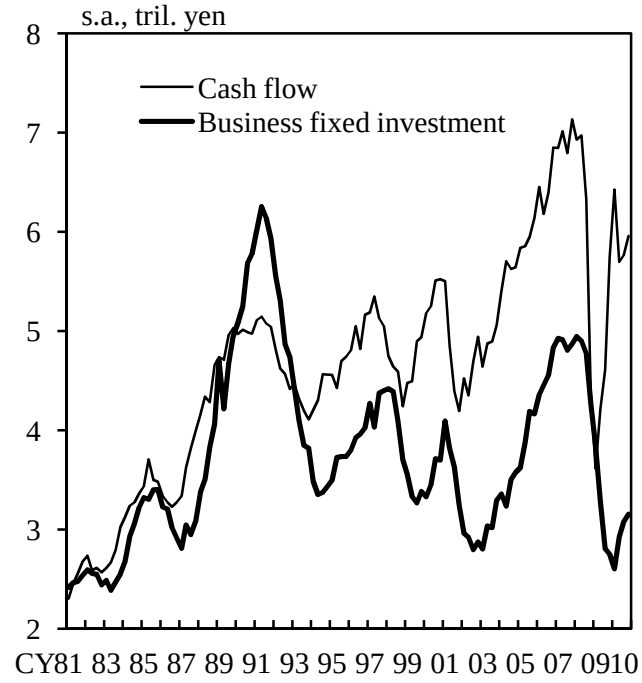



(b) Nonmanufacturing

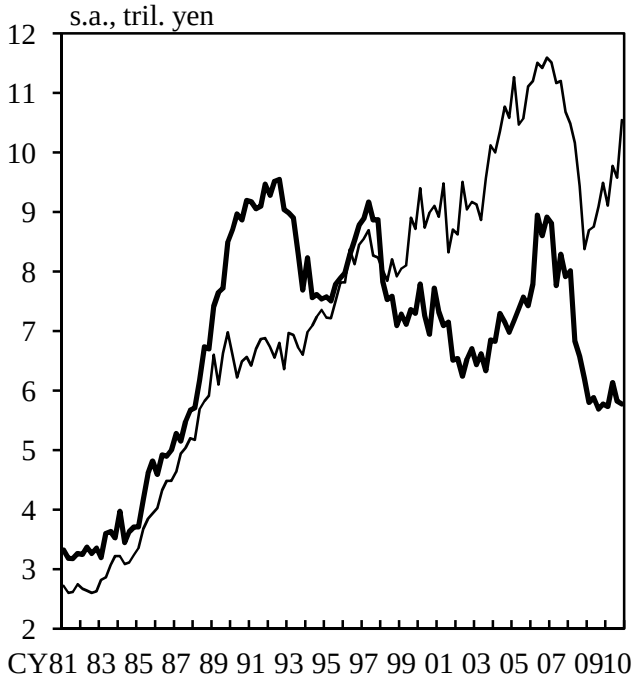



(2) Cash Flow and Business Fixed Investment[1,3]

(a) Manufacturing




(b) Nonmanufacturing

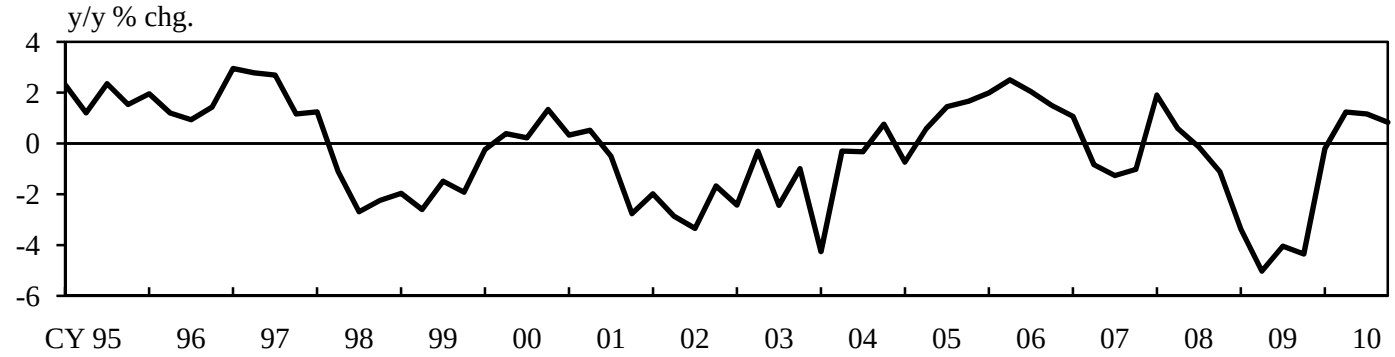



Notes: 1. Cash flow = depreciation expenses + current profits/2
2. Real annual growth rates surveyed in January or February in the previous fiscal year.
3. Based on all-size enterprises.
4. Figures for fiscal 2010 are those of 2010/Q2-Q4.

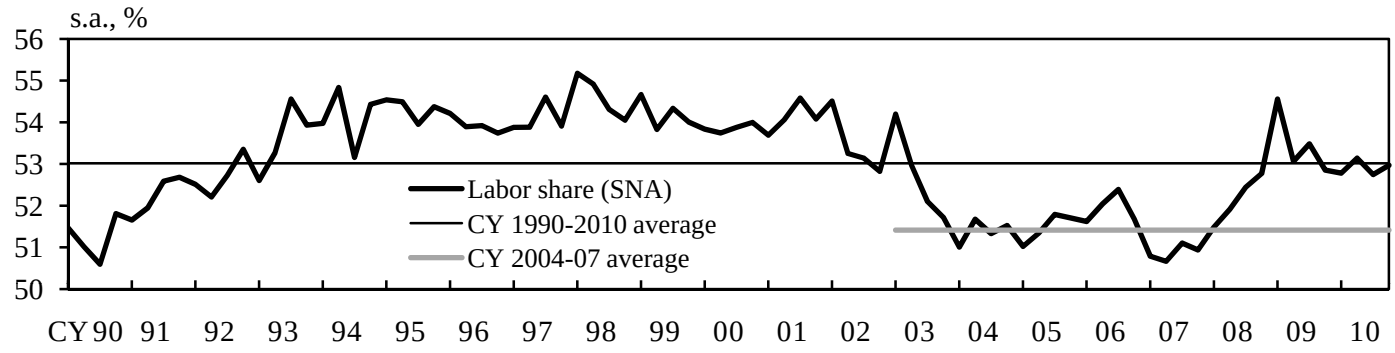
Sources: Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Quarterly";
Cabinet Office, "Annual Survey of Corporate Behavior."

# Employment and Wages

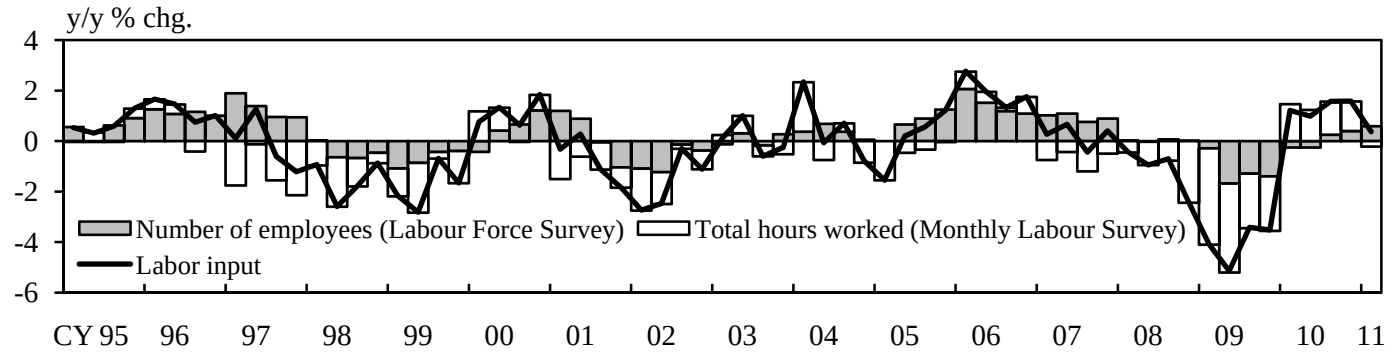
(1) Compensation of Employees (SNA)



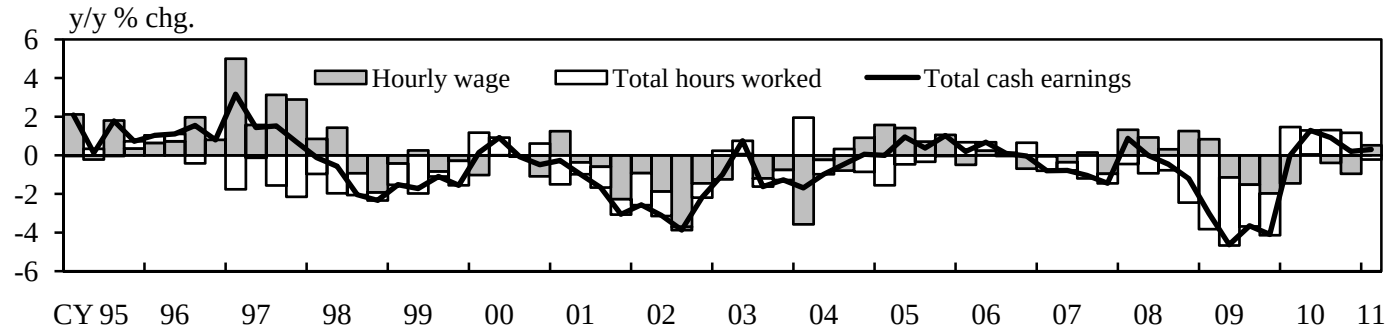

(2) Labor Share[1]




(3) Labor Input[2,3]




(4) Total Cash Earnings per Regular Employee (Monthly Labour Survey)[2,3]

