

## **Sayuri Shirai: Japan's economic activity, prices, and monetary policy – relationships between the output gap, prices, and wages**

Speech by Ms Sayuri Shirai, Member of the Policy Board of the Bank of Japan, at a meeting with business leaders in Okinawa (held in Naha), 29 May 2014.

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### **I. Introduction**

Good morning, everyone. It is a great honor to have this opportunity to visit Okinawa Prefecture and meet with local representatives here. I am really looking forward to learning from you about this region through an exchange of views. I would also like to express my sincere gratitude for your cooperation with the activities of the Bank of Japan's Naha Branch.

Let me briefly provide an outline of my speech. First, I would like to talk about the Bank's baseline scenario of the outlook for economic activity and prices in Japan for the projection period from fiscal 2014 through fiscal 2016, in line with the April 2014 *Outlook for Economic Activity and Prices* (hereafter the Outlook Report). Next, I would like to shed light on the concept of aggregate supply and demand balance (hereafter the "output gap") and explain my view of how that is related to prices and wages. Afterward, I look forward to hearing your candid opinions about the contents of my speech as well as your thoughts about the situation facing the local economy.

### **II. Outlook for economic activity and prices**

I will begin by describing the current condition of Japan's economic activity and prices, the Bank's outlook for economic activity and prices (the baseline scenario) based on the Outlook Report, followed by the upside and downside risks to that baseline scenario. My views will be also touched upon. After that, I would like to explain the Bank's communication policy, with some references to improvements made in the Outlook Report.

#### **A. Outlook for economic activity and upside and downside risks**

Japan's economy has continued to recover moderately as a trend, although the subsequent decline in demand following the front-loaded increase prior to the consumption tax hike has been observed. In the Outlook Report, the Bank revised downward its projected economic growth rate for fiscal 2013 – as compared with the projections made in October 2013 and January 2014 – owing mainly to sluggish export performance. However, a virtuous cycle of economic activity has been operating steadily since domestic demand has been firm.

Weak exports reflect a shift in production locations abroad, a decline in Japanese firms' international competitiveness, and weak recovery in the global economy. In addition, there were temporary factors, such as deceleration in U.S. economic activity due to the adverse effects of the unusually severe winter weather and firms' stance of placing priority on domestic shipments in response to the front-loaded increase in demand prior to the consumption tax hike. In this respect, *I raised doubts about the Bank's overall risk assessment* regarding the baseline scenario of the outlook for economic activity in its October 2013 Outlook Report. The Bank concluded that upside and downside risks were "balanced," but I proposed that it should mention that attention should be paid to the downside risks, mainly because there was a high degree of uncertainty regarding the recovery in exports. I think that the cause of my concern has in fact materialized.

Meanwhile, domestic demand remains firm. This is led mainly by labor-intensive nonmanufacturing, supported by public investment, housing investment, and private consumption, thereby tightening labor market conditions and also effectively wiping out a sense of excessiveness in production capacity. Taking these facts into account, the Bank

judges that the economy has been recovering steadily in line with the Bank's baseline scenario.

**According to the Bank's baseline scenario of the outlook for economic activity**, domestic demand is likely to maintain firmness. Exports are expected to increase, albeit moderately, as overseas economies particularly advanced economies are expected to moderately increase their growth rates. Thus, a virtuous cycle among production, income, and spending is likely to be maintained (Chart 1). Meanwhile, the accommodative monetary environment will continue to support economic activity. Moreover, firms' and households' medium- to long-term growth expectations are expected to rise moderately against the backdrop of progress in the government's growth strategy, as well as firms' initiatives toward improving productivity and their tapping of potential domestic and external demand. Therefore, the economy is likely to continue growing at a pace above its potential as a trend throughout the projection period.

*My outlook for economic activity* is more or less in line with the Bank's baseline scenario. However, my projections of the real GDP growth rates are somewhat lower than the median of the Bank's Policy Board members' forecasts throughout the projection period. The rate of economic growth is expected to temporarily turn negative in April–June 2014 owing to the adverse impact of the consumption tax hike. But subsequently, the growth rate will likely rise at a very moderate pace, and will likely remain above its potential growth rate throughout the projection period.

**The upside and downside risks to the Bank's baseline scenario regarding the economy** mentioned in the Outlook Report include the following: (1) developments in exports; (2) the effects of the consumption tax hikes; (3) firms' and households' medium- to long-term growth expectations; and (4) fiscal sustainability in the medium to long term. The Bank assesses that these risks are balanced as a whole.

As for *my own overall risk assessment related to the economy*, the downside risks remain somewhat greater than the upside ones, although the degree of downside risks has lessened to some extent compared to October 2013 and January 2014. First, there is the risk that the rate of increase in exports will be more moderate than projected. There is a possibility that the U.S. economic recovery pace will be slower than projected as a result of sluggish performance in the housing sector and relatively slow recovery in the employment conditions for long-term unemployed workers and involuntary part-time workers. Tepid performance in emerging economies, disinflation in the euro area, and geopolitical problems should also be monitored closely. Second, there is a risk of domestic private consumption becoming weaker. Since it is estimated that the rate of nominal wage increases will remain below the CPI-based inflation (including the effects of the consumption tax hikes) throughout the projection period, it is possible that real income may decrease and that consumer sentiment as well as households' medium- to long-term expectations for growth and income may not improve.

On this front, I disagreed four times in row with the Bank's risk assessment, which appeared in the *public statements* released after the Monetary Policy Meetings (MPMs) held in January through early April this year. This disagreement reflects my concerns that the public statements referred only to developments in overseas economies as a risk factor, and did not mention *the pace of improvement in the employment and income situation in Japan*, even though it was pointed out in the October 2013 Outlook Report. However, the April 2014 Outlook Report clearly stipulates the effects of the consumption tax hikes as a risk factor by almost reinserting the related description included in the October 2013 Outlook Report. The current report also refers to consumer sentiment as an additional new factor (as well as the employment and income situation and developments in prices) with regard to the transmission channel of how the consumption tax hikes may affect private consumption. I take these points as indications that my concerns were confirmed and shared by the Policy Board.

## **B. Outlook for prices and upside and downside risks**

The current price developments show that the year-on-year rate of increase in the CPI (all items less fresh food) has been expanding, and recently has been around 1¼ percent.<sup>1</sup> Major factors determining inflation rates are the output gap, medium- to long-term inflation expectations, and import prices. Developments in these factors reveal that the output gap has been improving and appears to have reached around the past long-term average of about 0 percent. Medium- to long-term inflation expectations appear to have been rising on the whole. As for import prices, upward pressure – mainly from the rise in energy prices – has already begun to weaken somewhat.

According to the **Bank's baseline scenario of the outlook for prices**, the year-on-year rate of increase in the CPI (excluding the direct effects of the consumption tax hikes) is likely to be around the current 1¼ percent for some time, follow a rising trend again from the second half of fiscal 2014, and “reach around 2 percent around the middle of the projection period.” Thereafter, Japan's economy is expected to gradually shift to a growth path that sustains such inflation in a stable manner (Chart 2). Over the same period, as the adverse impact of the consumption tax hike wanes, the output gap will continue to improve thereby providing an upward pressure on prices, while medium- to long-term inflation expectations will remain on a moderate rising trend on the whole. The upward pressure arising mainly from the rise in imported energy prices is likely to wane around this summer, reflecting developments in international commodity prices and weakening lagged effects of the yen's depreciation.

Regarding *my own outlook for prices for fiscal 2014*, I project that the year-on-year rate of increase in the CPI may somewhat decelerate by this summer owing to the declining impact of energy prices and the base effect from fiscal 2013, although it should remain at above 1 percent. The rate of inflation will then begin to rise again from October–December 2014. However, this will be a gradual move given that it will likely take some time for households' medium- to long-term inflation expectations to show a steady rise – an indicator implies that they are currently remaining roughly constant (Chart 3). Thus, the rate of inflation will likely be more moderate than the Bank's baseline scenario.

*My outlook for the period during and beyond fiscal 2015* is that *the year-on-year rate of increase in the CPI will reach an average of approximately 1½ percent or a little higher in fiscal 2015, and the inflation rate of 2 percent is likely to be reached toward the end of the projection period.* Thereafter, Japan's economy is expected to gradually shift to a growth path that sustains such inflation in a stable manner. Over the past year (when the projection period was from fiscal 2013 through fiscal 2015), my outlook was that “the rate of CPI inflation will rise closer to 2 percent toward the end of fiscal 2015” and thus I considered that it was barely in line with the Bank's baseline scenario – described as “reaching around 2 percent toward the latter half of the projection period” of fiscal 2013 through fiscal 2015. This is why I did not oppose the baseline scenario in the past. However, with the projection period extended to fiscal 2016, I considered that the description of the price outlook should clarify the timing when the Bank's “price stability target of 2 percent” will be achieved, rather than providing an expression – namely, “around 2 percent” – that contains a degree of latitude.<sup>2</sup>

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<sup>1</sup> Assuming that the rise in the tax is fully passed on to prices of all taxable items, the direct impact of the consumption tax hike from 5 to 8 percent in April 2014 is estimated to raise the CPI (all items less fresh food) by 2 percentage points in fiscal 2014, because some items will not be affected. The impact in April is estimated to be 1.7 percentage points; this is because the former tax rate of 5 percent was applied to some public electricity and water charges in that month.

<sup>2</sup> At the MPM held on April 30, 2014, I submitted a proposal against the expression of the baseline scenario of the outlook for prices. My proposed new expression was that “the inflation rate of 2 percent is likely to be reached toward the end of the projection period as the Bank continues with QQE, aiming to achieve the price stability target of 2 percent, as long as it is necessary for maintaining that target in a stable manner.” This

***The upside and downside risks to the Bank's baseline scenario regarding prices*** mentioned in the Outlook Report cover the following: (1) developments in firms' and households' medium- to long-term inflation expectations; (2) developments in the output gap; (3) the responsiveness of inflation to the output gap; and (4) developments in import prices. The risks to the price outlook are assessed as being largely balanced as a whole.

*My own overall assessment on risks to prices* is that the risks remain tilted somewhat to the downside, although the degree of such downside risks has declined moderately compared with October 2013 and January 2014. The path toward achieving the 2 percent target seems broadly on track so far. However, there is uncertainty with regard to "the timing for achieving 2 percent" and thereafter "the timing to gradually shift to a growth path that sustains 2 percent in a stable manner." In particular, I suggest that clear judgment on the timing to achieve 2 percent in a stable manner can be made only after examining the effects of the second round of the consumption tax hike.

*My aforementioned outlook for economic activity and prices* assumes that quantitative and qualitative monetary easing (QQE) will continue during and beyond 2015 under the current framework. Under this current framework, the Bank will continue with QQE, aiming to achieve the price stability target of 2 percent as long as it is necessary for maintaining this target in a stable manner. What is important is that the Bank is conducting monetary easing with the aim of achieving 2 percent inflation in a stable manner with sustainable economic growth, rather than merely achieving 2 percent in a specific year and failing to meet the target in subsequent years. Under the Bank's so-called *flexible inflation targeting framework*, I maintain the view that it will likely take longer than "two years" to achieve the 2 percent inflation – in order to avoid imposing excessive burdens on firms and households. Such a path seems desirable for Japan's economy and is likely to lead smoothly to the next phase of maintaining 2 percent in a stable manner. I will explain later my views on the path toward achieving 2 percent with some background rationale.

