

(Box 2) Wage Negotiations and Inflation Expectations

In comparison with the United States and Europe, wage negotiations in Japan are more affected by past inflation, including the fluctuations of energy prices. This indicates that the wage-setting process in Japan is characterized as more backward-looking than in the United States and Europe.

In order to quantify this, a simple "hybrid-type wage-version of the Phillips curve" is estimated by regressing nominal negotiated wages in Japan, the United States, and Germany using the following three variables: medium- to long-term inflation expectations, the past inflation rate, and the unemployment rate gap.²⁹ The estimation results reveal the following: (1) in the United States and Germany, the coefficients on medium- to long-term inflation expectations (α_1 in Box Chart 2 [1]) are substantially large, while the coefficients on the past inflation rate ($1 - \alpha_1$) are low in statistical significance; on the other hand, (2) as for the rise in base pay in Japan, the coefficients on medium- to long-term inflation expectations and the past inflation rate are both statistically significant, and the impact of the latter somewhat outweighs that of the former.

Since the end of 2014, the headline inflation rate has been lowered significantly in Japan, the United States, and Germany, affected by the decline in crude oil prices (Box Chart 2 [2]). The decline in the past inflation rate due to the decline in crude oil prices clearly has exerted downward pressure on the base pay increase in Japan, while its impact on wages in the United States and Germany is limited (Box Chart 2 [3]). This difference is partly due to the fact that, as the negotiated wages are applicable for a longer time in the United States and Germany than in Japan, medium-term inflation tends to be taken into account in the wage negotiations in these countries (Box Chart 2 [4]). On such occasions, the inflation targets set by respective central banks are an important reference. For instance, many labor unions in Germany are known to attach more importance in their wage negotiations with firms to the

²⁹ For the impact of medium- to long-term inflation expectations on firms' wage-setting behavior, see "Firms' Inflation Expectations and Wage-setting Behaviors," Bank of Japan Working Paper Series (2016-E-10).

quantitative definition of price stability by the ECB -- inflation rate of below, but close to, 2 percent -- than to the past inflation rate.³⁰

³⁰ See, for example, "The Phillips curve as an instrument for analyzing prices and forecasting inflation in Germany" in the April 2016 *Monthly Report* published by the Deutsche Bundesbank.

Negotiated Wages and Inflation Expectations

(1) Base Pay Increase and Inflation Expectations

<Estimation Equation>

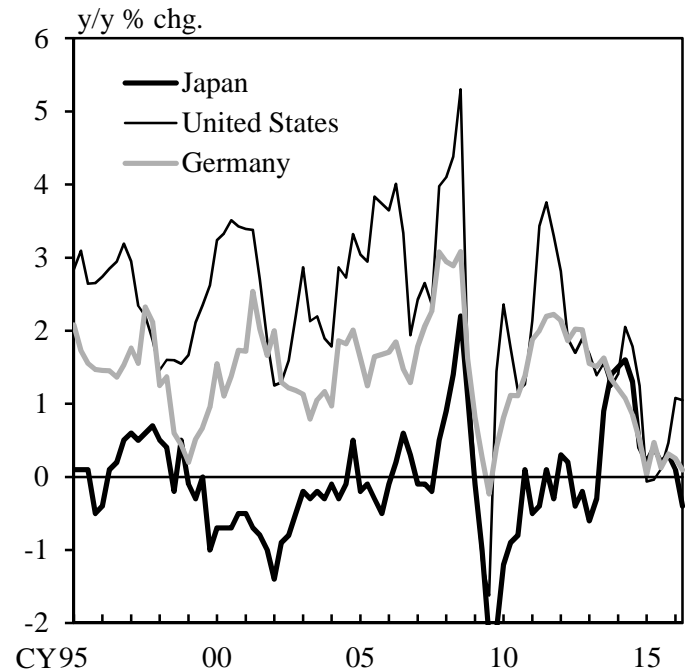
Base pay increase (y/y % chg.)
 = α_0 (constant)
 + $\alpha_1 \times$ Medium- to long-term
 inflation expectations
 (6 to 10 years ahead, %)
 + $(1 - \alpha_1) \times$ Past inflation rate
 (4-quarter average, %)
 + $\alpha_2 \times$ Unemployment rate gap (%)