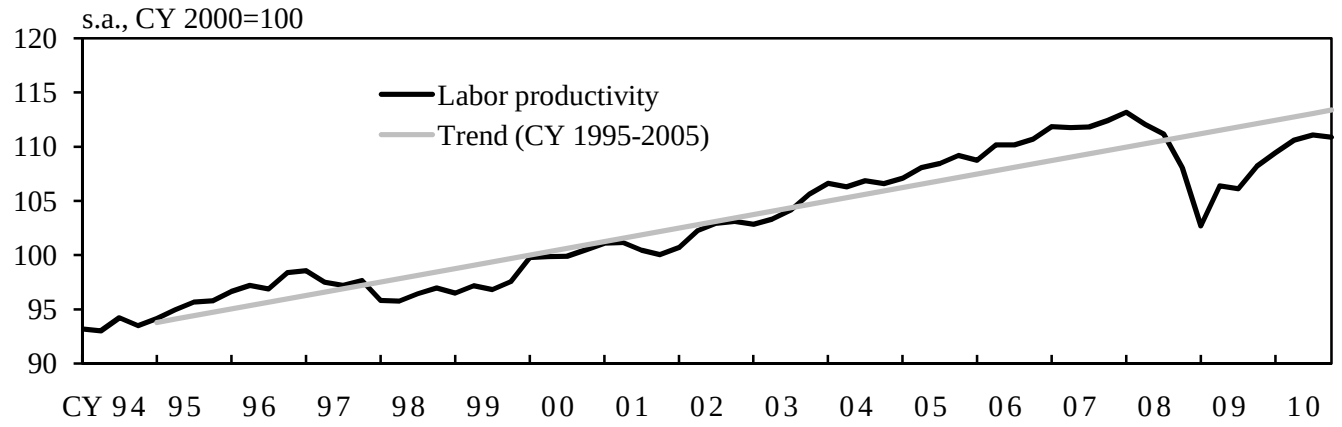



Notes: 1. Labor share = compensation of employees/nominal GDP × 100
2. Data from "Monthly Labour Survey" are for establishments with at least five employees.
3. Figures for 2011/Q1 are January-February averages.

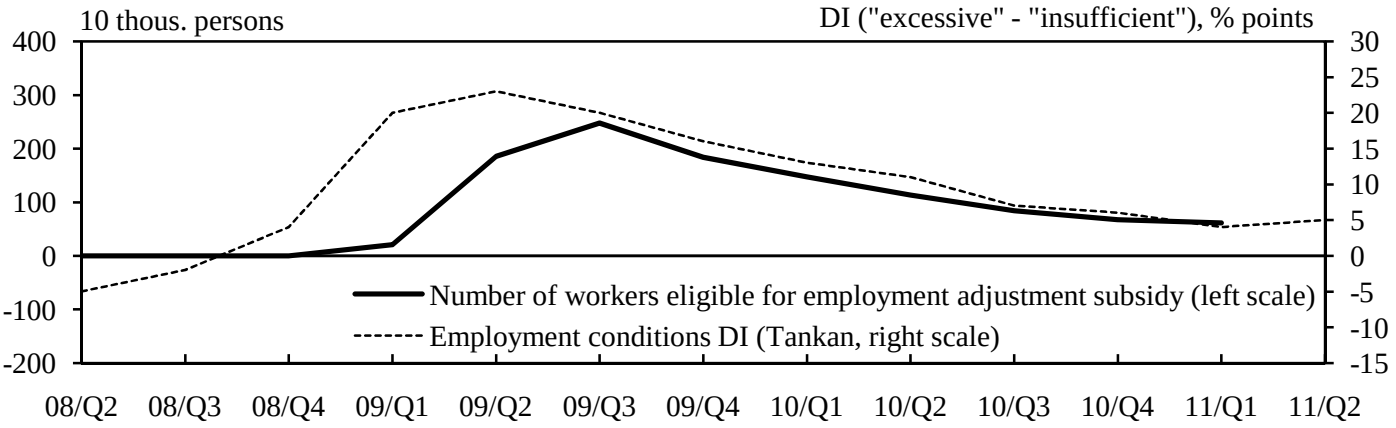
Sources: Cabinet Office, "National Accounts";
Ministry of Internal Affairs and Communications, "Labour Force Survey";
Ministry of Health, Labour and Welfare, "Monthly Labour Survey."

# Supply and Demand Conditions in the Labor Market

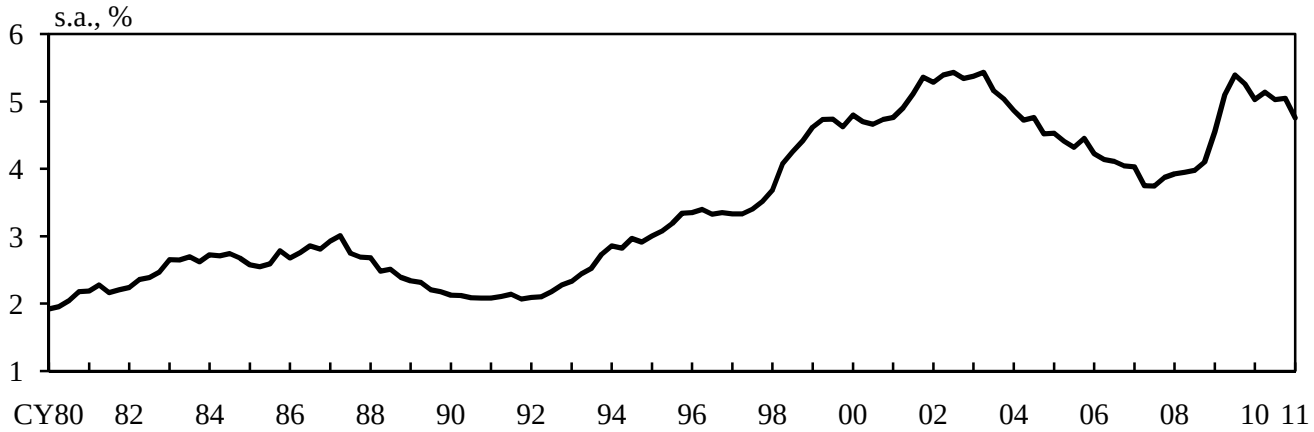
(1) Labor Productivity[1]




(2) Excessive Employment[2,3]




(3) Unemployment Rate[4]

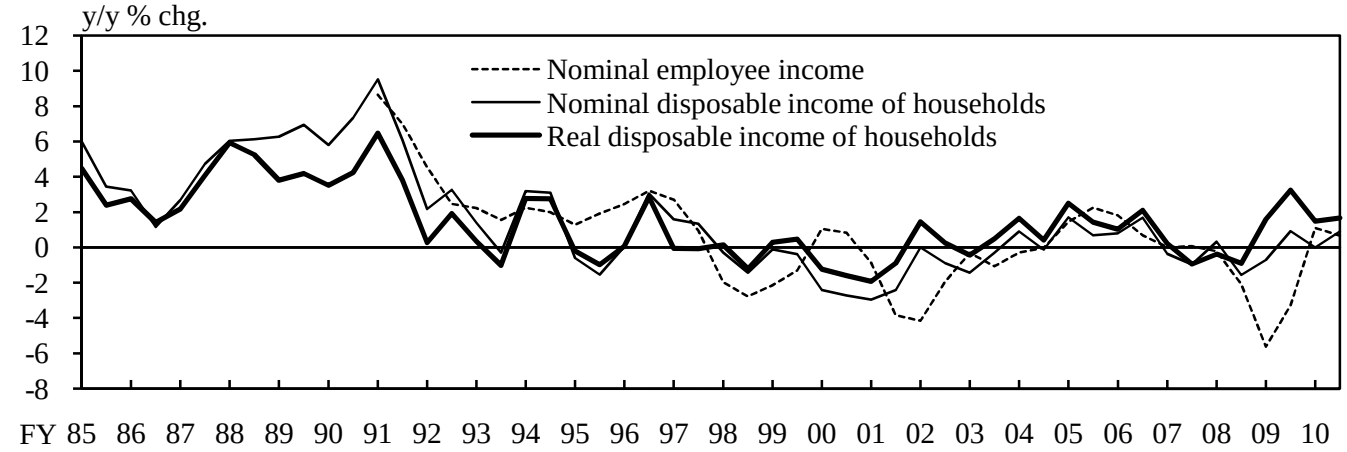



Notes: 1. Labor productivity = real GDP/number of employed persons
2. The figure for number of workers eligible for employment adjustment subsidy is that of the last month of each quarter.
3. The figure for the employment conditions DI is based on all-size enterprises and all industries. The figure for 2011/Q2 is the forecast in the March 2011 survey.
4. The figure for 2011/Q1 is the January-February average.

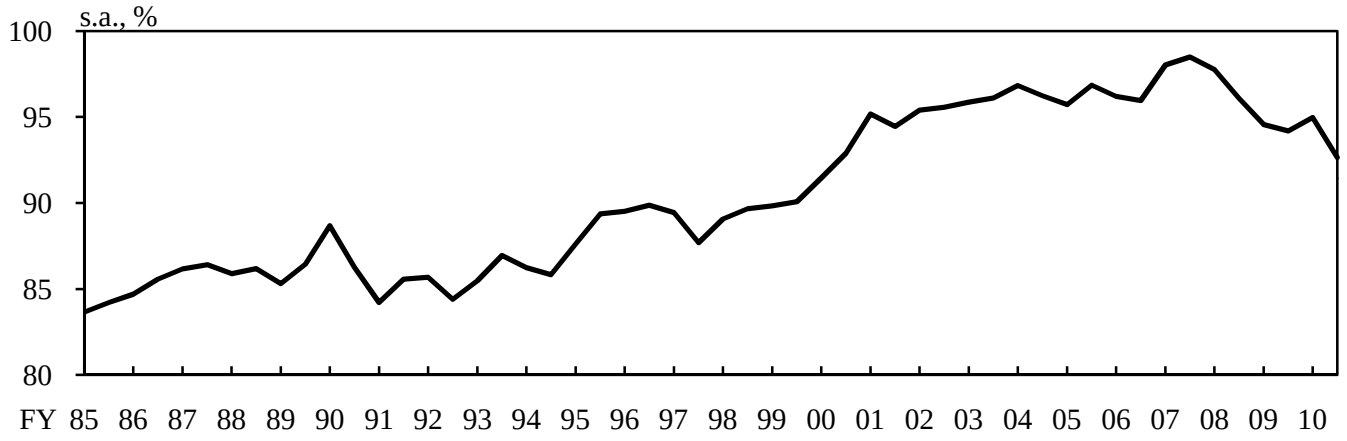
Sources: Cabinet Office, "National Accounts";
Ministry of Internal Affairs and Communications, "Labour Force Survey";
Bank of Japan, "*Tankan*, Short-Term Economic Survey of Enterprises in Japan";
Ministry of Health, Labour and Welfare.