### **C. The Bank's communication policy**

I would like to take advantage of this opportunity to report that *several changes* were made in the Outlook Report in terms of improving reader friendliness. The latest report now has a "summary" section. This section provides the structure of the report as well as a brief explanation on the examination from "two perspectives" in the context of meeting the price stability target: the baseline scenario (*first perspective*); and upside and downside risks to the baseline scenario (*second perspective*). Regarding these two perspectives, I submitted two different proposals in April and October last year suggesting revisions to the text to make the report easier to understand for the public. On this, I am glad to note that my proposal in October was incorporated in the latest report. This revision also reflected my repeated suggestion over the past years to insert a brief summary of the report. The Bank is now keen to steadily improve its communication, albeit at a rather gradual rate, particularly toward promoting the reader friendliness of its public documents.

These improvements can be considered a good example of the Bank achieving its intention to strengthen its external communication: this was incorporated in the Bank's *Strategic Priorities for Fiscal 2014–2018*, released in late March 2014, which describes the basic principles of the Bank's business operations and organization. One of its key features is that the Bank expressed that it will engage in Bank-wide efforts to steadily fulfill its mission of

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expression seems more appropriate not only because it reflects my own outlook, but also because it is a better description of the Bank's baseline scenario. Regarding the latter, the median of the Policy Board members' forecasts of the inflation rate is 1.9 percent for fiscal 2015 and 2.1 percent for fiscal 2016; so the projected year of achieving "2 percent" is fiscal 2016. Given that the Bank is committed to achieving "2 percent," it is better to provide a clear focus on the timing when 2 percent will be reached, rather than providing an expression of "around 2 percent."

achieving the price stability target of 2 percent; the document gave priority to strengthening external communication to ensure broad public confidence. This new move reflects my call to place greater emphasis on external communication – stressed ever since I assumed my position as a Policy Board member. Especially in light of achieving the 2 percent target, public understanding is indispensable. Concrete actions specified in the report include the following: (1) making full use of information technology, for example through improvements to the Bank’s web site, and enhancing the in-house tours of its Head Office and branches; (2) strengthening the Bank’s communication with various people, firms, and economic organizations; (3) publishing the findings from its research and analysis in effective ways; and (4) supporting the activities of the Central Council for Financial Services Information and associated committees to promote financial literacy among the public. Related departments of the Bank have already prepared detailed plans to put the new strategic priorities into practice. Accordingly, the Bank will continue to do its best to implement the priority issues expressed in the Strategic Priorities.

### III. Output gap in Japan

A shortage of demand for goods and services relative to supply capacity since the global financial crisis has been a major cause of the sustained mild deflation in Japan. This situation has recently improved as economic recovery has continued. Today, I would like to explain my view on the process of achieving the 2 percent target, with a focus on the “output gap” as a key word for understanding the background of the sustained mild deflation and recent improvement.

#### A. Concepts of the output gap and its performance

The output gap is a term that refers to the difference between aggregate demand and supply capacity. Usually, actual GDP is used as a proxy for aggregate demand, and potential GDP as a proxy for supply capacity. The Bank estimates potential GDP as the production level achieved under the current economic structure with an *average* utilization level of labor and capital stock. Generally, whether a country’s economic condition is in an upturn or a downturn can be judged on the basis of the level of aggregate demand relative to the level of supply capacity. If aggregate demand exceeds supply capacity with an average utilization level of labor and capital stock, excess demand prevails, and the sign of the output gap becomes positive. The converse is true for a negative sign of the output gap, implying a stagnant economic activity level. Meanwhile, a change toward this positive territory implies upward pressure on prices, and a change toward negative territory implies downward pressure on prices. In Japan, the rate of real GDP growth has exceeded that of potential growth since fiscal 2013, thereby contributing to a significant improvement in the output gap.

Now, let us take a look at ***some indicators related to the output gap***. Chart 4 exhibits (1) the estimates of the output gap by the Bank and (2) the composite indicator in the Bank’s quarterly *Tankan* (Short-Term Economic Survey of Enterprises in Japan). The Bank’s estimate reports an improvement from about minus 1 percent in July–September 2013 to nearly 0 percent in October–December 2013, suggesting that the output gap is more or less balanced.<sup>3</sup> Meanwhile, the *Tankan* composite indicator – the proxy for the output gap based on the extent of labor and capital stock utilized – is built as the weighted average of the diffusion indices (DIs) for the employment conditions and production capacity from the Bank’s *Tankan*. Positive figures of the composite indicator signify that firms find that their employment and production capacity are on the whole excessive, and negative figures mean a shortage. Chart 4 shows that the indicator turned negative in 2013, pointing to a shortage

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<sup>3</sup> According to the Cabinet Office, the output gap is estimated to be about minus 1.5 percent for July–September 2013, about minus 1.6 percent for October–December 2013, and about minus 0.3 percent for January–March 2014.

in employment and production capacity. It should be noted that the composite indicator gives equal weight to respondent firms. Given that the *Tankan* respondents are dominated by small firms, which face a shortage in employment and production capacity, the *Tankan* composite indicator tends to reflect such a shortage more strongly than the Bank's estimate of the output gap. Taking these factors into account, it is fair to judge the output gap as currently being more or less balanced.

## **B. Interpretation of output gap estimates**

There is a high degree of uncertainty with respect to estimates of the output gap. Care thus needs to be exercised in its interpretation – as evident in the fact that the output gap estimate by the Cabinet Office is in larger negative territory than that by the Bank for the same period. In this regard, I would like to point out four issues regarding the Bank's estimation method of the output gap.

First, **estimation errors** arise from different estimation methodologies and different data sources. Although actual GDP data are available from the "National Accounts" compiled by the Cabinet Office, there are no official data on potential GDP, and therefore institutions and researchers have to make their own estimates from various data on, for example, labor and capital stock. One distinctive feature of the Bank's estimate is that the Bank derives its estimate of the potential growth rate by first determining the output gap and then applying the actual GDP growth data (Chart 5).<sup>4</sup> Conversely, the Cabinet Office first estimates the potential growth rate and then derives the output gap by applying the actual GDP growth data. Both estimates point to an improvement in the output gap from a long-term perspective.

Second, **different estimates on the rate of potential economic growth** may lead to differences in output gap estimates. The Bank estimates Japan's potential growth rate to be around 0.5 percent, while the Cabinet Office estimates this to be about 0.7 percent. The difference may have suggested a greater improvement in the output gap in the case of the Bank's estimate.<sup>5</sup> Moreover, according to the Bank's estimate, the decline in Japan's potential growth appears to have occurred since around the time of the global financial crisis. This may be attributable to the manner that the demographic trend and a decrease of capital stock due to physical disposal and wear are reflected in the estimate.

Third, the impact of **tightening labor market conditions** can also be captured using the Bank's output gap estimate. The output gap can be divided into *labor input gap* and *capital input gap* on the basis of resource utilization – just as with the *Tankan* composite indicator (Chart 6). If the labor input gap is positive, actual labor input exceeds average labor input, which indicates a labor shortage; if the labor input gap is negative, the converse is true. The labor input gap had already turned positive by October–December 2013. This reflects a continuous decline in average labor input, which was caused by a decrease in the number of employed people and labor hours. This trend has been augmented since 2012 by the retirement of the baby boomer generation reaching 65 years old. The labor shortage was exacerbated further by the rapid economic recovery since 2013 driven by labor-intensive nonmanufacturing. This observation is consistent with the following: (1) the *Tankan's* employment conditions DI, which had already shifted to one of shortage; (2) the unemployment rate of 3.6 percent in February 2014, which approached the *structural* unemployment rate of around 3.5 percent; and (3) the positive growth trends in wages (Charts 7 through 9).

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<sup>4</sup> The Bank applies the Hodrick-Prescott filter method to smoothen the rate of the total factor productivity (TFP) growth. Thus, there is no one-to-one relationship between the estimated rate of potential growth (Chart 5) and that derived from the output gap and the actual GDP growth data.

<sup>5</sup> Although different methodologies and data are used, both the Bank and Cabinet Office adopt the Cobb-Douglas production function approach and estimate the rate of potential growth by dividing into labor, capital stock, and Solow residual (TFP).

Fourth, the Bank's estimate also reflects **a rising shortage in production capacity** mainly in nonmanufacturing, as shown in a rapid improvement in its capital input gap. Chart 6 indicates that the capital input gap is presently in the vicinity of zero. The gap was nearly closed by a rise in the capital utilization ratio; this was achieved by economic recovery while business fixed investment has remained sluggish since the global financial crisis. In particular, the construction sector faces a shortage in production equipment and facilities. Moreover, a deficiency is also felt in information and communication services, reflecting growing use of information technology by the services sector, and in the distribution and retail sectors. These movements are consistent with the *Tankan's* production capacity DI for nonmanufacturing, which points to a shortage in production capacity (Chart 10). In manufacturing, the capital utilization ratio also improved rapidly when firms faced a front-loaded increase in domestic demand prior to the consumption tax hike (Chart 11). Some firms had to postpone exports in order to prioritize domestic demand.

### **C. Will the balanced output gap lead to immediate economic growth constraints?**

Now that the output gap is almost balanced in Japan, the next issue is whether this condition will impose a constraint on economic growth by creating a shortage in labor and capital stock across nearly all sectors and firms. I would first like to touch on this issue from the short- and medium-term point of view.

Because the *balanced* output gap simply means that aggregate demand is roughly equal to a long-term average supply capacity, this would not immediately lead to growth constraints. However, if a firm encounters a rapid temporary increase in demand – as was the case with the front-loaded increase in domestic demand prior to the consumption tax hike in April 2014 – it may find difficulty in immediately hiring sufficient numbers of workers through want ads or in quickly reassigning existing production capacity and employees to specific production lines and services. This may adversely affect other firms, for example, in being unable to provide parts and materials or having insufficient delivery cars and drivers. This condition actually occurred among some firms and sectors in Japan until March 2014, but it seems to have improved somewhat since April. The output gap therefore seems to have improved in January–March 2014 and the opposite in April–June.

If exports begin to rise at a moderate pace, there will be room for manufacturing to raise production without causing a severe labor shortage, owing to higher labor productivity than nonmanufacturing. The manufacturing industry, which faced declining employment from the early 1990s, managed to expand production by improving labor productivity until the global financial crisis. In addition, business fixed investment in manufacturing has been increasing gradually, and if the rate of increase exceeds that of physical disposal and depreciation costs, this will likely further raise capital stock and supply capacity (Chart 5).

Moreover, improvement in skills and proficiency of workers will also contribute to an improvement in labor productivity and accordingly, if a mismatch between supply and demand of labor is reduced, this may open the possibility of lowering the structural unemployment rate. The rate was generally in the range of 2–3 percent in the 1980s; it rose to a peak of above 4 percent in the early 2000s before dropping moderately to the current level of around 3.5 percent (Chart 8). The structural unemployment rate appears to have risen on the backdrop of slow labor supply responses in adjusting to changes in the domestic demand structure driven by the progressive aging of the population and a steady decline in public investment.

