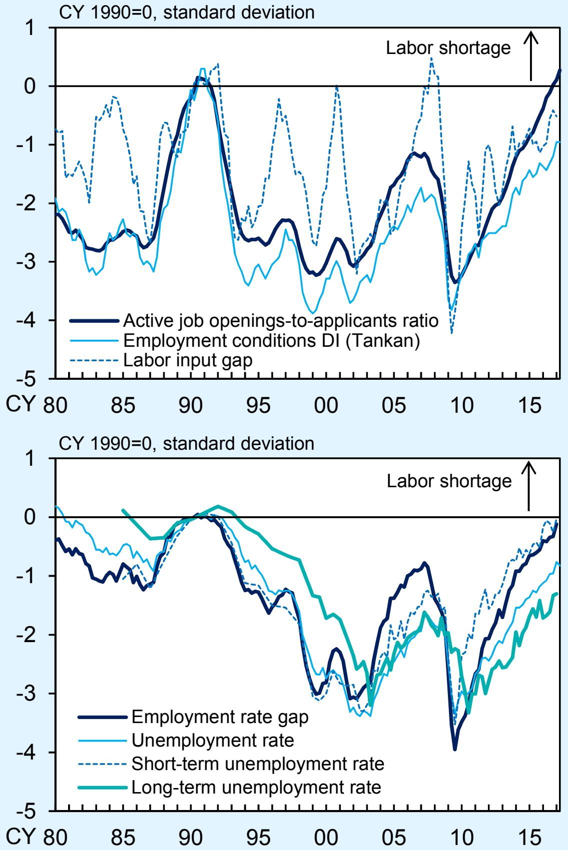
(Box 1) The Relationship between Labor Market Conditions and Wages in Recent Times

A question often heard lately is why wages are not increasing despite the labor shortage.[30] While Box 2 examines why wages are not increasing, Box 1 examines the facts regarding the relationship between labor market conditions and wages in recent times.

The recent degree of labor market tightness has been at around or slightly below the peak level during the bubble period ("the bubble peak level"). Chart B1-1 shows developments in a number of measures of labor slack. To allow for comparison, series in the chart are normalized using the standard deviation. The chart indicates the following: (1) the active job openings-to-applicants ratio, the short-term unemployment rate, and the employment rate gap have tightened to such an extent that they have now reached the bubble peak levels, while (2) the employment conditions DI in the *Tankan*, the unemployment rate, the long-term unemployment rate, and the labor input gap have remained slightly slack relative to the bubble peak levels.[31,32]

Chart B1-1: Various Measures of Labor Slack



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

Notes: 1. Figures for each labor slack measure are normalized by the standard deviation after 1990.
2. Figures for active job openings-to-applicants ratio and unemployment rate for 2017/Q2 are April-May averages.
3. The labor input gap and employment rate gap are based on staff estimations.
4. Figures for the short- and long-term unemployment rates up through 2001 are not seasonally adjusted, since they are on a semiannual or annual basis.

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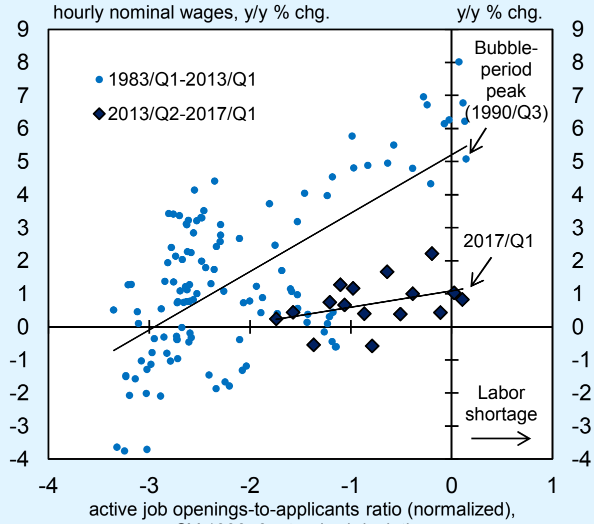
[30] See, for example, Yuji Genda ed., *Hitode Busoku nanoni Naze Chingin ga Agaranainoka* (*Why Wages Are Not Increasing despite the Labor Shortage*), Keio University Press Inc., 2017 (available only in Japanese).

[31] The employment rate gap indicates a gap between the unemployment rate and the structural unemployment rate, which is calculated based on the idea of the so-called Beveridge Curve. The labor input gap is defined as a gap between labor input and potential labor input, and calculated by adding up (1) the employment rate gap, (2) the labor force input gap (i.e., deviation from the trend of the labor force participation rate), and (3) the hours worked gap (i.e., deviation from the trend of working hours per

Although, as indicated by these various measures, the labor market has been as tight as during the bubble period, wages have been increasing at a slower pace than during that period. Chart B1-2, using the active job openings-to-applicants ratio as the measure of labor market conditions, shows that there is a positive correlation between nominal wage increases and the degree of labor market tightness ("wage Phillips curve"). However, when looking only at data from 2013 onward, the curve appears to have shifted downward and flattened. As a result, while nominal wages around 1990 rose at a rate of 5-6 percent, which is the bubble peak level, they have been rising only at a rate of around 1 percent recently.

Chart B1-2: Wage Phillips Curve



Source: Ministry of Health, Labour and Welfare.
Notes: 1. For hourly nominal wages: Q1 = March-May, Q2 = June-August, Q3 = September-November, Q4 = December-February.
2. Figures for hourly nominal wages up through 1990 are for establishments with 30 or more employees.
3. The solid lines show the fitted regression lines for each period.

Therefore, it is not the case that wages are not increasing at all despite the labor shortage; rather, the increase has not been sufficiently noticeable despite the tight labor market conditions.

worker). For details, see the Bank's research paper "Methodology for Estimating Output Gap and Potential Growth Rate: An Update" released in May 2017.

[32] The degree of labor market tightness differs for each measure. Such difference mainly depends on the following: (1) to what extent the long-term unemployment rate is regarded as structural (i.e., to what extent the long-term unemployment rate, which is the result of hysteresis of prolonged stagnation in the past, could possibly decline amid the continued economic expansion); (2) a margin of working hours, which is taken into account only by the labor input gap; and (3) the size and industry of sample firms -- that is, the *Tankan* survey limits its sample firms to those in the private sector capitalized at more than or equal to 20 million yen and excludes those in the quasi-public sector, such as health and medical care, as well as welfare, which face acute labor shortage.