# Disposable Income of Households, Propensity to Consume, and Saving Rates

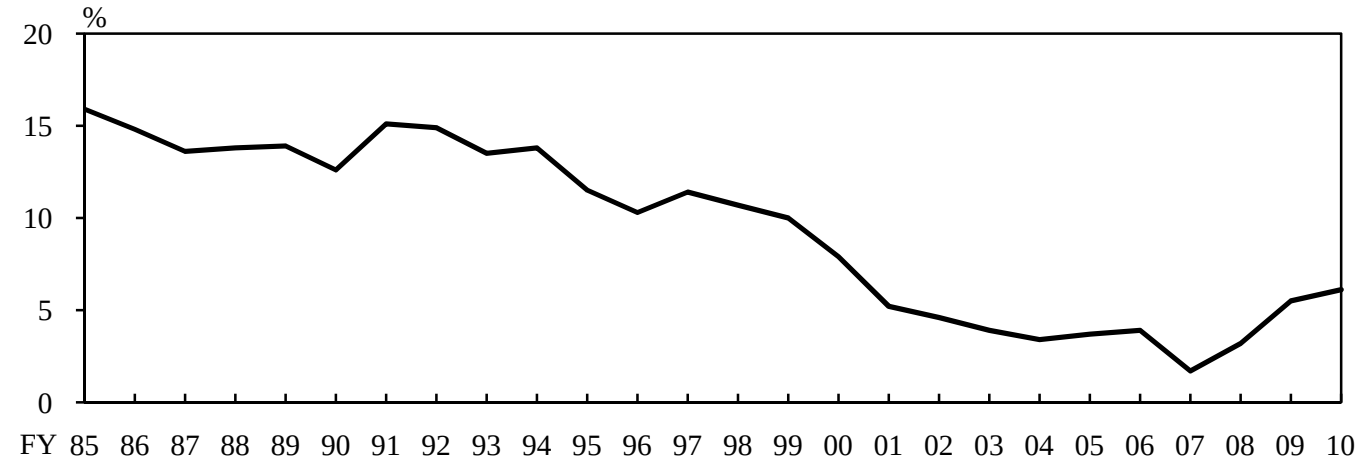
(1) Employee Income and Disposable Income of Households[1,2]




(2) Propensity to Consume




(3) Saving Rates



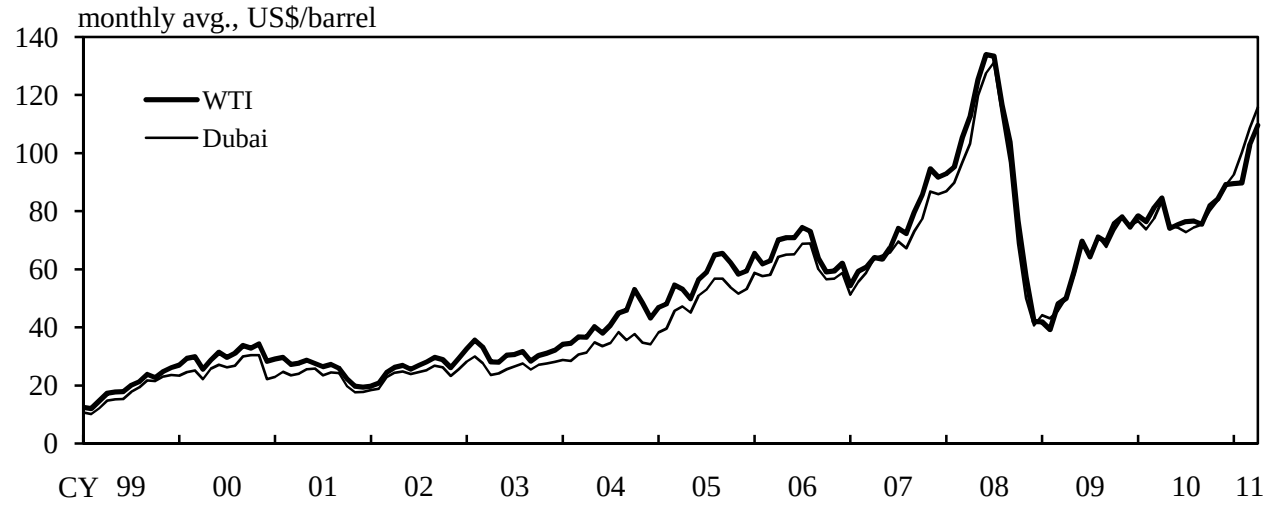

Notes: 1. Nominal employee income is calculated as the number of employees (Labour Force Survey) multiplied by total cash earnings for establishments with at least five employees (Monthly Labour Survey). Figures for the second half of fiscal 2010 are October 2010-February 2011 averages.

2. Figures of disposable income of households, propensity to consume, and saving rates for fiscal 2010 are estimated by the Research and Statistics Department, Bank of Japan. They include estimated transfers of income from the government to households through the economic policy packages. Propensity to consume is calculated as consumption of households divided by disposable income.

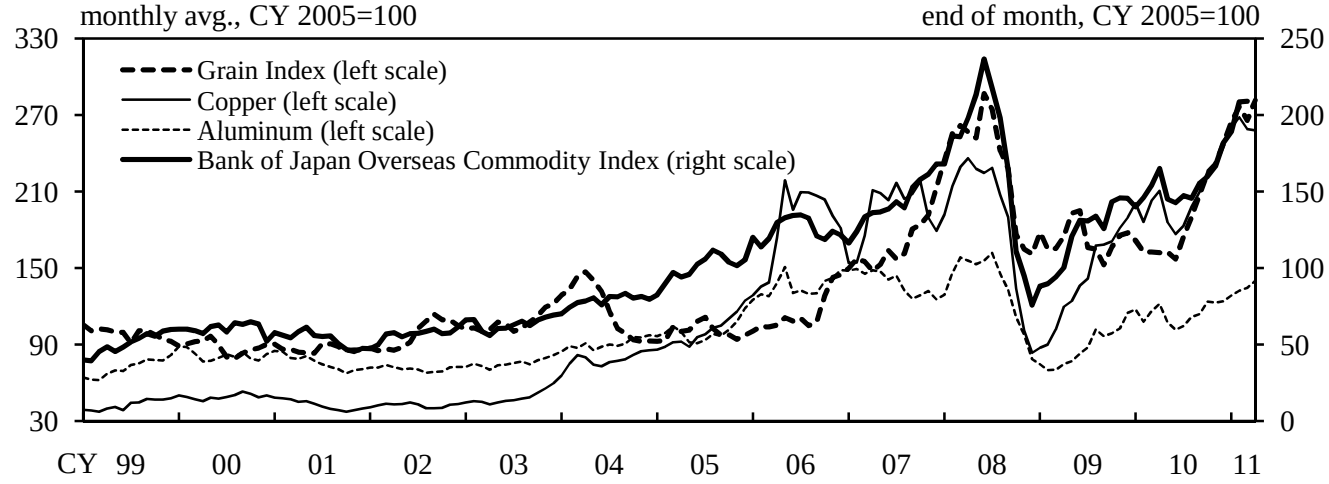
Sources: Cabinet Office, "National Accounts"; Ministry of Internal Affairs and Communications, "Labour Force Survey," "Consumer Price Index"; Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Annually," "The Budget for FY 2010," "The Supplementary Budget for FY 2010"; Ministry of Health, Labour and Welfare, "Monthly Labour Survey," etc.

# Commodity Prices

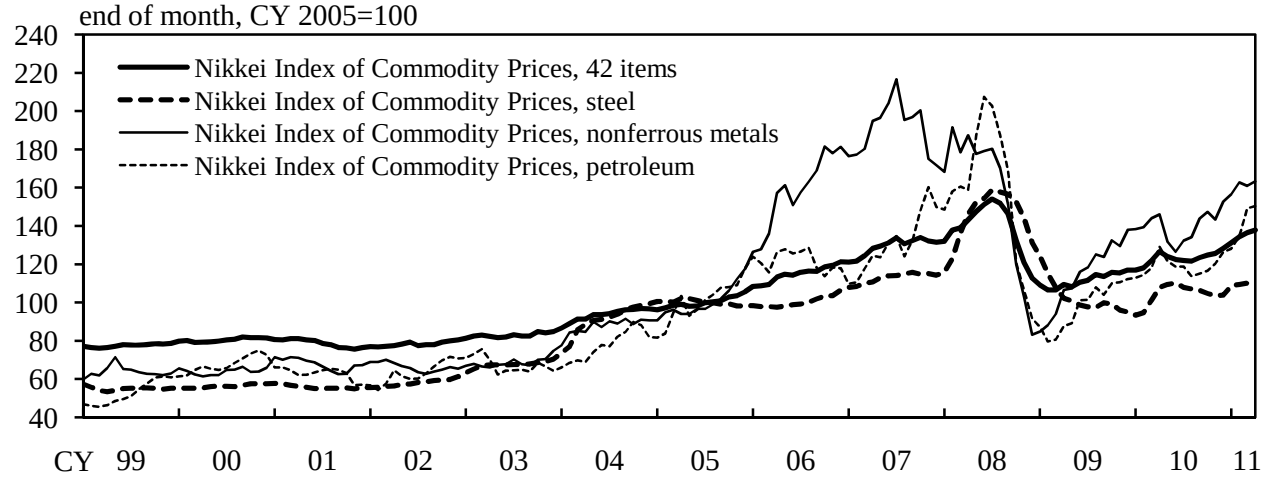
(1) Oil Prices




(2) International Commodity Prices[1]




(3) Domestic Commodity Prices[2]