Over the Bank's projection period, the potential growth rate is expected to rise from the current level of around 0.5 percent toward around 1 percent. This will occur mainly through an accumulation of capital stock, a moderate increase in the labor force participation ratio for women and the elderly, and further improvement in total factor productivity (TFP). At the same time, an economic growth rate exceeding the potential growth rate will expand the output gap into the positive territory, mainly in fiscal 2014 and fiscal 2015. The greater positive output gap will promote business fixed investment and an extension of working

hours by part-time workers, thereby helping to raise further the potential growth rate. It is also expected that greater efforts will be made by the government to update existing institutions and tax systems aimed at promoting full-time employment, settling the issues of children on waiting lists for nursery schools, and promoting economic growth strategies.

*To summarize*, Japan's potential growth rate has declined in the aftermath of the global financial crisis, partly owing to the sluggish economic growth. Decline in the potential growth rate is commonly observed among other advanced countries. Going forward, Japan's potential growth rate is expected to gradually rise toward about 1 percent, while the actual economic growth will exceed the potential growth rate. The output gap will be expected to improve from summer 2014 through fiscal 2015, and remain in the positive thereafter.

#### **D. Medium- to long-term challenges implied by the output gap**

I will now touch on the medium- to long-term challenges implied by developments in the output gap. The pace of aging will accelerate in Japan, and the labor shortage will likely intensify despite an increase in the labor force participation ratio for women and the elderly as well as in the number of full-time workers. Given that the elderly tend to increase demand for medical and nursery care, trips, and social expenditure, the economic structure will probably be tilted further to labor-intensive nonmanufacturing. This suggests that labor-saving initiatives will be needed in nonmanufacturing through the active use of information technology and robotics as well as promoting a business-friendly environment that supports competition, efficiency, and corporate governance. At the same time, comprehensive measures to deal with the declining population will become important.

### **IV. Output gap, inflation expectations, and their relations to prices and wages**

Next, I would like to explain my views regarding two important key words in achieving 2 percent price stability target – the output gap and inflation expectations – and how they relate to price and wage developments.

#### **A. Relations between the output gap and prices: the Phillips curve**

An improvement in the output gap tends to exert upward pressure on prices. Such a positive relationship between the rate of change in prices and the output gap may be expressed using the *Phillips curve*. Chart 12 exhibits Phillips curves based on the CPI (for all items less fresh food) and on the CPI (for all items less food and energy) as variables for price changes on the vertical axis. Both Phillips curves were drawn based on two observation periods: (1) from 1998 Q1 to 2012 Q3 (from the period with a decline in wages to the period prior to the sharp depreciation of the yen and stock price hike); and (2) from 2012 Q4 to 2014 Q1 (from the period of the sharp depreciation of the yen and stock price hike to the present).

The slope of *the Phillips curve based on the CPI (for all items less fresh food)* appears to have steepened sharply together with a rise in the intercept since October–December 2012. Among these changes related to the curve, the steepening of the slope indicates that prices are *more prone to rise than before in response to a similar degree of change in the output gap* (I will explain about the intercept later). This occurs when firms find it easier to raise their sales prices or pass their input costs on to their sales prices. The recent movement mainly reflects the sharp rise in imported prices as a result of a rapid and sharp depreciation of the yen, that has accompanied a corresponding rise in the prices of energy and other goods and services (Chart 13).

In contrast, in the case of the Phillips curve based on the CPI (for all items less food and energy), a steepening of the slope is not clearly observed. This is attributable to the lesser impact of the yen's depreciation: it is because this CPI omits food and energy prices that account for about 30 percent of the weight of the CPI (for all items less fresh food). In this sense, further steepening of the slope is expected to occur for the Phillips curve based on

the CPI (for all items less food and energy) in order to achieve the 2 percent target. However, it seems that this process will take some time.

### **B. Changes in firms' deflation-oriented price-setting behavior**

It is known that the Phillips curve for Japan has flattened since the late 1990s. One contributing factor for this has been the *decline in the frequency of price adjustments*. Reflecting the sluggish economy, discount price setting by competitors, and the preference for lower prices by clients, firms were discouraged from raising their sales prices in the face of concerns over a possible loss of market share – even though a rise in production cost occurred. Currently, the situation signals the possibility that the price-setting environment of firms may be improving. As economic recovery continues and the inflation rate steadily increases at a moderate pace, the frequency of price adjustments increases, and thereby, the slope of the Phillips curve will likely steepen gradually. In this regard, the sharp increase in imported prices and the consumption tax hike appear to have provided opportunities for firms to raise their sales prices collectively. Some firms have begun to amend their past price-setting behavior. They have managed to continue increasing demand – even with higher sales prices – by offering higher value-added or innovative goods and services.

An increase in the number of such firms may promote further steepening of the Phillips curve. However, the increase is likely to be gradual – as evidenced by the presence of divergent behavior among firms, some of which are still setting lower sales prices in stiff competition. This may suggest that it is a challenging task to change the price-setting behavior of firms, as demand has been decreasing amid the declining population, and it will take place gradually through firms' greater efforts to develop innovative business models and their greater growth expectations.

Developments in services prices will play an important role in achieving the 2 percent price stability target. In the past, the frequency of price adjustments was highest among energy-related products and food, followed by goods; the prices of services were rarely adjusted. With energy-related products, food, and goods, the sales prices need to be adjusted frequently in response to changes in related imported commodities, materials, and input costs. Conversely, the prices of *general services* – accounting for about 40 percent of the components of the CPI (all items less fresh food) – were barely changed: the year-on-year rate of change was in a narrow range of plus 0.8 percent to minus 0.6 percent throughout the 2000s (Chart 13). Since October–December 2013, however, the prices of general services, such as those in the food services industry, have begun to rise due in part to the effects of the depreciation of the yen. I suggest a key question is whether the rising trend will continue.<sup>6</sup>

### **C. Relationship between prices and wages**

Naturally, the next question is *why services prices have hardly been adjusted*. In general, services are labor intensive, and so wages account for a greater weight in the production cost. For this reason, sluggish wage developments seem to have contributed to reducing the need to adjust services prices, although this causal relationship may have occurred in two ways.

Over the period since the 2000s, changes in cash earnings have remained at around 0 percent, and there appears to be a positive correlation between changes in cash earnings and changes in the CPI (all items less food and energy) (Chart 14). Nonetheless, such a

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<sup>6</sup> House rent and imputed rent, which account for about 20 percent of the components of the CPI (all items less fresh food), are also important determinants of the price developments in Japan. These rents may be underestimated in the CPI due to the low frequency of price adjustment and to the absence of the quality adjustment on the age of buildings and earthquake-resistant structure. Imputed rent is included in the CPI and PCE deflator in the United States, while it is excluded from the HICP in the euro area.

positive correlation does not necessarily hold if the observation is made on the industrial level (Chart 15). This can be understood more intuitively by taking a look at their development in the “levels” as opposed to year-on-year changes (Chart 16). In manufacturing, for example, the prices of goods (reflected in the CPI) have declined while cash earnings of full-time workers have been more or less unchanged. This suggests that an increase in labor productivity has partly enabled such a price decline. By contrast, in nonmanufacturing, services prices and cash earnings have both remained largely constant over the same period, as labor productivity was low.

Meanwhile, the cash earnings of part-time workers have been on a rising trend since the mid-2000s, for both manufacturing and nonmanufacturing. As a result, the differences in hourly cash earnings between full-time workers and part-time workers have somewhat decreased, leading to the current hourly cash earnings of part-time workers to be roughly above 40 percent of those of full-time workers. This may reflect the shortage of part-time workers as a result of a steady shift in employment from full-time workers to part-time workers. This trend is especially seen in nonmanufacturing. Part-time workers, whose wages are relatively low, now account for over 30 percent in nonmanufacturing, whereas in manufacturing they account for less than half.

Regarding the overall outlook for Japan’s prices and wages, a positive correlation between them is likely to hold – mainly driven by an increase in both wages and sales prices especially in nonmanufacturing. In general, the *responsiveness of sales prices to wage changes* is greater for part-time workers than full-time workers in the services industry (Chart 15). This is because the variable component of wages is greater for part-time workers, and so changes in their hourly wages have a more direct impact on services prices. As Japan’s economy gradually shifts to nonmanufacturing, wage increases are expected to exert upward pressure on prices. Nevertheless, the pace of wage increases is, on the whole, likely to be faster than that of price increases (excluding the direct effects of the consumption tax hike), as will be discussed later.

Let us now look at ***the Phillips curve with a wage version***, which indicates the relationship between the rate of change in cash earnings and in the unemployment rate. Chart 17 presents the Phillips curve using the same observation period as the Phillips curve with inflation version. Steepening of the slope reflects the higher *responsiveness of wage changes against the improvement in the unemployment rate*. Recent movements of the curve, however, have not yet resulted in an apparent steepening of the slope. Going forward, the steepening of the slope is expected to occur gradually as the economy continues to recover and labor demand increases.

#### **D. Inflation expectations, prices, and wages**

Let me now talk about inflation expectations. The increase in inflation expectations will lead to an increase in current prices and wages if such an increase in inflation expectations is incorporated in the current price setting. A rise in inflation expectations is reflected as an upward shift of the intercept of ***the Phillips curves in both the CPI and wage versions*** (Charts 12 and 17). The upward shift of the intercept means that the rate of inflation is *prone to rise even with the same level of the output gap* in the former case, and that the rate of wage increase is *prone to rise even with the same level of unemployment* in the latter case. In this regard, the upward shift of the curve is observed in the Phillips curve for the CPI, but it is yet to be seen in that for wages. It is expected that the upward shift will occur further in the Phillips curve for the CPI (all items less food and energy) version, while the shift will begin to occur in the Phillips curve for the wage version.

*Medium- to long-term* inflation expectations are more important indicators than *short-term* expectations. This is because the former are more stable, while the latter are more prone to current prices, such as prices of energy and daily necessities, and thus tend to be volatile. Thus, let us look at medium- to long-term indicators: the inflation outlook (excluding the direct effects of the consumption tax hikes) over the next five years for *households* and that over

the next three and five years for *firms*. Chart 3 indicates that households' inflation expectations have remained at around 2.0-2.5 percent since late 2011. Meanwhile, firms' inflation expectations recorded 1.7 percent for both the next three and five years, according to a survey conducted in March 2014 as a part of the *Tankan* (Chart 18).<sup>7</sup> Going forward, inflation expectations are likely to rise to around 2 percent, thereby raising the actual prices and wages.

#### **E. Timing of achieving the 2 percent price stability target**

As noted earlier, I expect that the inflation rate of 2 percent is likely to be reached toward the end of the projection period. Related to this outlook, I will now summarize my views.

