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Bank of Japan

Lessons of Japan: Focusing on Issues regarding Long-Term Inflation Expectations

Speech at Yale University in New Haven

Takehiro Sato
Member of the Policy Board

Introduction

First of all, I thank Senior Fellow Stephen Roach for giving me the opportunity to talk to this esteemed audience at Yale. I understand that he teaches macroeconomic policy issues, focusing on the lessons Japan learned from deflation. The Bank of Japan is the frontrunner in combating deflation. As one of its board members, I hope that my remarks today will help stimulate academic discussion.

Deflation has prevailed for almost a quarter century in Japan. To overcome deflation, theory and practice were introduced and tested, and the policy effects were examined. As a result, a range of knowledge and wisdom has been acquired. The Bank, on its part, conducted a comprehensive assessment of quantitative and qualitative monetary easing -- or QQE for short -- in September last year, and learned some important lessons. Among these, I will today focus on the issues regarding long-term inflation expectations. This is because they are the key factor in overcoming deflation. I admit that conceiving such expectations is a somewhat elusive task, but it is worth discussing.

I. Lessons of Japan

A. Determinants of Long-Term Inflation Expectations

Japan's experience refutes the premise for monetary policy that long-term inflation expectations are determined by a central bank (Chart 1).[1] This is because monetary policy effects are asymmetric when a central bank decreases long-term inflation expectations toward the target and when it raises them toward the target.

In other words, once long-term inflation expectations -- the norm of prices -- are de-anchored, a central bank's ability to influence inflation is constrained significantly due to the zero interest rate bound. Those in academia might feel that this is somewhat troublesome. In fact, however, when a central bank re-anchors long-term inflation

[1] In its Statement on Longer-Run Goals and Monetary Policy Strategy (adopted effective January 24, 2012; as amended effective January 26, 2016), the Federal Reserve indicated that "The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation." See Board of Governors of the Federal Reserve System (2016).

expectations toward the target, there will be a limit if monetary policy is the only game in town. What is needed, in addition to continued powerful monetary easing, is a raise in the potential growth rate, which roughly equals the natural rate of interest. This should be achieved through structural policies including labor market reform.[2]

Academic discussion is seriously needed on this point. This is because Japan is not the only country that has learned lessons on deflation. Namely, simultaneous declines in the potential growth rate and long-term inflation expectations have been observed in many countries since the latest global financial crisis (Chart 2).

B. Negative Effects of Excessively Low Long-Term Inflation Expectations

Let me elaborate. The more fundamental lesson we learned was that central banks should not allow long-term inflation expectations to decline to excessively low levels.

Central banks can lower excessively high long-term inflation expectations because of the credibility they have earned through the past achievements. The fight against inflation is easier and the strategy can be simpler compared with combating deflation. There is a premise for economic theory that holds true with the fight against inflation; namely, long-term inflation expectations are determined by inflation targets set by central banks.

By contrast, an inflation target will not be the basis for an economic model when set by a central bank that has lost credibility due to excessively low inflation. For example, the declines in the potential growth rate and long-term inflation expectations occurred simultaneously in Japan. However, the academic side of economics has yet to provide an answer as to whether it is possible to raise excessively low long-term inflation expectations through monetary policy. This is because of the present unique situation in Japan -- as I will touch on later -- that long-term inflation expectations are at virtually 0 percent and the potential growth rate is at slightly above 0 percent, while there is a zero nominal interest rate bound to usual economic transactions.

[2] The original "three-arrows" strategy of the Abe administration had a positive implication that fiscal and monetary policies combined would support structural policies.

In reality, even under a large-scale unconventional monetary policy, both the mechanism of Friedman's quantity theory of money and the New Keynesian model of a jump in expectations have operated insufficiently so far. In terms of re-anchoring long-term inflation expectations, the glass is both half full and half empty. If the potential growth rate and long-term inflation expectations had not declined to the current low levels, monetary policy would have been more effective.

Next, I will discuss long-term inflation expectations in the following aspects: (1) their formation mechanism; (2) reasons for low expectations in Japan; (3) the relationship with Japan's financial crisis; and (4) the relationship with labor market reform.

II. Issues regarding Long-Term Inflation Expectations

A. Formation Mechanism

In economics theory, long-term inflation expectations are irrelevant to the potential growth rate. However, I doubt that this holds true in reality, in light of what is happening in Japan. Rather, I think that long-term inflation expectations and the potential growth rate do have a correlation, although it may not be strong (Chart 3).

Long-term inflation expectations declined sharply in Japan, before and after the financial crisis in the late 1990s. Economic fundamentals already had been weak before the crisis because of the negative interaction between demand and supply conditions; specifically, (1) a negative financial accelerator on the demand side due to the dire asset price deflation, and (2) the impairment of the financial intermediary function, as well as the distortion of economic resource allocation caused by the bubble economy on the supply side. The financial crisis triggered further weakening of economic fundamentals (Chart 4). In this situation, pessimism about the future led to a decline in people's expectations for medium- to long-term growth, and the potential growth rate remained low over a long period of time. As a result, people's perception of prices became excessively conservative. In other words, long-term inflation expectations turned downward.