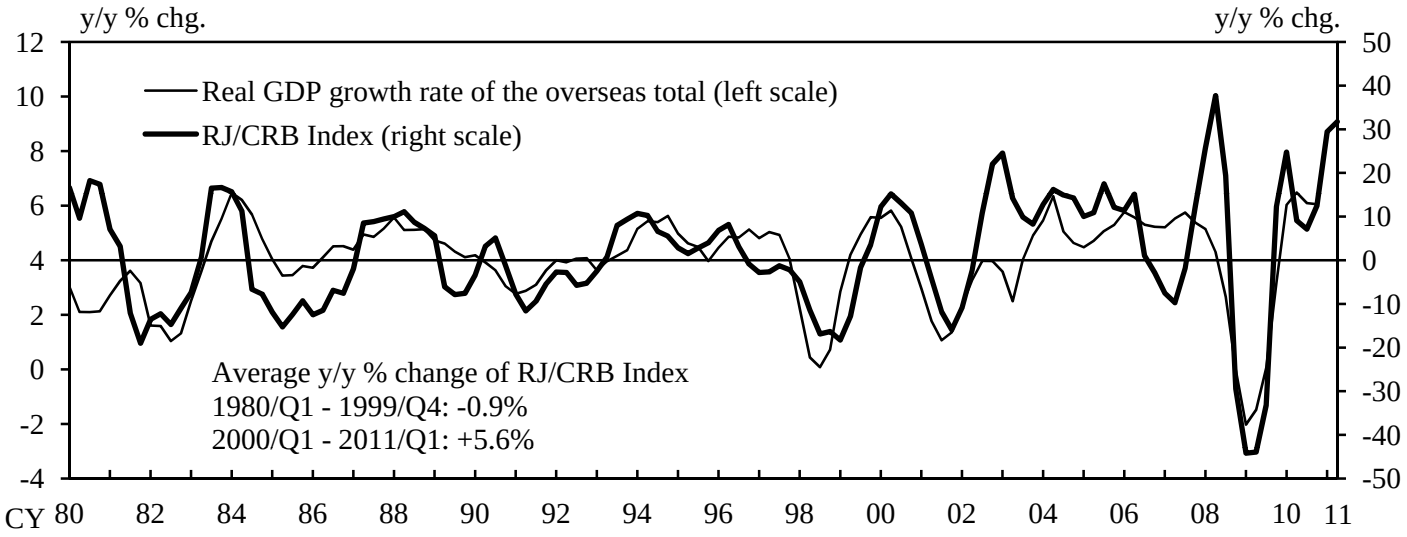



Notes: 1. The "Grain Index" is the weighted average of prices of three selected items (wheat, soybeans, and corn) in overseas commodity markets. The weights are based on the value of imports in the Trade Statistics of Japan.
2. Steel: steel bars, H sections, steel plates, etc. Nonferrous metals: unwrought copper, unwrought aluminum, etc. Petroleum: gasoline, kerosene, gas oil, fuel oil C.

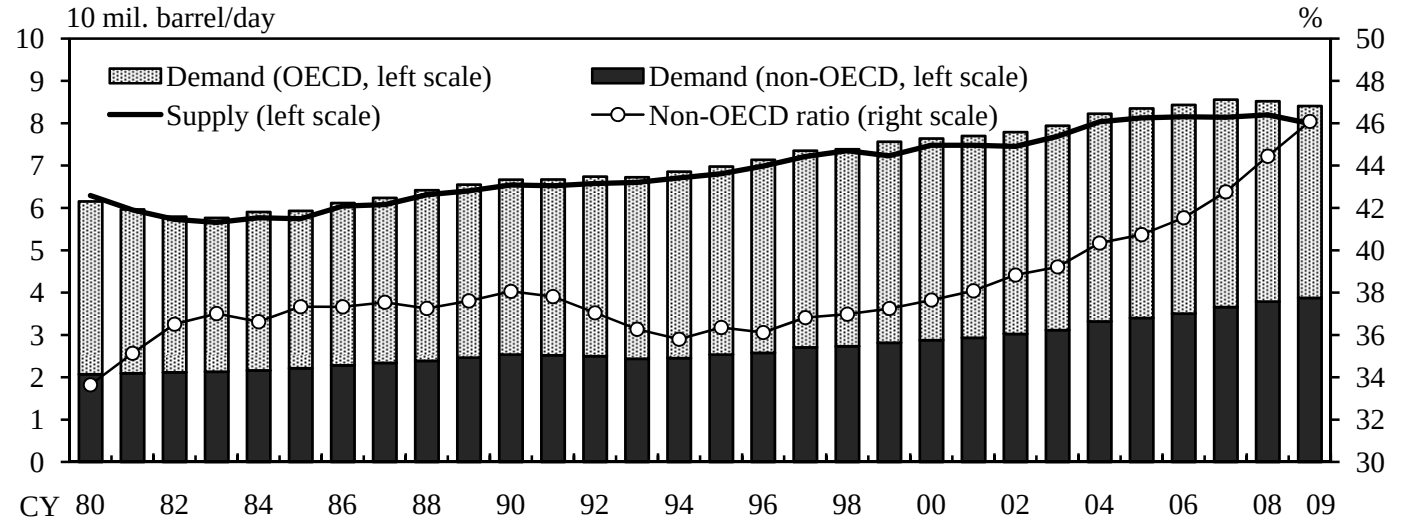
Sources: Bank of Japan, "Bank of Japan Overseas Commodity Index"; Nikkei Inc., etc.

# Overseas Economies and International Commodity Prices

(1) Overseas Economies and International Commodity Prices

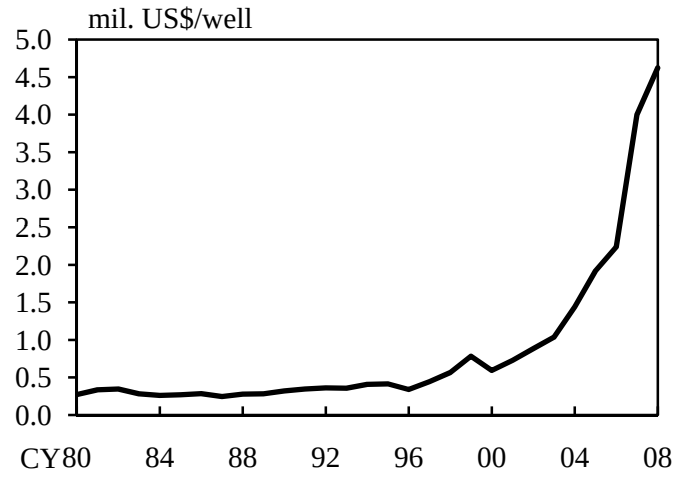



(2) Supply and Demand of Crude Oil

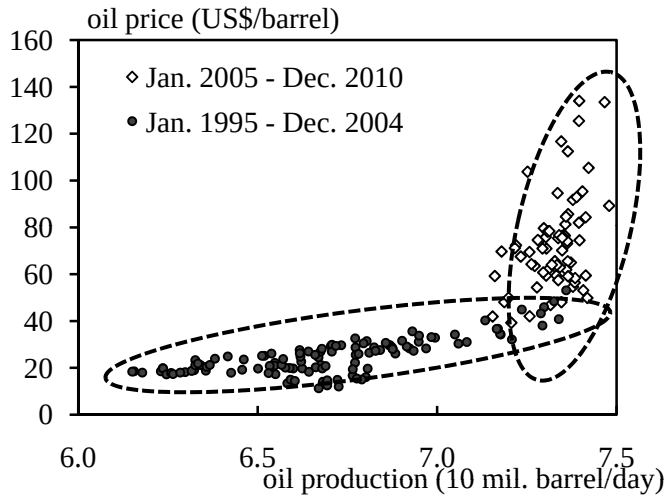



(3) Crude Oil Production and Prices

(a) Cost of Crude Oil Wells Drilled (U.S.)