- First, medium- to long-term inflation expectations appear to have been rising on the whole. However, some indicators have recently leveled off; in particular, households' long-term inflation expectations have continued to level off since late 2011. These inflation expectations are expected to rise gradually, as moderate inflation becomes settled in society and if the 2 percent price stability target is more widely recognized by the public.
- Next, it may take time for households to get accustomed to the environment of continued moderate inflation. Real wages (deflated by the CPI, including the direct impact of the consumption tax hikes) are expected to continue to decline throughout the projection period; pension payrolls are also expected to be restrained vis-à-vis price developments. Under these circumstances, households may continue to regard low prices as an important determinant in their expenditure decisions – as confirmed by the recent households' survey. The rise in medium- to long-term expectations for growth and income – together with an alleviation of future concerns over fiscal conditions and the social security system – may gradually lead to a situation where mild inflation is more readily acceptable.
- Such an attitude among households is likely to affect firms' price-setting behavior. Until recently, many firms have found it easier to raise their sales prices since the yen's depreciation and the consumption tax hike provided an opportunity for them to increase the prices of most of their products and services simultaneously and collectively. Nonetheless, price rises are likely to occur only gradually in the near future owing to discount price setting by some firms and preference for low prices by many households. This observation appears to be consistent with the *Tankan's* results, which indicate only a moderate increase in firms' own sales price outlook (Chart 18).
- Wage increases stemming from a labor shortage are likely to generate upward pressure on services prices, but they will not necessarily raise sales prices in an equal proportion. For firms, it may take some time for a stable and positive relationship to emerge between increases in wages and increases in sales prices.

Let me explain the last point in some detail. There are mainly three approaches that can be considered by firms in the face of permanent wage increases: (1) a response by raising labor productivity without generating upward pressures on sales prices; (2) a response by squeezing profit margins without causing an increase in sales prices; and (3) a response by raising sales prices, which is possible in a situation where demand grows for their goods and

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<sup>7</sup> Although interpretation of the survey results requires caution since the survey was conducted for the first time, the decomposition by firm size reveals that small firms reported higher inflation expectations than large firms. This could be attributable to the following: (1) small firms tend to be more affected by high material and input costs; and (2) a great number of large firms may feel that only a moderate increase in their sales prices is feasible.

services. Case (3) will thus lead to a stable rise in sales prices, whereas the increase in sales prices will be limited in cases (1) and (2).

In the transition period toward the new price and wage environment, there will be divergent responses among firms. Some firms will attempt to engage in higher value-added businesses and raise productivity, thereby expanding their market shares. Others may fail to adopt such strategies and have to restructure their businesses, merge with other firms, or close. Thus, the above three cases are likely to coexist for some time.

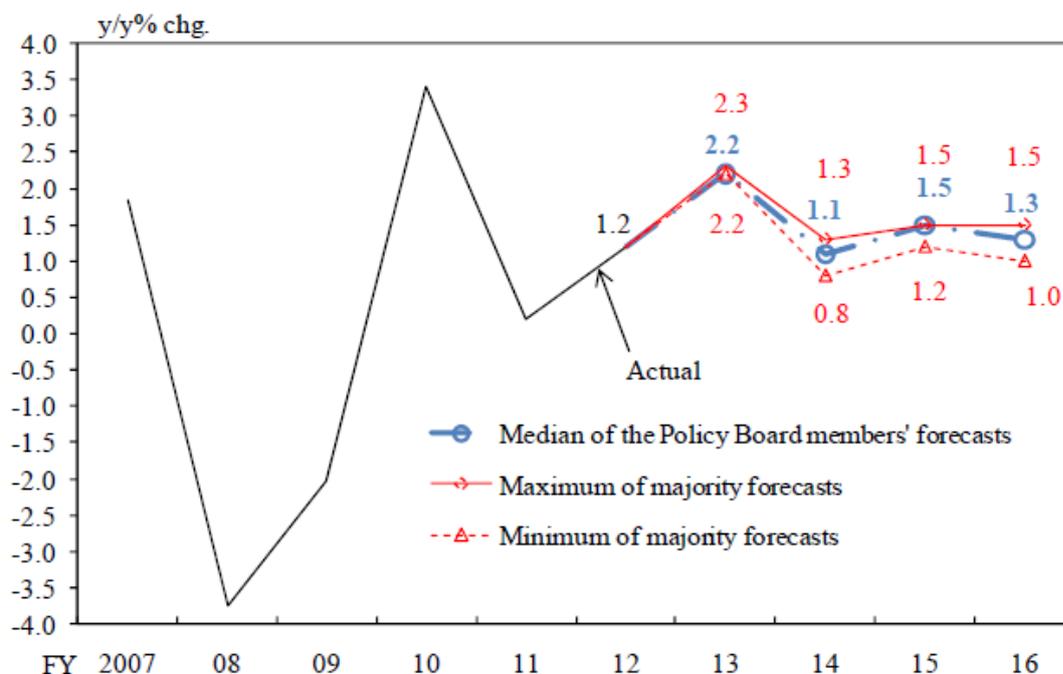
With regard to the overall economic perspective, the rate of wage increases will be roughly equivalent to the sum of (1) the rate of the aggregate price increases and (2) the rate of labor productivity growth. It is expected that the rate of productivity growth will improve toward around 1 percent or somewhat higher over the projection period. Accordingly, the rate of wage increases will exceed the rate of price increases (excluding the temporary effects of the consumption tax hikes) by this magnitude. I consider that the 2 percent inflation is likely to be reached toward the end of the projection period at a moderate pace that does not impose excessive burdens on firms and households. I consider that such a gradual path is likely to lead to a society where the 2 percent inflation is maintained in a stable manner and is desirable for Japan's economy.

This brings me to the end of my speech.

Thank you very much indeed for your kind attention.

Chart 1

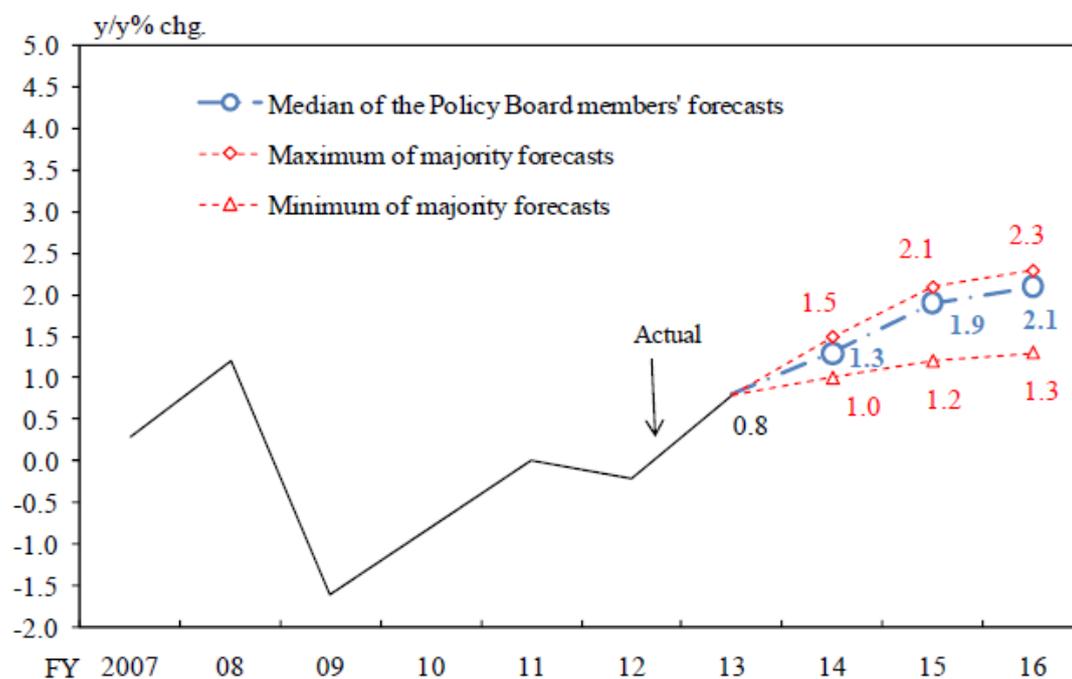
The Bank's Outlook for Economic Activity (Real GDP)



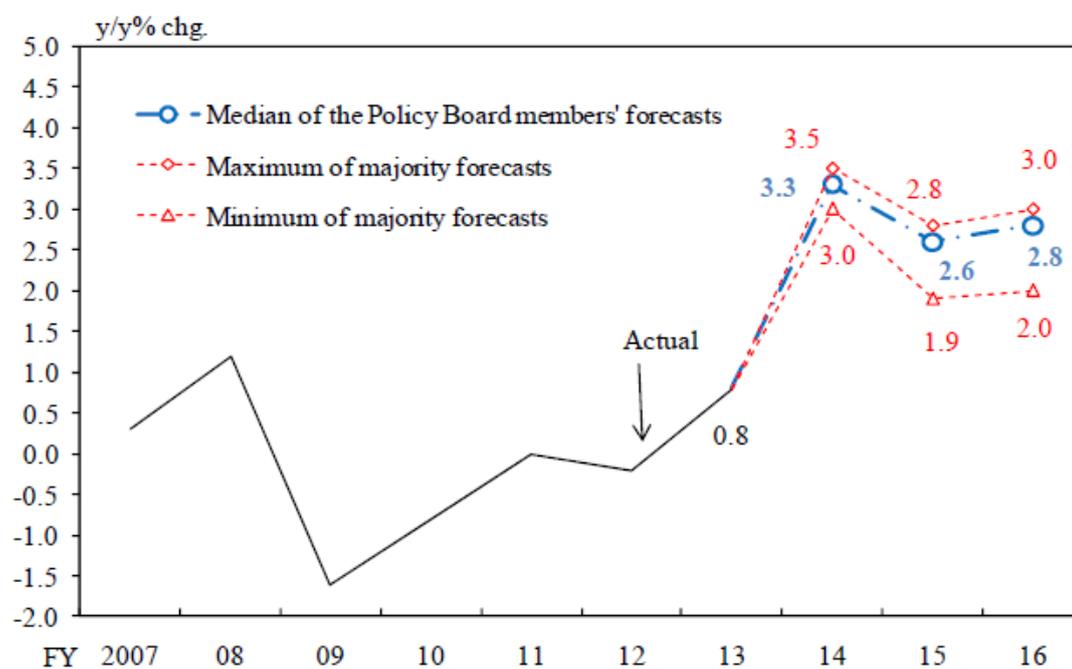
Source: Bank of Japan.

### The Bank's Outlook for Prices (CPI)

#### (1) Excluding the Effects of the Consumption Tax Hikes



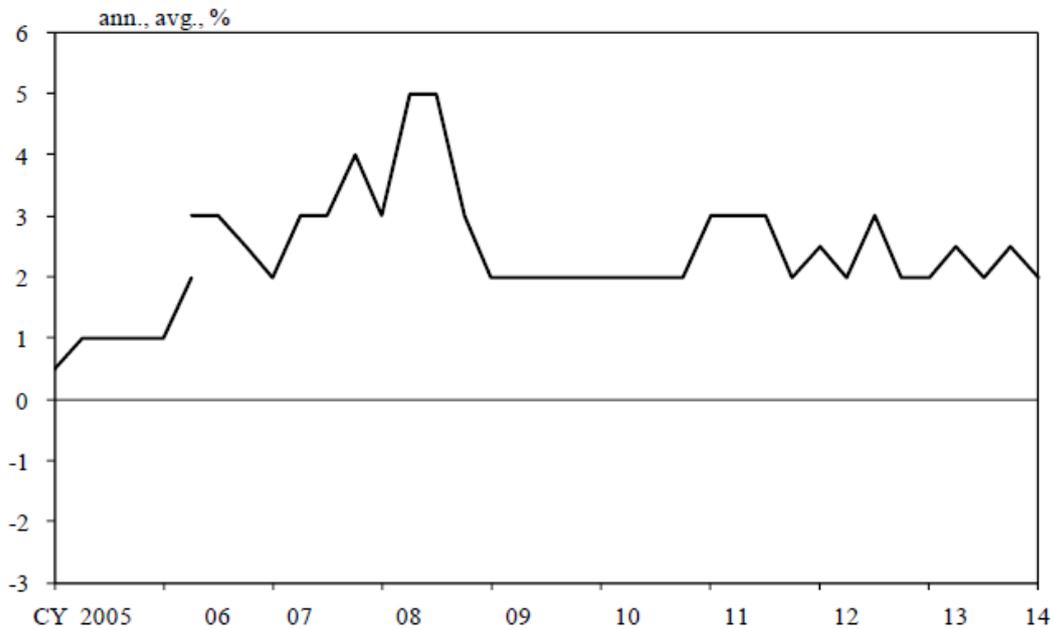
#### (2) Including the Effects of the Consumption Tax Hikes



Source: Bank of Japan.