<Estimation Results>

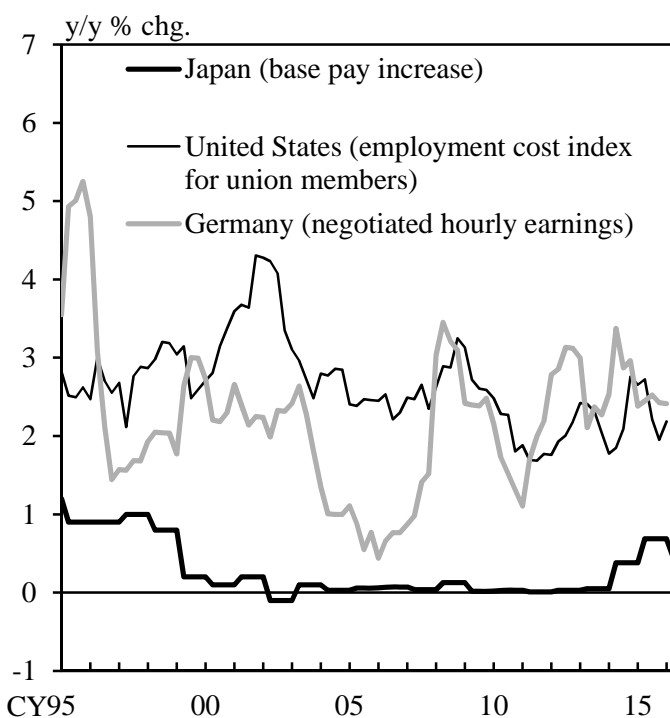
	α_0	α_1	$1 - \alpha_1$	α_2	S.E.
Japan	-0.10	0.38**	0.62***	0.05	0.47
United States	0.23***	0.86***	0.14*	-0.05	0.56
Germany	0.52***	0.86***	0.14	-0.51***	0.69

Estimation Period: FY 1991-2016 for Japan,
 1995/Q1-2015/Q4 for the United States and Germany.
 ***, **, and * denote statistical significance at the 1%, 5% and 10%
 levels, respectively.

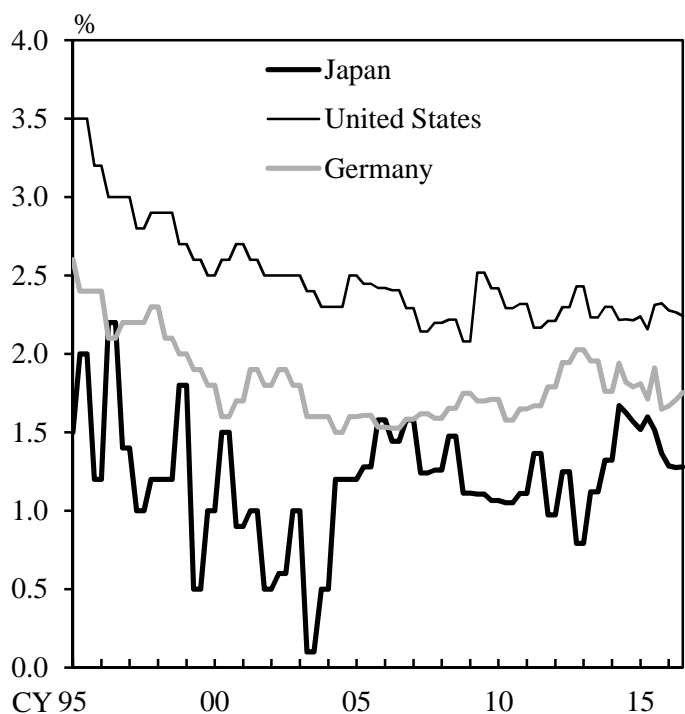
(2) Past Inflation Rate (CPI) in Each Country



(3) Base Pay Increase in Each Country



(4) Medium- to Long-Term Inflation Expectations in Each Country



Notes: 1. Figures for the medium- to long-term inflation expectations are the expectations for the CPI 6 to 10 years ahead and are based on the "Consensus Forecasts."

2. Figures for the past inflation rate are based on the CPI (all items). Figures for the CPI in Japan are adjusted to exclude the estimated effects of changes in the consumption tax rate.

3. The unemployment rate gap used in the estimation is estimated by the Research and Statistics Department, Bank of Japan.

4. Figures for the employment cost index for the United States are based on wages and salaries, which include bonuses.

Sources: Central Labour Relations Commission; Japanese Trade Union Confederation (*Rengo*); Ministry of Internal Affairs and Communications; BLS; CBO; Federal Statistical Office of Germany; Deutsche Bundesbank; Consensus Economics Inc., "Consensus Forecasts."