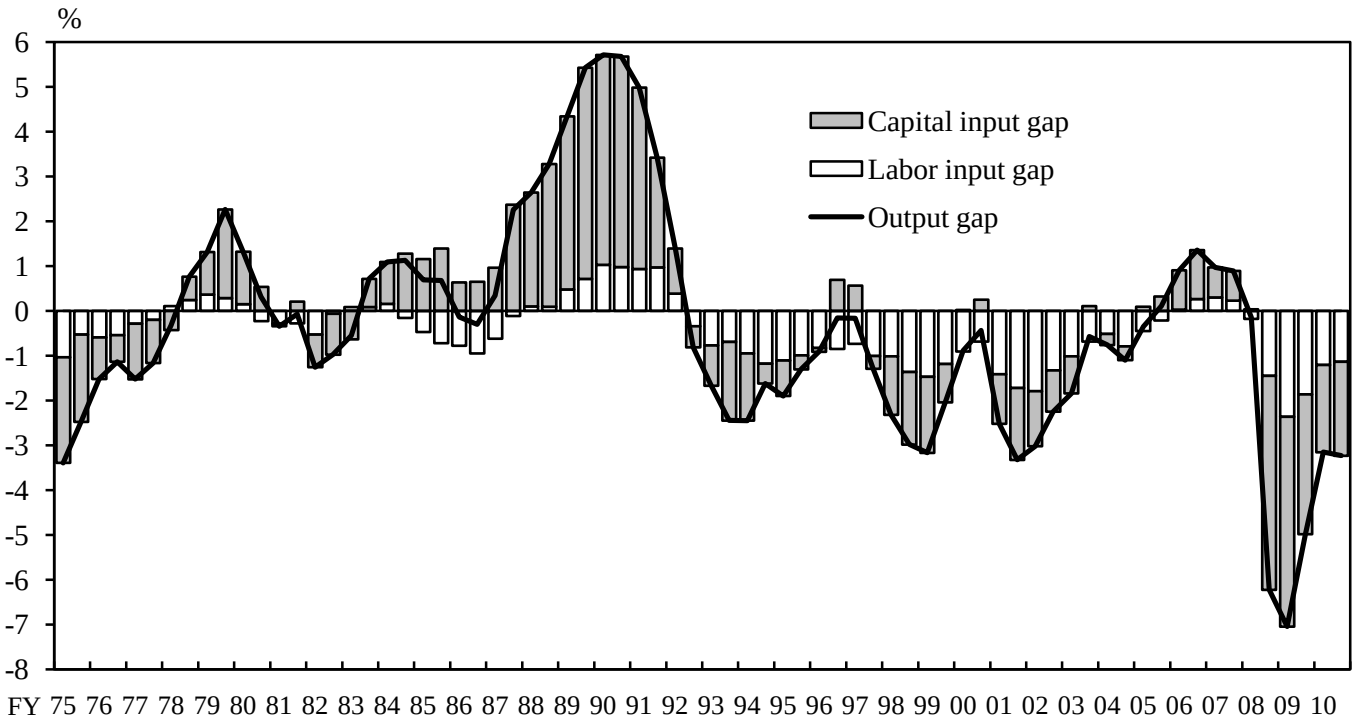

(b) Crude Oil Production and Prices



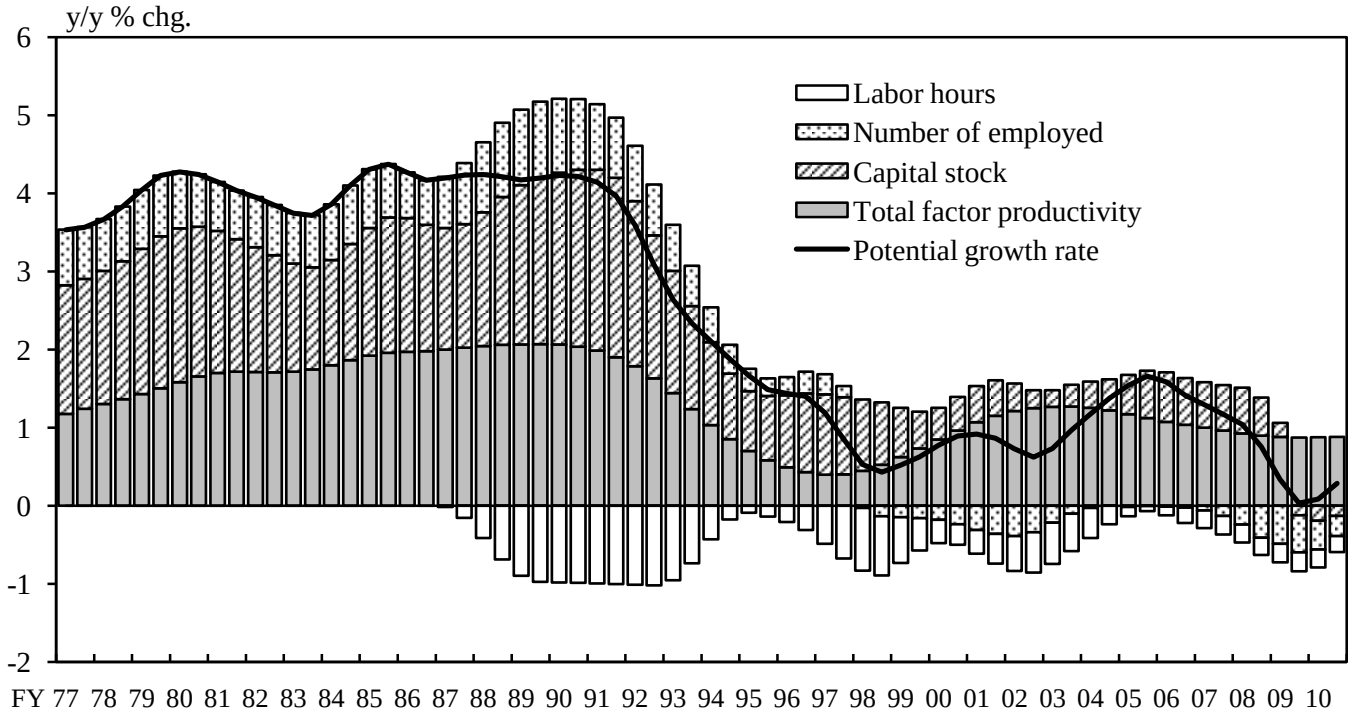

Sources: IMF, "World Economic Outlook"; BP, "Statistical Review of World Energy";
EIA, "Monthly Energy Review," etc.

# Output Gap and Potential Growth Rate

(1) Output Gap




(2) Potential Growth Rate

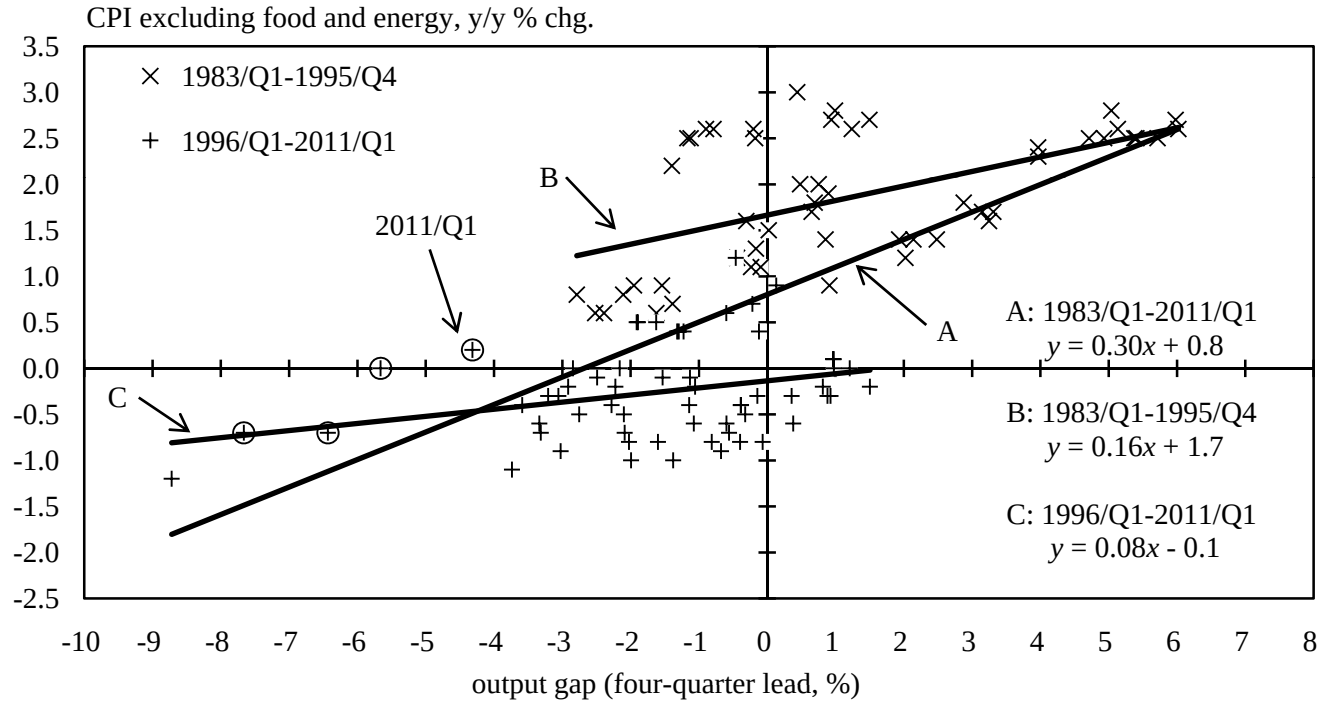



Notes: 1. The output gap and the potential growth rate are estimated by the Research and Statistics Department, Bank of Japan. For the estimation procedures, see "The New Estimates of Output Gap and Potential Growth Rate," Bank of Japan Review Series, 2006-E-3.
2. Figures for the second half of fiscal 2010 are those of 2010/Q4.

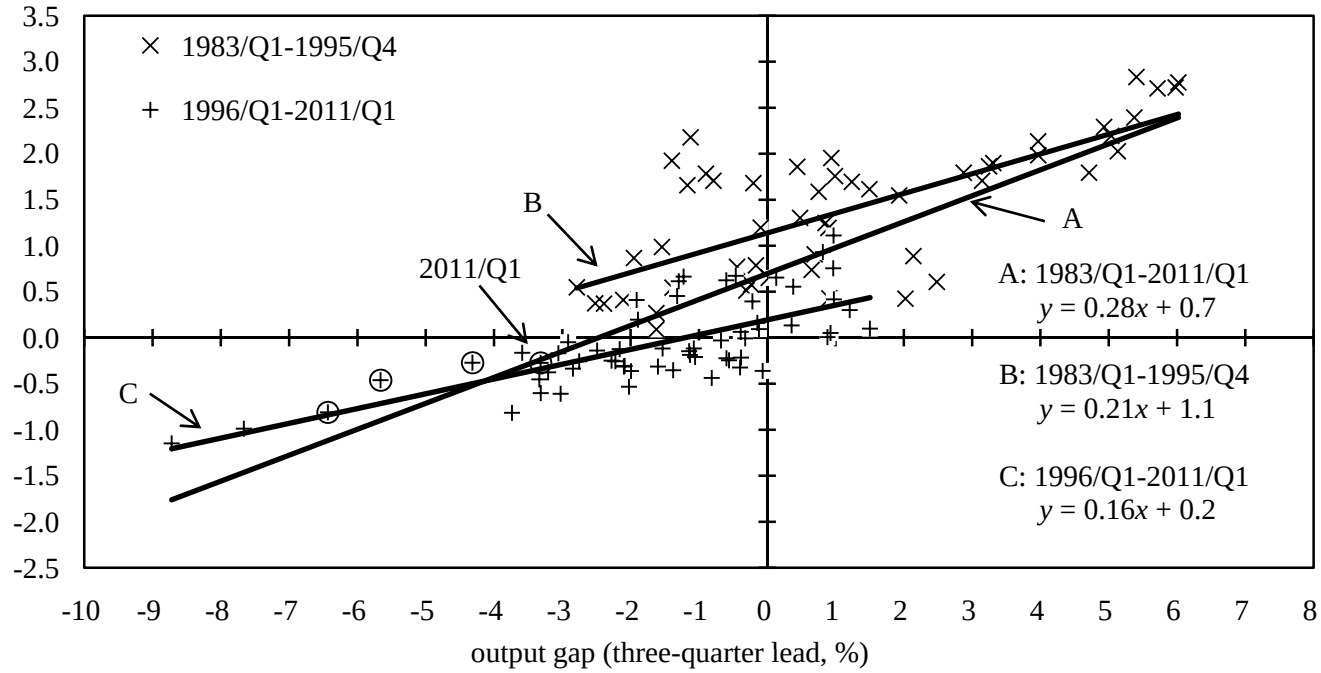
Sources: Cabinet Office, "National Accounts"; Cabinet Office and Ministry of Finance, "Business Outlook Survey"; Ministry of Internal Affairs and Communications, "Labour Force Survey"; Ministry of Health, Labour and Welfare, "Monthly Labour Survey," "Report on Employment Service"; Ministry of Economy, Trade and Industry, "Indices of Industrial Production," etc.