Chart 3

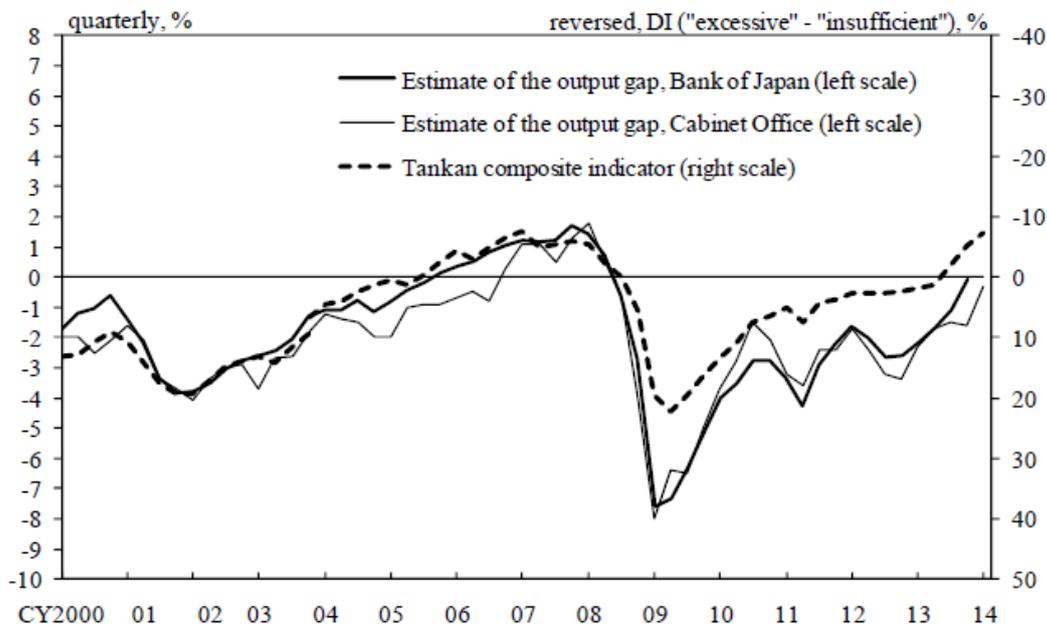
Households' Inflation Expectations over the Next Five Years



Source: Bank of Japan.

Chart 4

Estimates of the Output Gap

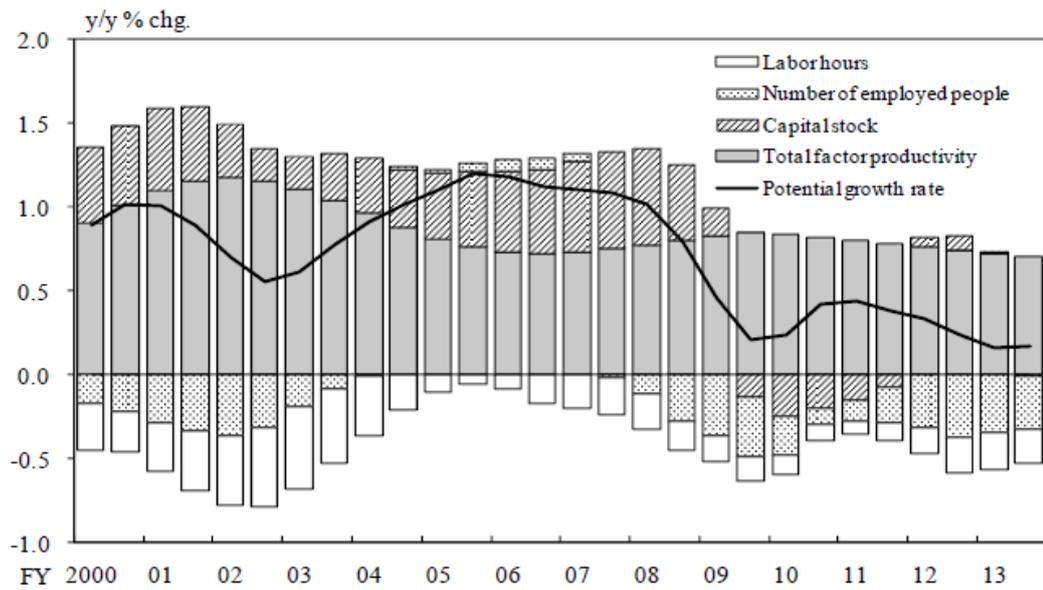


Note: For the estimation procedures of the output gap estimated by the Bank of Japan, see "The New Estimates of Output Gap and Potential Growth Rate," Bank of Japan Review Series, 2006-E-3.

Sources: Cabinet Office; Bank of Japan.

Chart 5

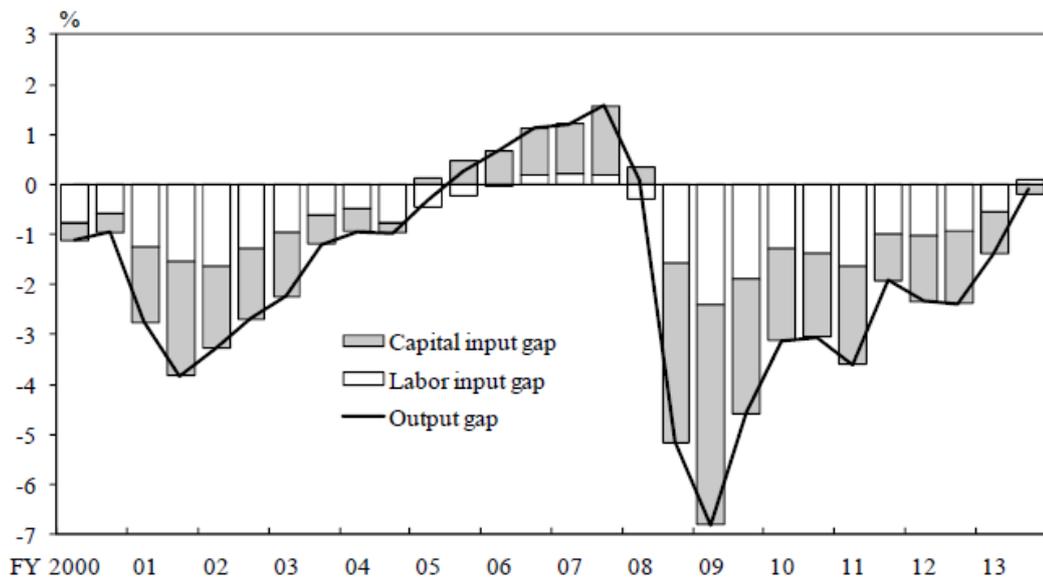
Potential Growth Rate (the Bank's Estimate)



Sources: Cabinet Office; Ministry of Internal Affairs and Communications; Ministry of Economy, Trade and Industry; Ministry of Health, Labour and Welfare; Bank of Japan.

Chart 6

Decomposition of the Output Gap (the Bank's Estimate)



Sources: Cabinet Office; Ministry of Internal Affairs and Communications; Ministry of Economy, Trade and Industry; Ministry of Health, Labour and Welfare; Bank of Japan.