# Output Gap and Inflation Rate

(1) Phillips Curve (CPI Excluding Food and Energy)[1,2,3,4]




(2) Phillips Curve (10 Percent Trimmed Mean)[1,3,4,5]

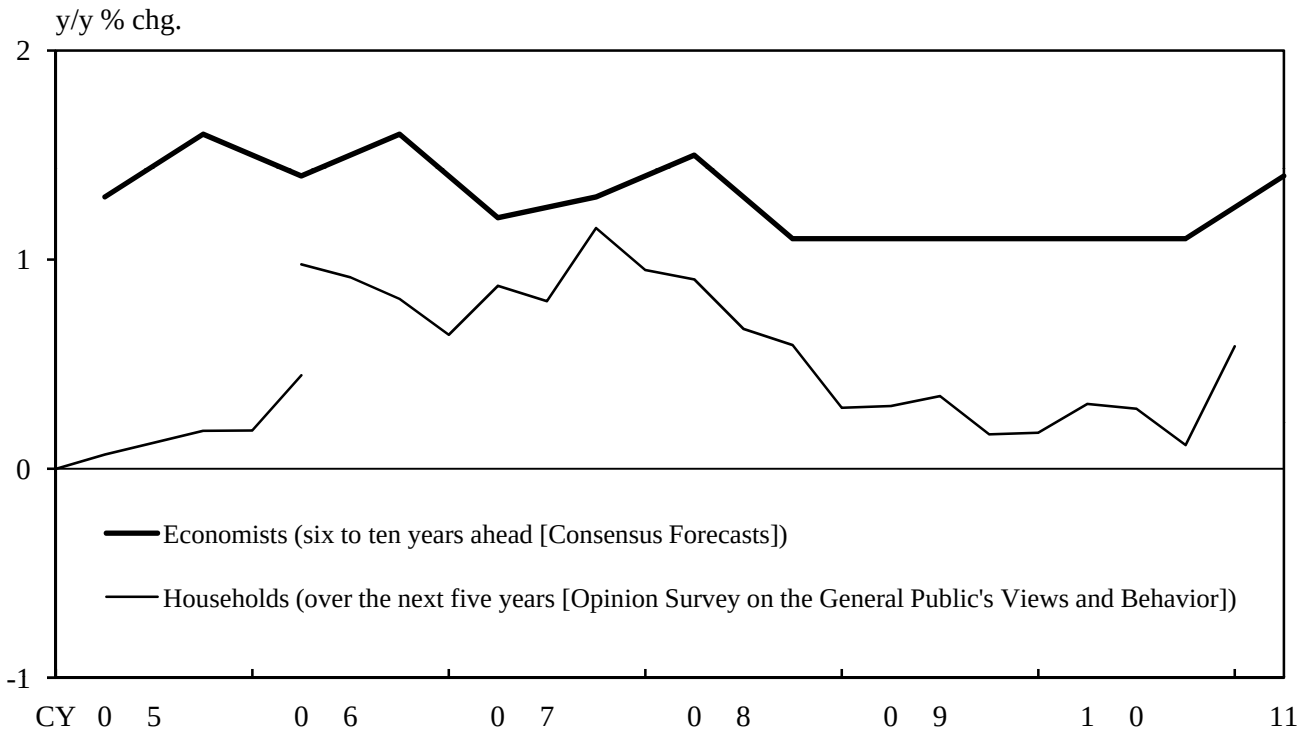



Notes: 1. The circled marks are positions in fiscal 2010.
2. From 2010/Q2, figures for the CPI exclude high school fees. Alcoholic beverages are excluded from food.
3. Figures for the CPI and the 10 percent trimmed mean are adjusted to exclude the effect of changes in the consumption tax rate.
4. The output gap is estimated by the Research and Statistics Department, Bank of Japan. For the estimation procedures, see "The New Estimates of Output Gap and Potential Growth Rate," Bank of Japan Review Series, 2006-E-3.
5. For the calculation method of the 10 percent trimmed mean, see Footnote 3 for Chart 11.

Sources: Ministry of Internal Affairs and Communications, "Consumer Price Index," etc.

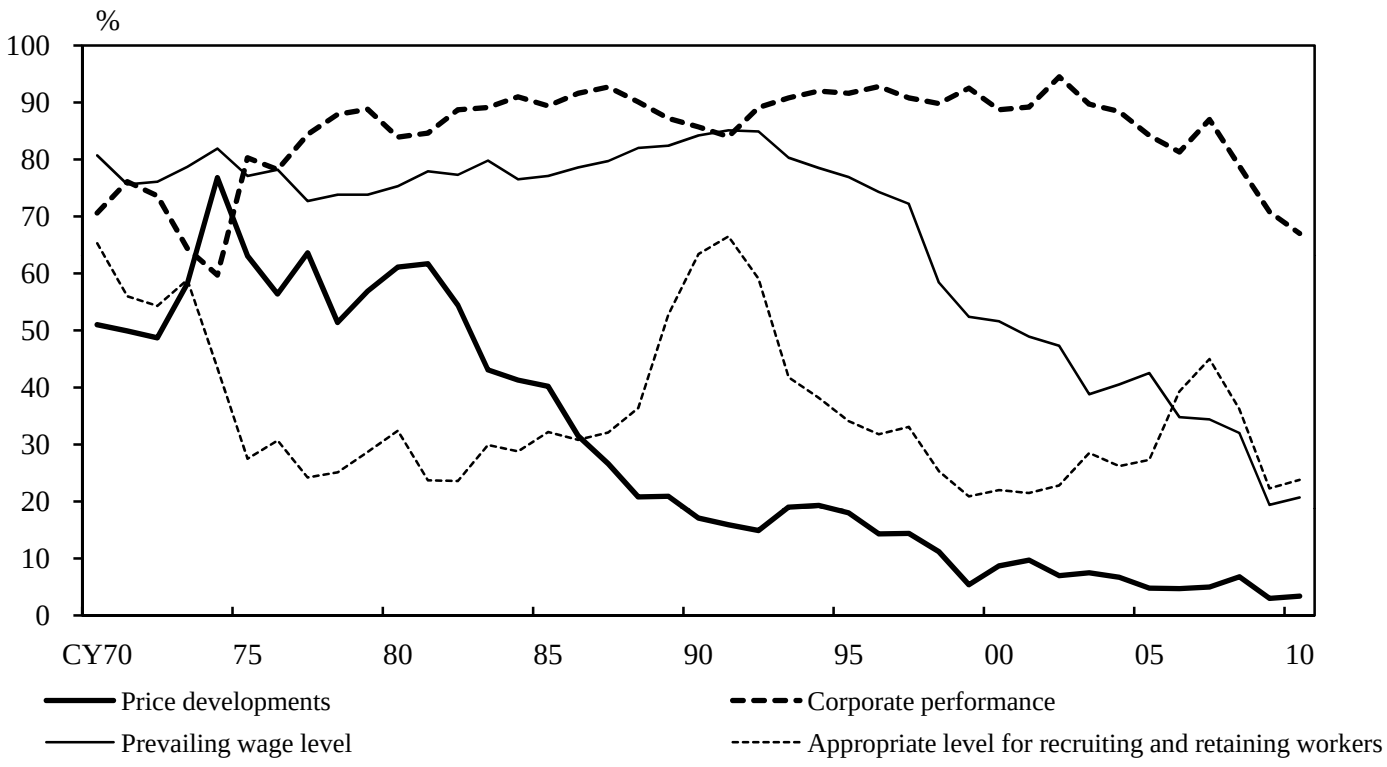
# Households' and Firms' Inflation Expectations

(1) Expected Rates of Inflation over the Medium to Long Term




Note: Figures for households are estimated using a modified Carlson-Parkin method. For details, see "On Inflation Expectations," Bank of Japan Review Series, 2008-J-15 (available in Japanese only).

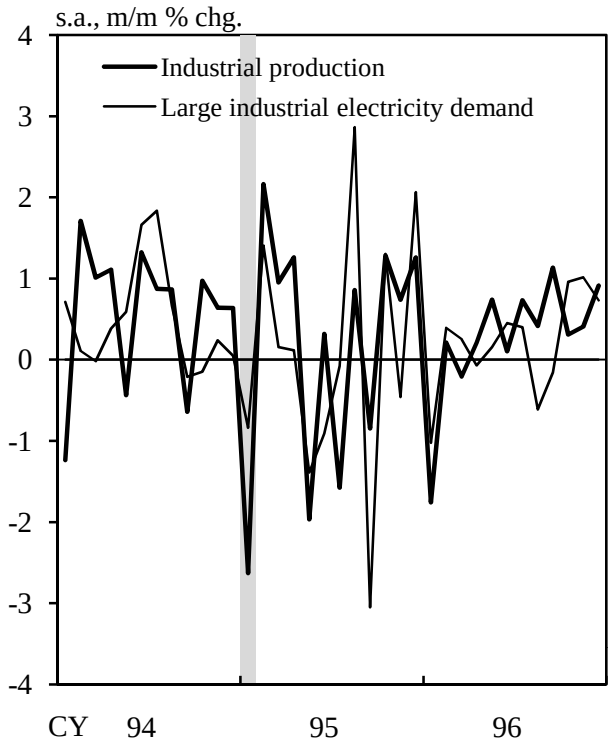
(2) Factors Weighed in Determining Wage Increases (Multiple Answers Allowed)



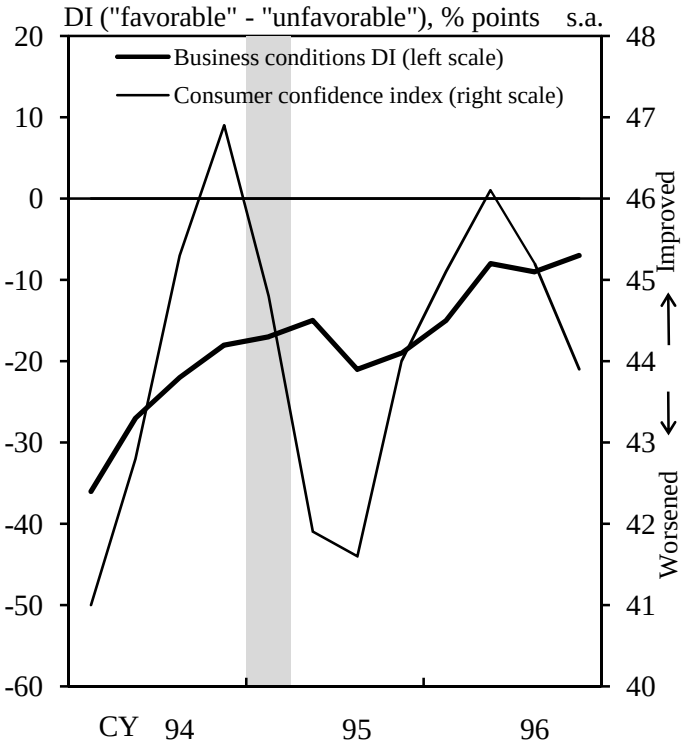

Sources: Bank of Japan, "Opinion Survey on the General Public's Views and Behavior"; Consensus Economics Inc., "Consensus Forecasts"; Ministry of Health, Labour and Welfare, "Survey on Wage Increase."

# Impact of the Great Hanshin-Awaji Earthquake

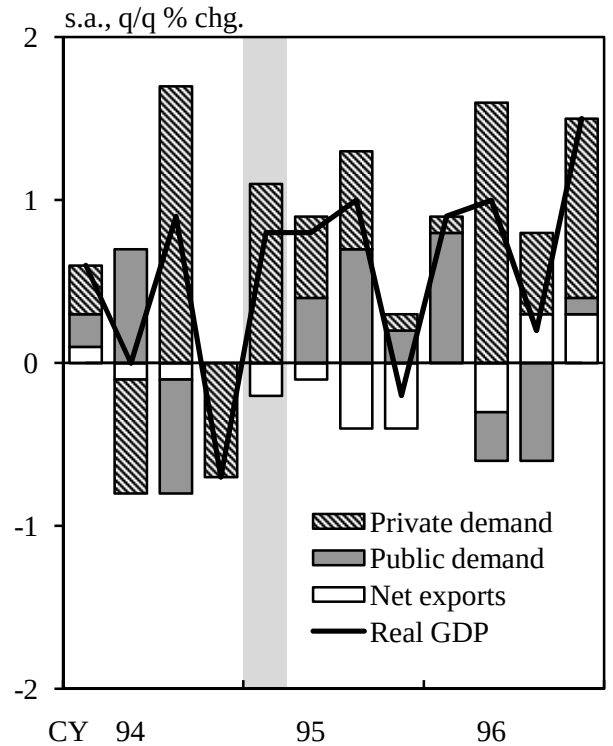
(1) Industrial Production and Large Industrial Electricity Demand[1]




(2) Business Conditions and Consumer Confidence Index[1]




(3) Real GDP[1]




(4) Components[1,2]

s.a., q/q % chg.

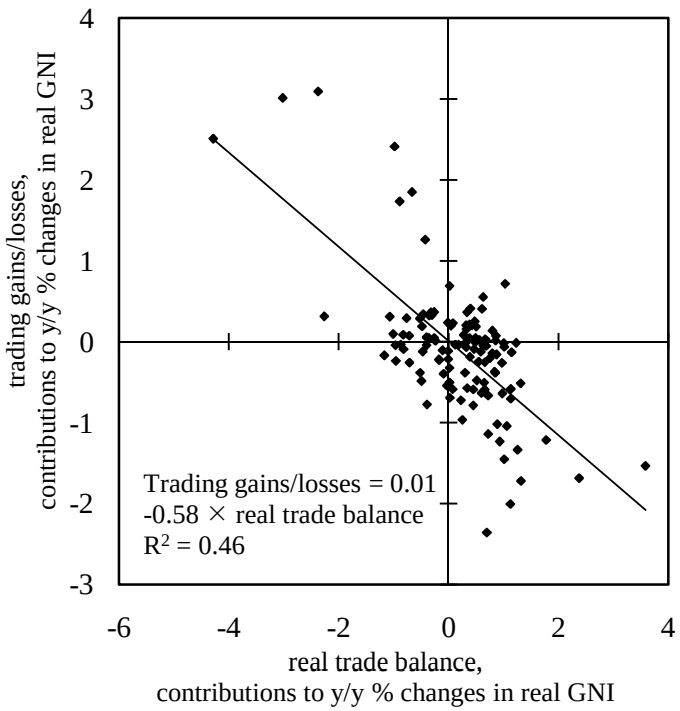
| | 1994 | 1995 | | |
|---|---|---|---|---|
| | Q4 | Q1 | Q2 | Q3 |
| Real GDP | -0.7 | 0.8 | 0.8 | 1.0 |
| Domestic demand | -0.7 | 1.1 | 0.9 | 1.3 |
| Private demand | -0.7 | 1.1 | 0.5 | 0.6 |
| Private consumption | -0.4 | 0.0 | 0.6 | 0.4 |
| Non-Resi. investment | 0.0 | 0.1 | 0.7 | -0.1 |
| Residential investment | -0.2 | -0.1 | -0.2 | -0.2 |
| Private inventory | -0.1 | 1.1 | -0.6 | 0.4 |
| Public demand | -0.0 | 0.0 | 0.4 | 0.7 |
| Public investment | -0.0 | -0.2 | 0.3 | 0.5 |
| Net exports of goods and services | 0.0 | -0.2 | -0.1 | -0.4 |
| Exports | 0.1 | 0.0 | 0.2 | 0.1 |
| Imports | -0.1 | -0.3 | -0.3 | -0.4 |
| Nominal GDP | -0.9 | 0.7 | 0.5 | 1.0 |

Notes: 1. Shaded areas indicate the period that includes the Great Hanshin-Awaji Earthquake on January 17, 1995.
2. Figures for components of real GDP indicate contributions to changes in GDP.

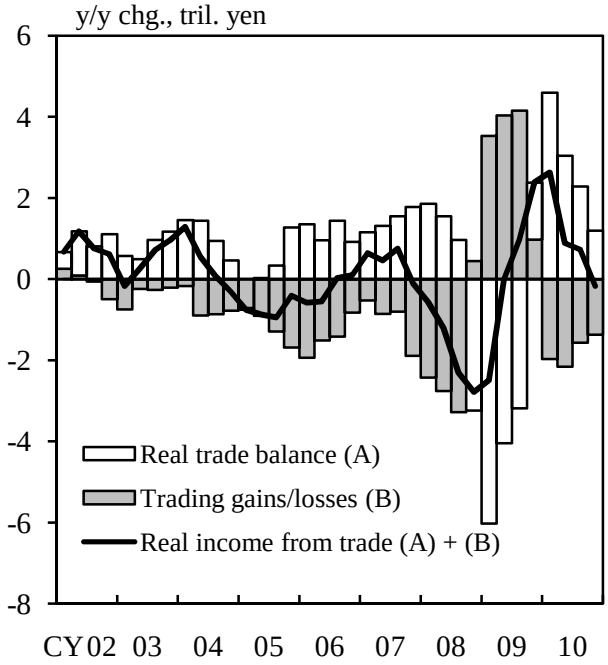
Sources: Cabinet Office, "National Accounts," "Consumer Confidence Survey"; Bank of Japan, "*Tankan*, Short-Term Economic Survey of Enterprises in Japan"; Federation of Electric Power Companies of Japan, "Electricity Demand"; Ministry of Economy, Trade and Industry, "Indices of Industrial Production."

# Trading Gains/Losses and Real Trade Balance

(1) Trading Gains/Losses and Real Trade Balance



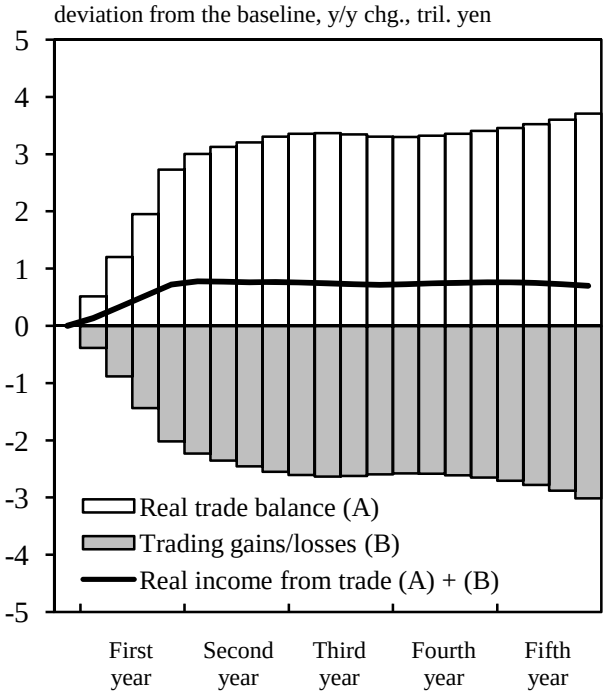

(2) Real Income from Trade



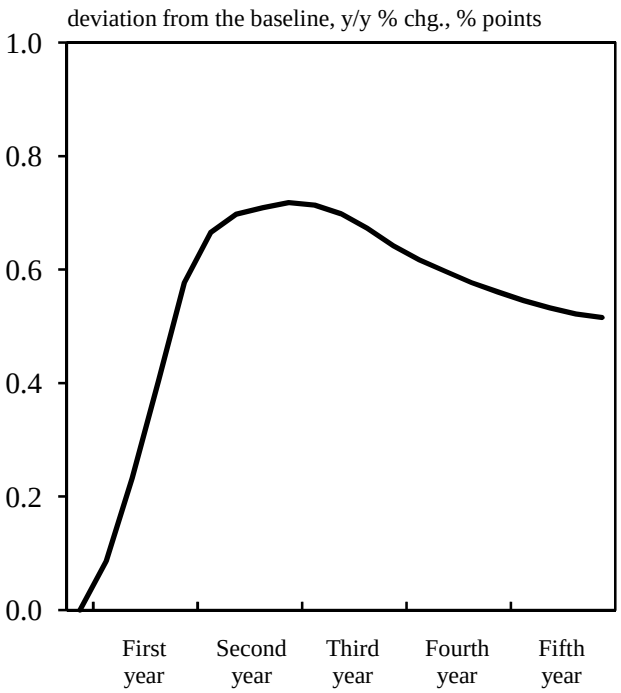

Notes: 1. The sample period is 1981/Q1-2010/Q4.
2. The real trade balance refers to the net exports of goods and services in the national accounts.