Chart 7

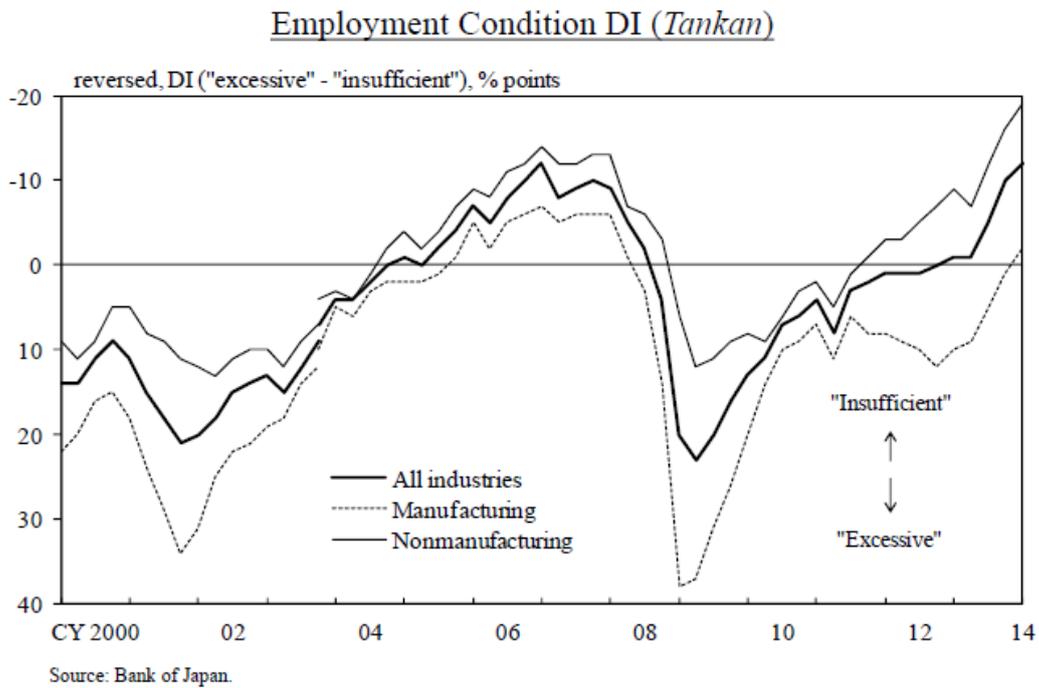


Chart 8

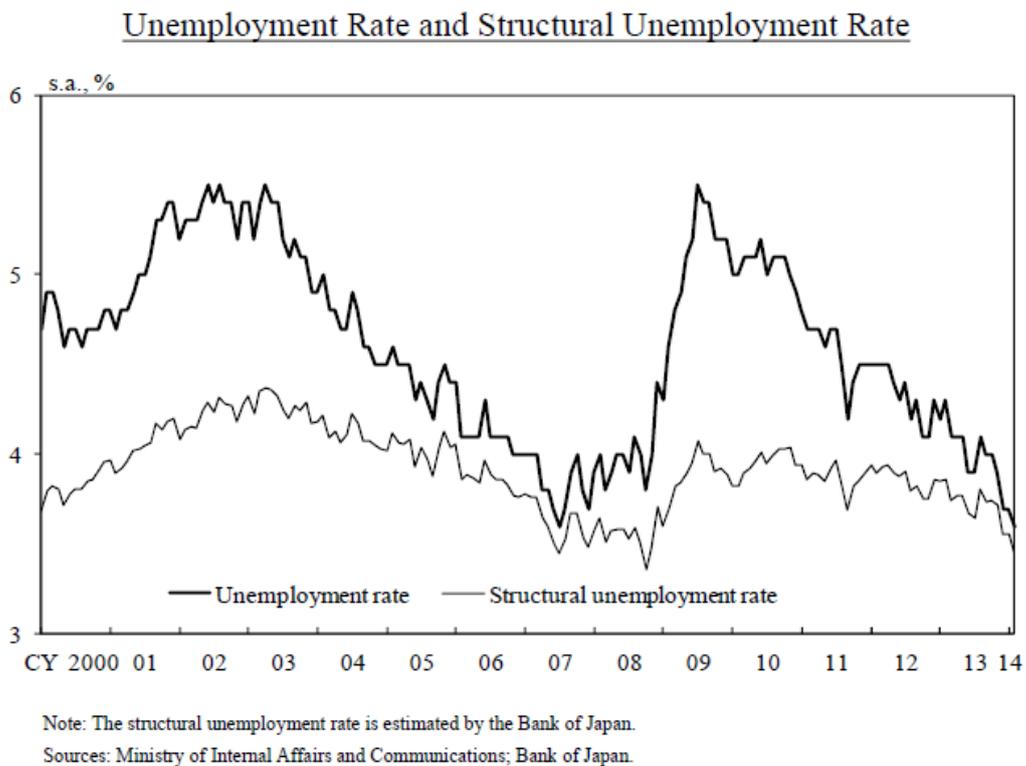
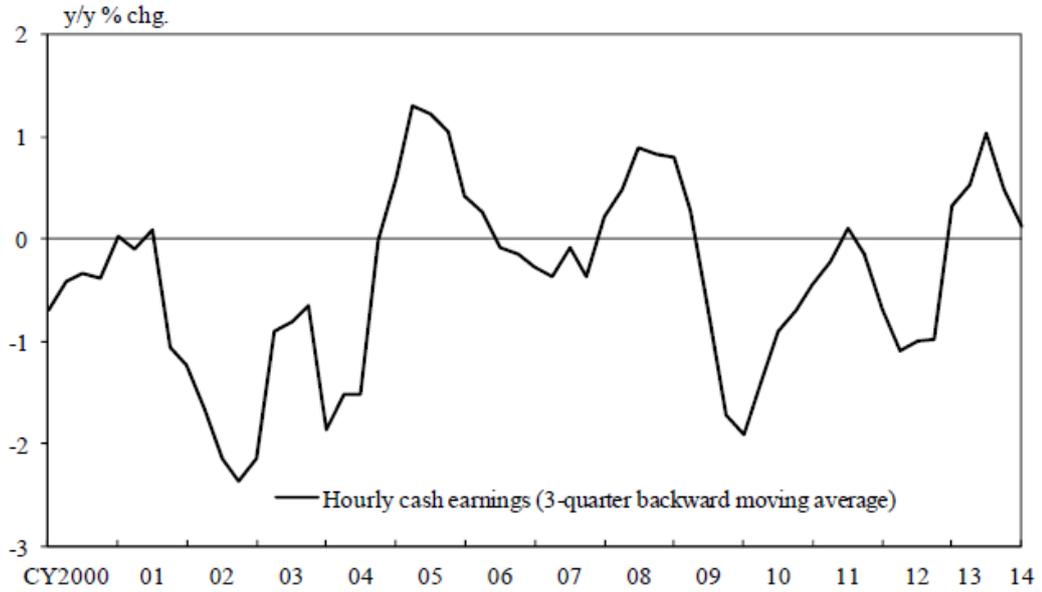


Chart 9

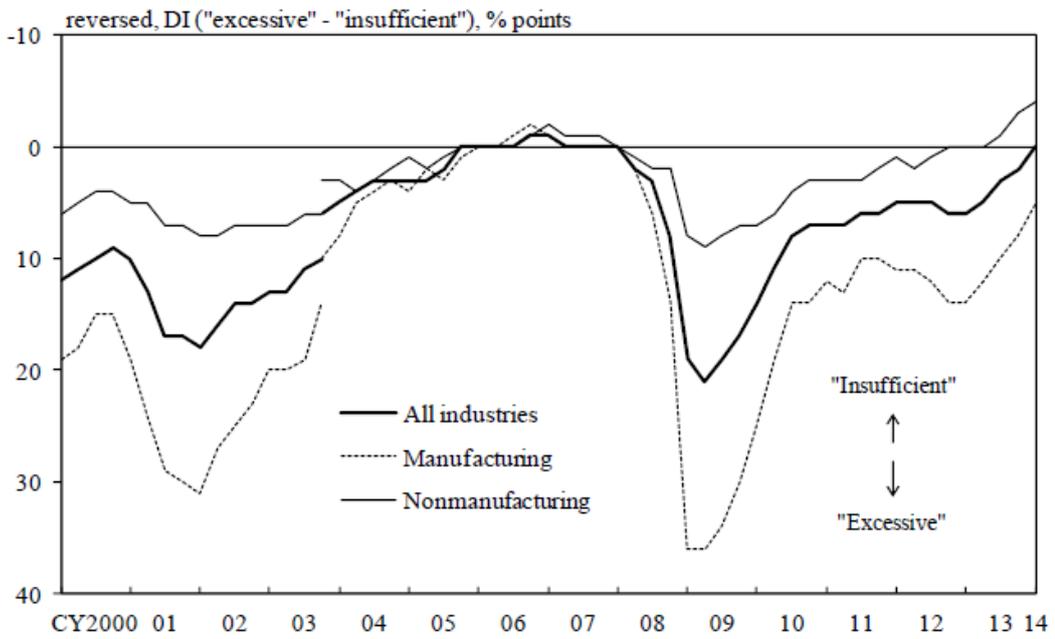
Hourly Cash Earnings (All Workers)



Note: "All workers" includes full-time workers and part-time workers.  
Source: Ministry of Health, Labour and Welfare.

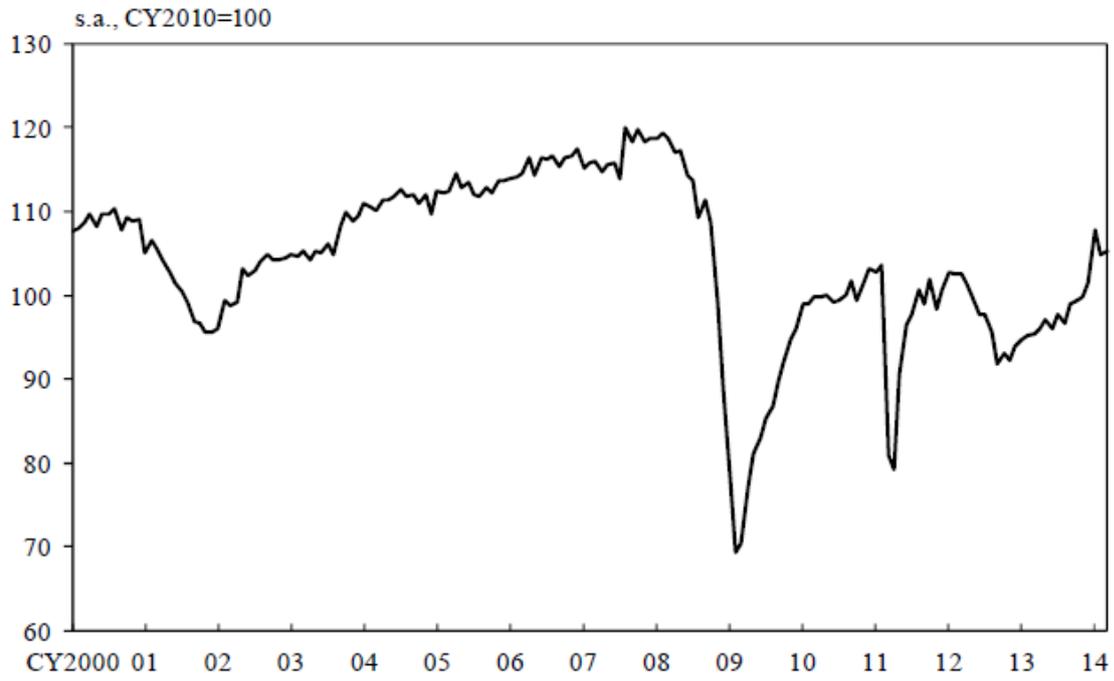
Chart 10

Production Capacity DI (*Tankan*)



Source: Bank of Japan.

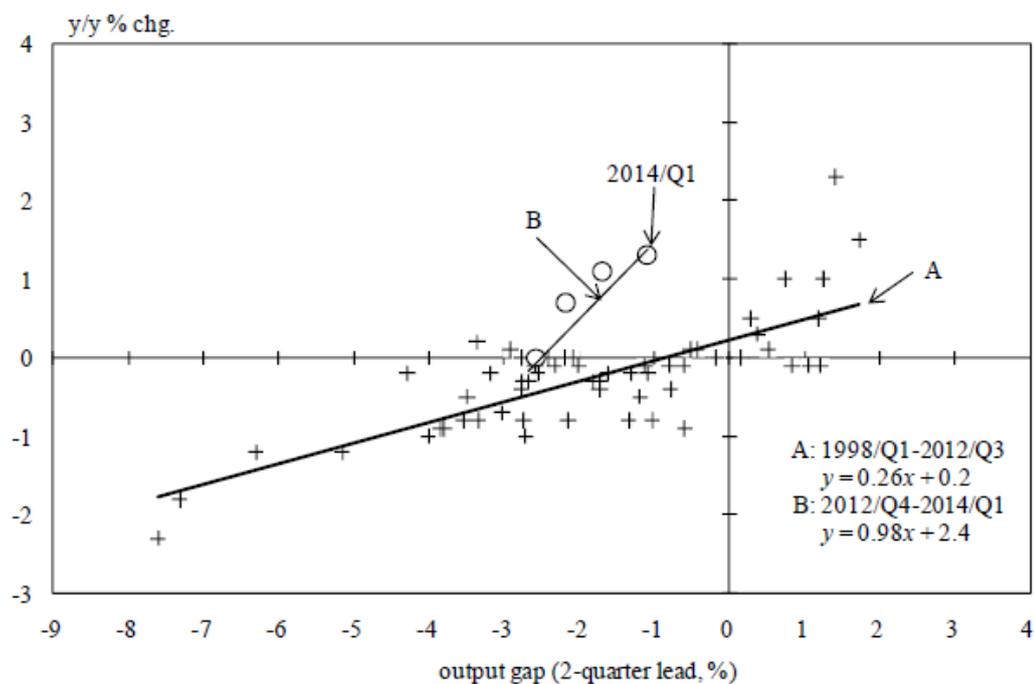
Capital Utilization Ratio (Manufacturing)