(3) Effects of Higher Growth of Emerging Countries on Real Income from Trade and Real GDP

(a) Real Income from Trade




(b) Real GDP



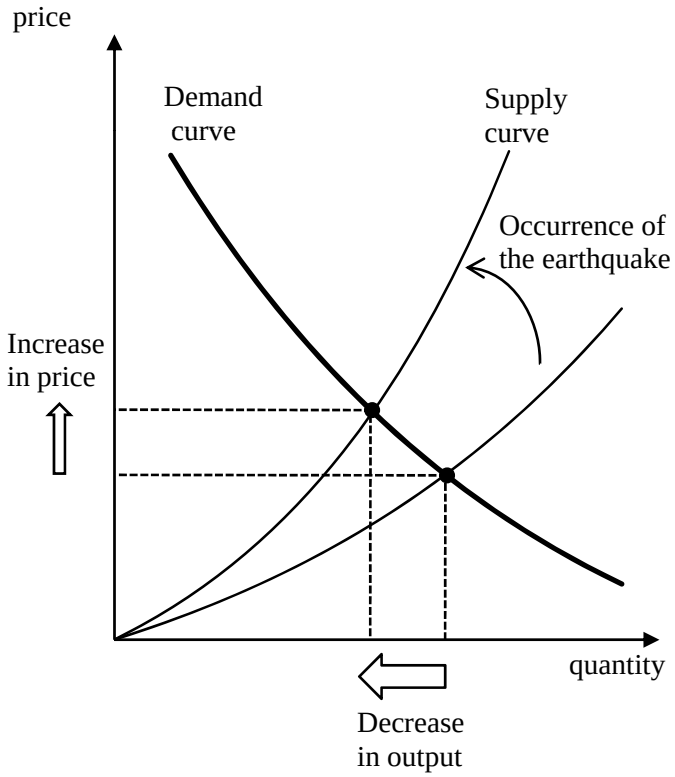

Notes: 1. This simulation is conducted using Q-JEM, a macroeconomic model developed by the Research and Statistics Department, Bank of Japan.
2. This simulation assumes a permanent increase of 1 percentage point in the growth rate of overseas economies excluding the United States.

Sources: Cabinet Office, "National Accounts," etc.

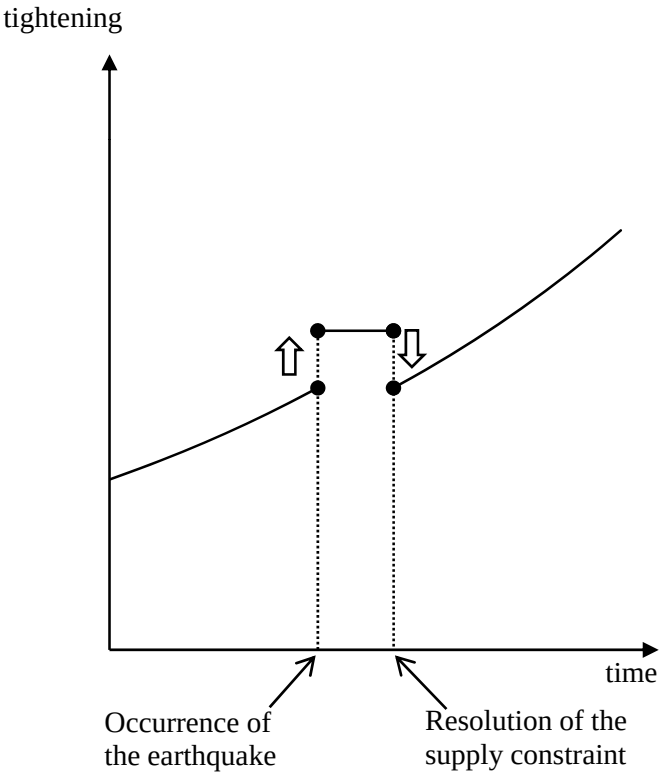
# Impact on Supply and Demand of an Earthquake

(1) When Only a Supply Constraint Is Caused by an Earthquake

(a) Supply and Demand Curve

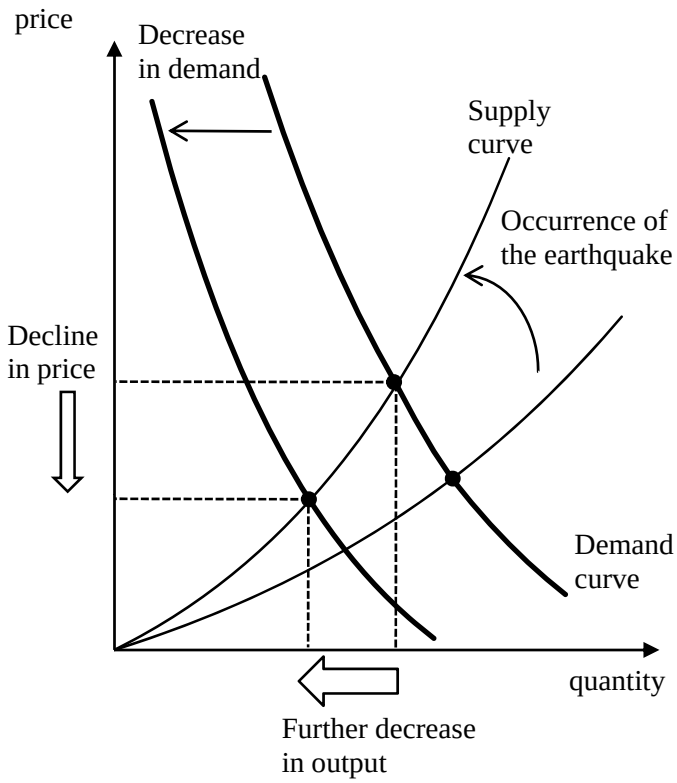



(b) Output Gap

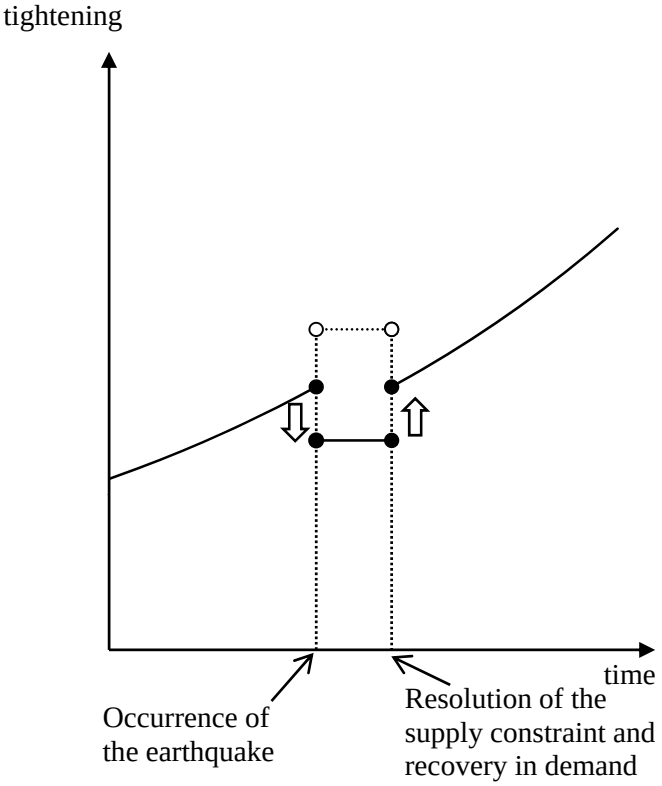



(2) When Both a Supply Constraint and a Decrease in Demand Are Caused by an Earthquake

(a) Supply and Demand Curve




(b) Output Gap



Reference

# Economic Assessment by Region (Regional Economic Report)

| Region | Assessment in January 2011 | Difference between assessments | Assessment in April 2011 |
|---|---|---|---|
| Hokkaido | The economy seems to have paused recently, although it has continued picking up. |  | The economy has recently been under downward pressure due to the effects of the earthquake. |
| Tohoku | The economy is picking up as a whole, although the recovery seems to be pausing particularly in manufacturing. |  | The damage caused by the earthquake has been widespread, particularly in the coastal area along the Pacific Ocean. As a result, the economy -- which had been picking up until recently -- has been damaged significantly, with impairment of the social infrastructure as well as production and business facilities. |
| Hokuriku | The economy is recovering moderately, but improvements have slowed. |  | The economy has recently been showing signs of stagnation, and business and consumer sentiment has also turned cautious, due to the widespread damage from the earthquake. |
| Kanto-Koshinetsu | The economy is recovering moderately, but the recovery seems to be pausing. Differences among regions and industries also remain. |  | The economy is in a severe condition due to a sharp decline in production caused by the earthquake. |
| Tokai | The economy has paused. |  | The economy seems to be worsening recently, although it had been picking up gradually. |
| Kinki | The economy has recently paused, although it has been on a moderate recovery trend. |  | The effects of the earthquake are starting to become noticeable mainly on the production side, although the economy had been recovering moderately despite a pause in autumn 2010. |
| Chugoku | The recovery in the economy seems to be pausing. |  | The economy is beginning to show signs of stagnation mainly due to constraints on production and cautious consumer sentiment that have become widespread reflecting the effects of the earthquake. |
| Shikoku | The pick-up in the economy seems to be pausing. |  | The economy has been picking up. However, production as well as business and consumer sentiment are likely to come under downward pressure in the short term due to the effects of the earthquake. |
| Kyushu-Okinawa | The economy has continued to recover moderately as a whole, although a decline in demand is seen following a last-minute increase in some goods. |  | The effects of constraints on the supply side due to the earthquake have recently been apparent, although the economy had been recovering moderately. |

Note: The Regional Economic Report (summary) is available on the Bank of Japan's web site (http://www.boj.or.jp/en/research/brp/rer/rer110411.htm/).

Source: Bank of Japan, "Regional Economic Report (Summary) April 2011."