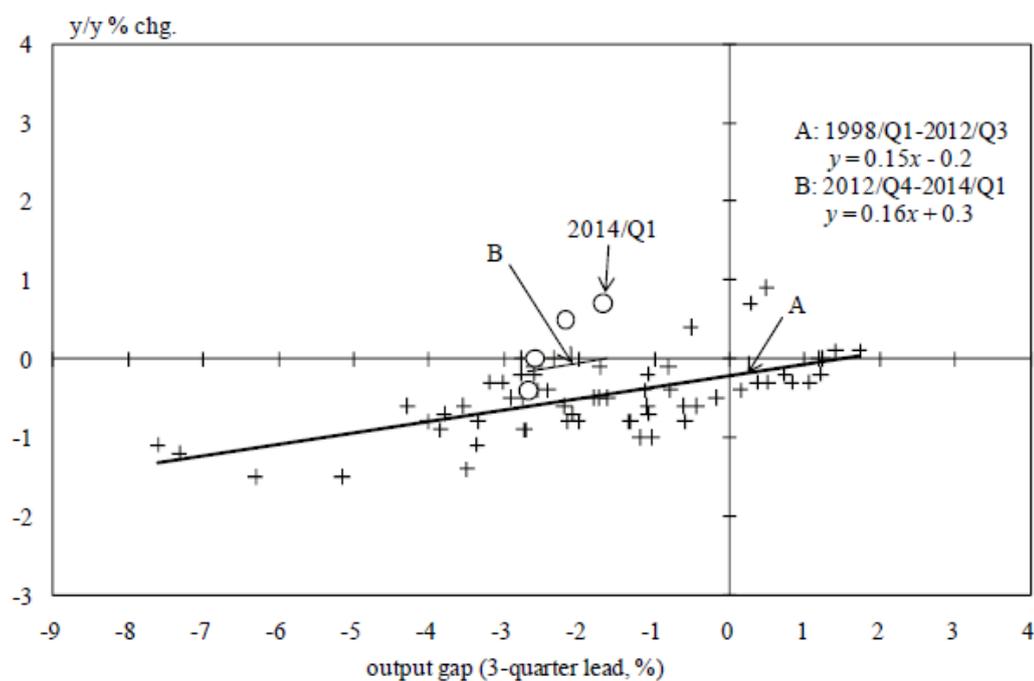
Source: Ministry of Economy, Trade and Industry.

### Estimated Phillips Curve

(1) Phillips Curve (CPI All Items Less Fresh Food)



(2) Phillips Curve (CPI All Items Less Food and Energy)

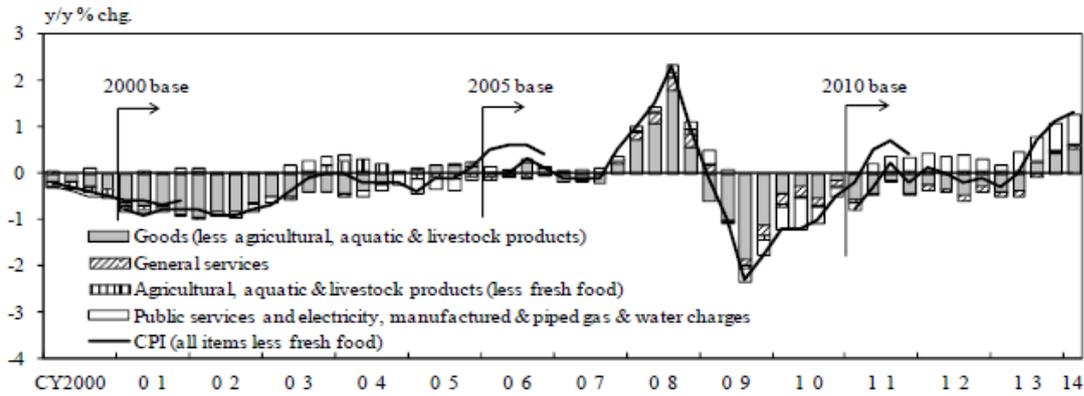


Note: The output gap is estimated by the Bank of Japan.

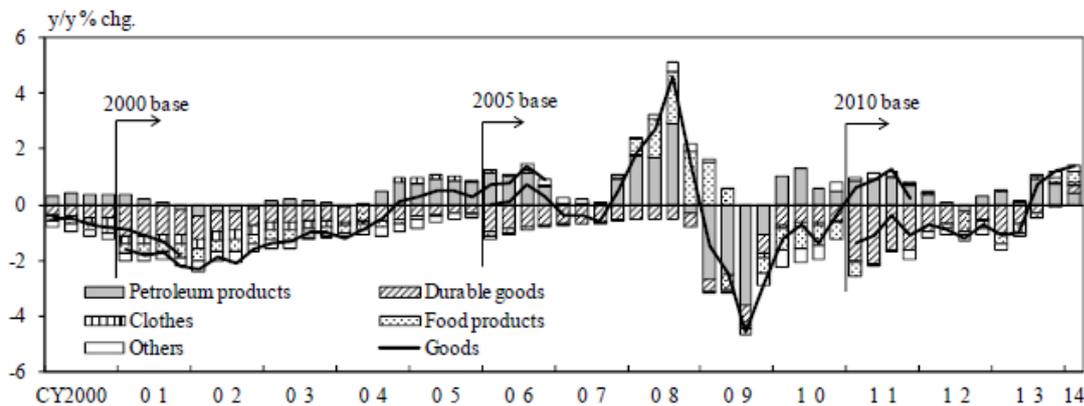
Sources: Ministry of Internal Affairs and Communications; Cabinet Office; Bank of Japan.

### Consumer Price Index

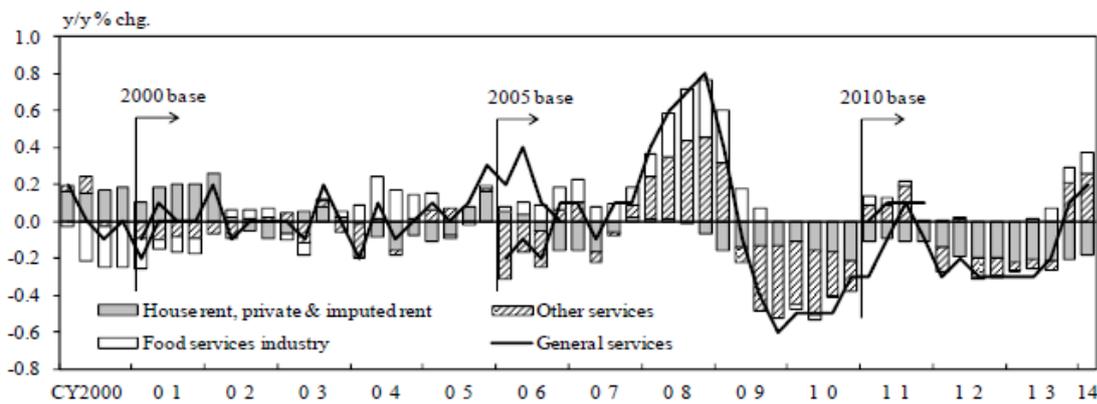
(1) Consumer Price Index (All Items Less Fresh Food)



(2) Goods (Less Agricultural, Aquatic & Livestock Products)



(3) General Services

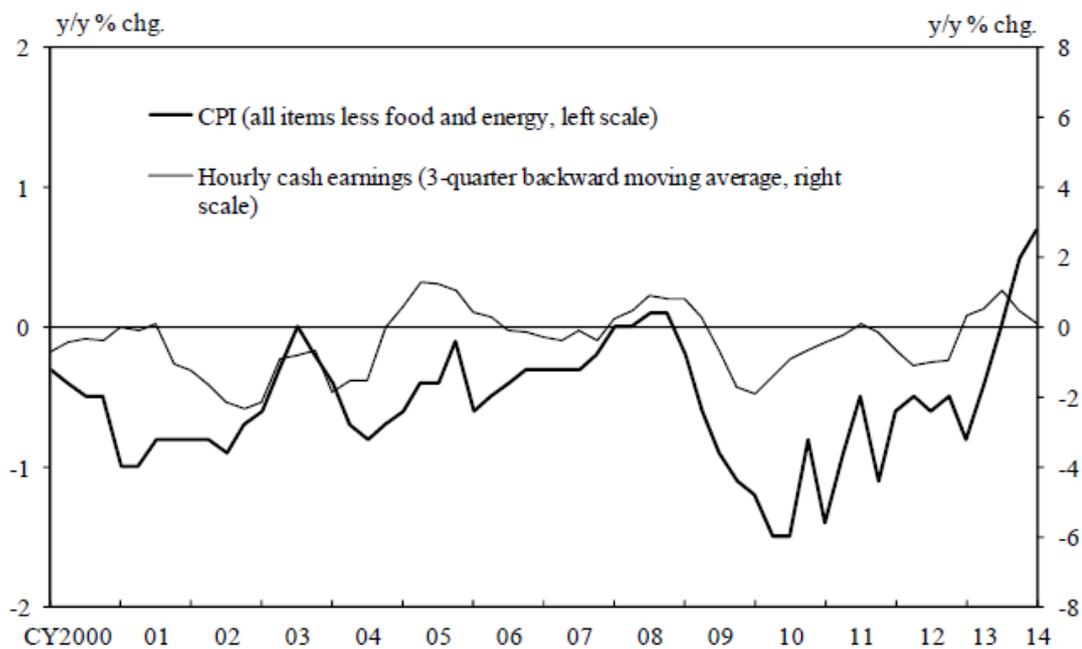


Notes: 1. The items are basically the same as those defined by the Ministry of Internal Affairs and Communications. However, electricity, manufactured & piped gas & water charges are excluded from goods. Clothes include shirts, sweaters & underwear.

2. Alcoholic beverages are excluded from food.

Sources: Ministry of Internal Affairs and Communications; Bank of Japan.

Wages and Prices (Changes from the Previous Year)

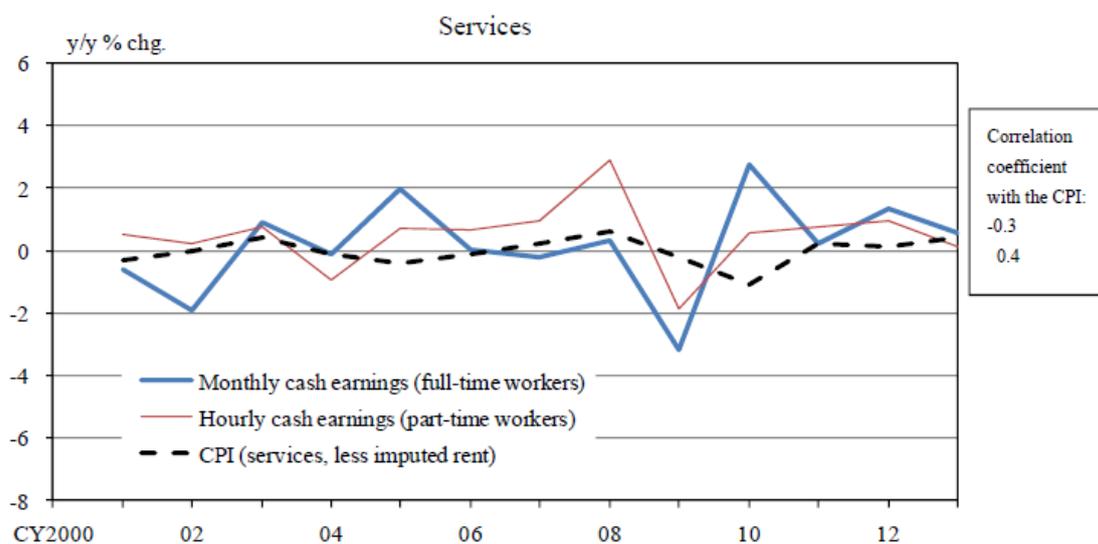
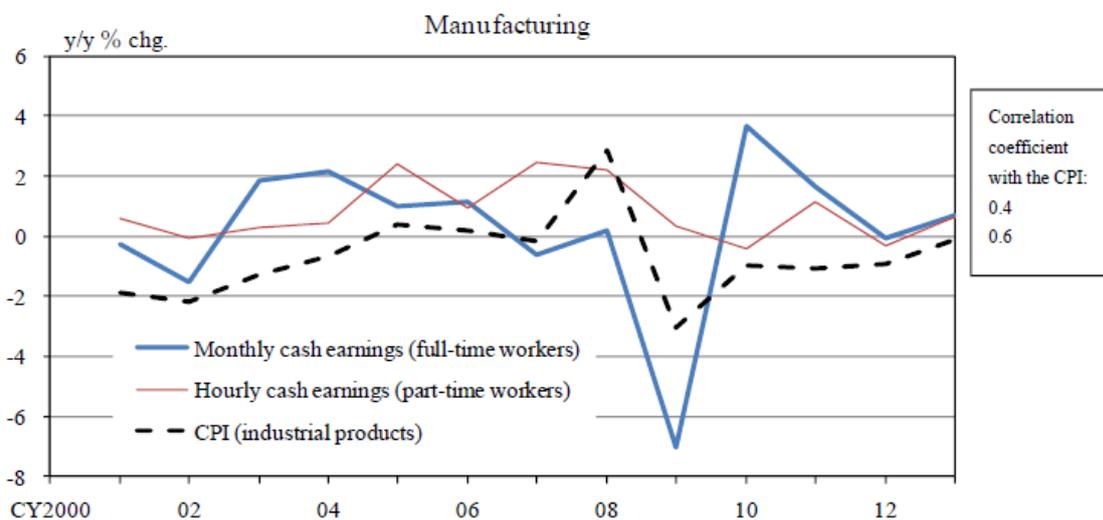


Note: Hourly cash earnings are for "all workers" which includes full-time workers and part-time workers.

Sources: Ministry of Internal Affairs and Communications; Ministry of Health, Labour and Welfare.

Chart 15

Wages and Prices by Industry (Changes from the Previous Year)

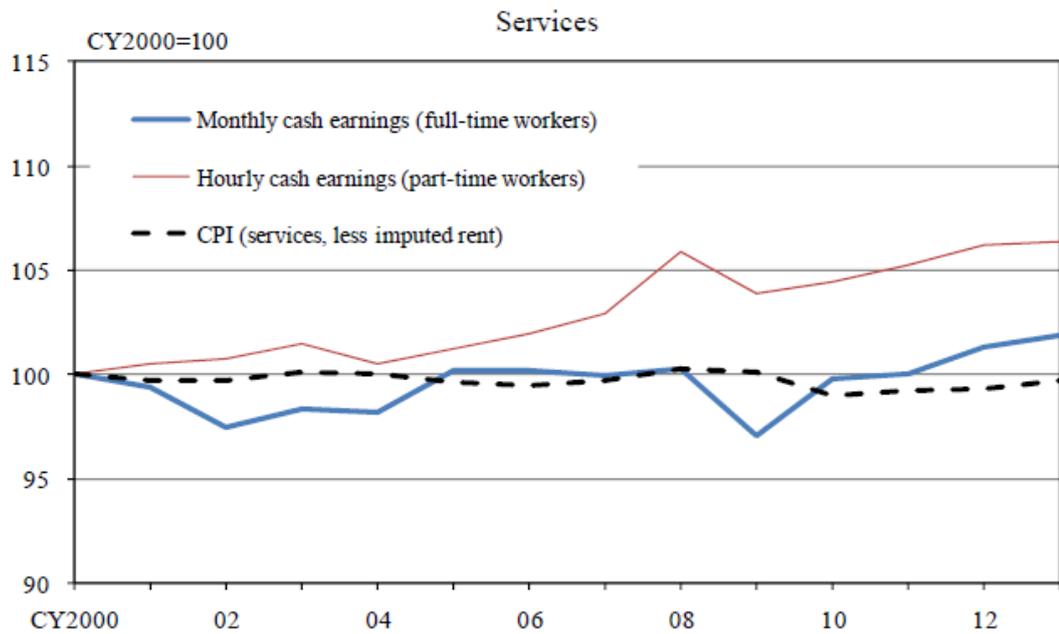
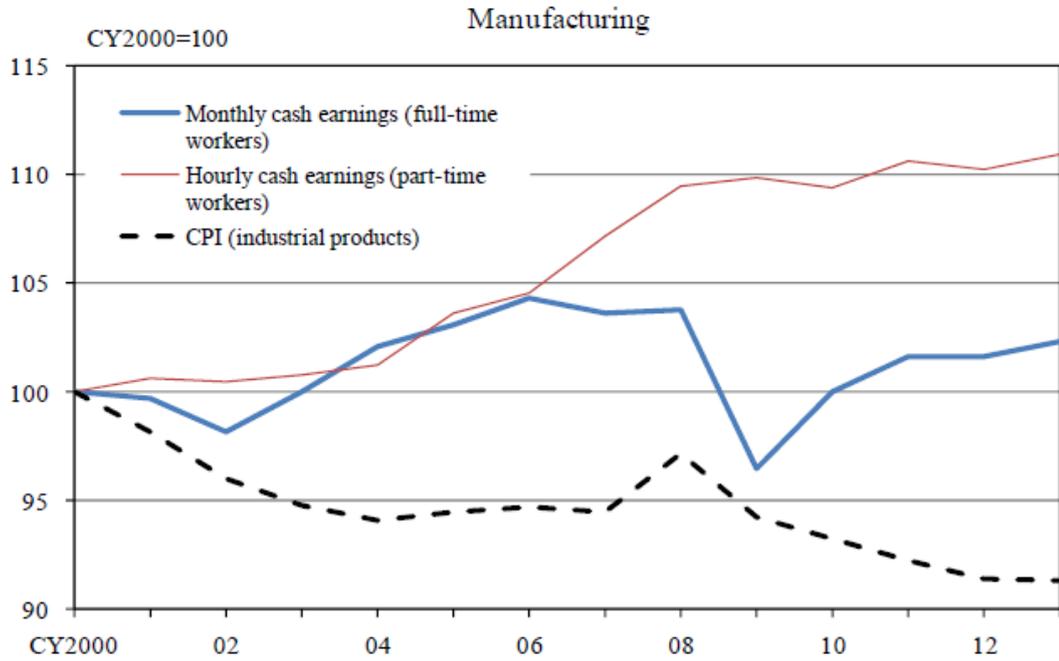


Notes: 1. When examining wage developments, it is useful to separate cash earnings data into those for *full-time* workers and those for *part-time* workers, and look at the year-on-year rate of change in *monthly* cash earnings for full-time workers and that in *hourly* cash earnings for part-time workers. This is because (1) this could remove the effects of the decline in average wages caused by the uptrend in the proportion of part-time workers; and (2) *hourly* cash earnings better capture wages of part-time workers, whose working hours tend to be unstable.

2. Owing to data constraints and for simplicity the figures for "wholesale and retail trade" are used as a proxy for the services sector, from the "Monthly Labour Survey," published by the Ministry of Health, Labour and Welfare.

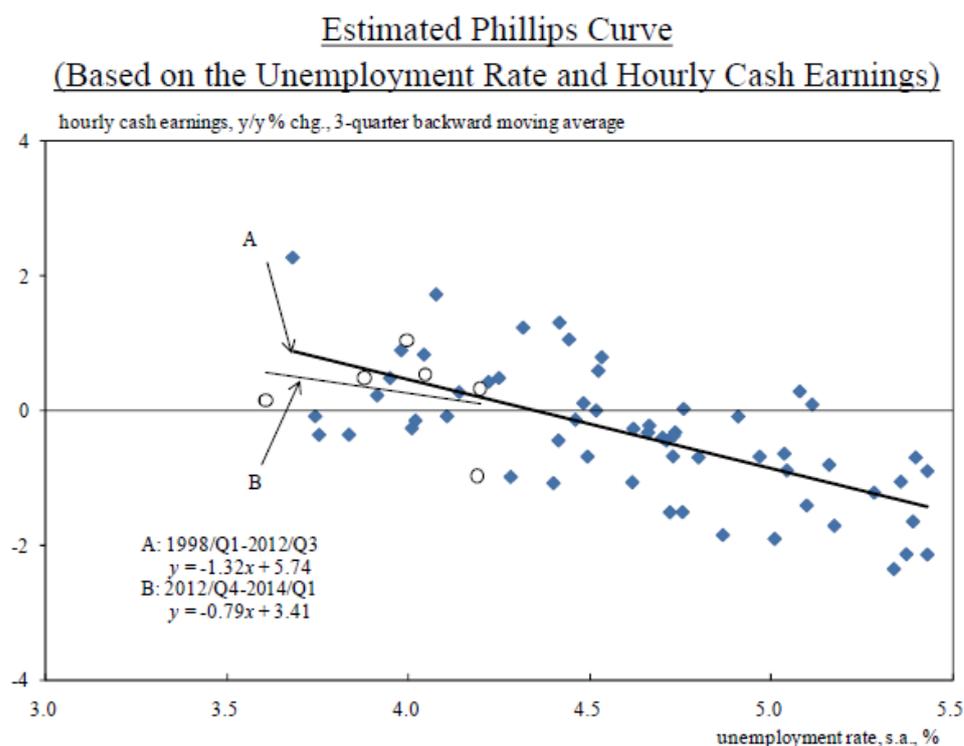
Sources: Ministry of Internal Affairs and Communications; Ministry of Health, Labour and Welfare.

Wages and Prices by Industry (Level)



Sources: Ministry of Internal Affairs and Communications; Ministry of Health, Labour and Welfare.

Chart 17



Sources: Ministry of Internal Affairs and Communications; Ministry of Health, Labour and Welfare; Bank of Japan.

Chart 18

Firms' Inflation Expectations

## (1) Outlook for General Prices

	y/y % chg.		
	1 year ahead	3 years ahead	5 years ahead
All firms	1.5	1.7	1.7
Large firms	1.1	1.3	1.3
Small firms	1.7	1.9	1.9

## (2) Outlook for Sales Prices

	% chg. relative to the current level		
	1 year ahead	3 years ahead	5 years ahead
All firms	1.1	1.8	2.1
Large firms	0.6	0.6	0.7
Small firms	1.5	2.4	2.9
(Note) All firms	1 year ahead	1 to 3 years ahead	3 to 5 years ahead
	1.1	0.7	0.3

Source: Bank of Japan.