B. Reasons for Low Expectations in Japan

Next, let us take a look at developments in survey-based measures of expected long-term inflation in Japan. A survey-based rate marked a sharp decline during the period of the financial crisis in the late 1990s, and then leveled out at around 1 percent. Since then, even throughout the period of the global financial crisis and the European sovereign debt crisis, it has been more or less unchanged at around 1 percent (Chart 5). However, I am somewhat doubtful about this figure.[3] I believe that it is more persuasive to say that long-term inflation expectations in Japan have actually declined to around 0 percent, for the following four reasons.[4]

First, the frequency of micro-level price changes suggests that the mode value remains zero. In other words, the year-on-year rate of increase in the prices of sample items concentrated on 0 percent. Therefore, people are likely to consider that zero inflation is a steady and constant state. It is helpful to see the comparison with the U.S. situation (Chart 6).[5]

Second, administered prices are excessively sticky (Chart 7).[6,7] For example, the starting subway fare in Tokyo has been unchanged for over 20 years since 1995 -- disregarding the effects of the consumption tax hikes.

[3] Market-based measures of long-term inflation expectations -- such as the 5-year, 5-year forward inflation swap rate -- have less credibility than survey-based ones in Japan, due to a lack of market liquidity and depth, and therefore do not represent a useful reference.

[4] On this point, it seems intuitively unlikely that many of the surveyed economists project that the inflation rate will remain at about 0 percent over the next 5-10 years. On the other hand, there might be a disparity between the perception of prices of economists and that of households and firms, i.e., long-term inflation expectations of households and firms might be lower than those of economists.

[5] See Watanabe and Watanabe (2016).

[6] In reality, amid the prolonged economic stagnation in Japan, a mechanism was established firmly in which the rise in costs for administered prices was compensated for by fiscal deficits reflecting the increasing political pressure to avoid the rise in administered prices. Such a process itself suggests a decline in long-term inflation expectations, which is the norm of prices.

[7] See Shintani, Kurachi, and Nishioka (2016).

Third, the rate of increase in wages resulting from the wage negotiations between labor and management continued to be 0 percent for a long time. Even after the recent resumption of base pay increases, the rate is less than 1 percent (Chart 8).[8]

Fourth, Japan's deflation equilibrium cannot be theoretically explained on the basis of the 1 percent long-term inflation expectations (Chart 9).

I will elaborate on the fourth point. Let us assume that there is a zero nominal interest rate bound. Even if that is the case, as long as long-term inflation expectations are meaningfully positive, the real interest rate will fall below the natural rate of interest, which is around 0 percent, by making the real interest rate negative. In this case, monetary policy should be effective, and Japan's economy should be able to get out of deflation equilibrium. This suggests that, if long-term inflation expectations are at least around 1 percent, monetary policy can be more effective.

C. Relationship with Japan's Financial Crisis

Looking back, if Japan's financial crisis in the late 1990s had been settled more promptly with ample liquidity provision and capital injection, the large-scale credit crunch could have been avoided, and thus the subsequent path of Japan's economy might have been different. This widely shared lesson was put to good use at the time of the global financial crisis afterwards. I note that it is important to address the private sector's solvency problem through provision of a massive scale of liquidity and through credit enhancement by means of swift capital injection.

In Japan, the bailout of financial institutions with taxpayers' money experienced a strong backlash from the public. It took a considerable amount of time before public funds were actually injected into financial institutions. In the aftermath of the financial crisis, the injection of public funds was carried out several times. However, it actually took several years before concern about the stability of the financial system subsided (Chart 10).

[8] It also can be said that the resumption of base pay increases under the Abe administration might prove that long-term inflation expectations have started to rise from 0 percent.

It was only after the introduction of the zero interest rate policy in 1999 and the introduction of quantitative monetary easing in 2001 that the market's liquidity concern was alleviated through the Bank's provision of ample funds (Charts 11-1 and 11-2).[9]

Quantitative monetary easing was a pioneering attempt in increasing the predictability of monetary policy. It was conducted both by lowering market interest rates to virtually 0 percent through the provision of ample funds surpassing the required reserves and by introducing forward guidance. Nevertheless, I have a feeling that the Bank could have addressed liquidity concern in the late 1990s at a much earlier stage. In that regard, I somewhat have understanding toward the criticism that the Bank's monetary easing was insufficient at that time, and as a result the financial crisis was prolonged and the economy fell into a deflationary trap.[10]

I also note that the Bank paid particular attention to the negative feedback loop between asset price deflation and the real economy. It did not pay due attention to mild deflation for a long period. In fact, the Bank repeatedly explained that the deflation was mild and the economy was not falling into a deflationary spiral, unlike at the time of the Great Depression in the 1930s.[11]

It is true that the Bank's provision of ample funds and the government's capital injection helped avoid a deflationary spiral, although these were somewhat delayed. Long-term inflation expectations were declining, but not much attention was paid by the Bank or those in academia to their potential effects on monetary policy.

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[9] In response to Japan's financial crisis in the 1990s, the Bank expanded its balance sheet and conducted both funds-supplying and funds-absorbing operations -- i.e., it actively provided funds to money markets and at the same time absorbed excess reserves by selling bills. However, this does not mean that the Bank provided excess reserves and allowed the decline in market interest rates to 0 percent. After all, there was no such concept of quantitative easing at that time.

[10] Another significant lesson was that the excessive monetary easing before the financial crisis was the source of the huge economic bubble. In the United States as well, large-scale monetary easing after the bursting of the IT bubble and subsequent moderate tightening at a measured pace became the source of the housing bubble, which led to the global financial crisis.

[11] See Bank of Japan (2006).

With hindsight, the Bank at least should have clarified its firm determination not to allow the decline in long-term inflation expectations, as was done by the Federal Reserve after the global financial crisis and by the European Central Bank after the sovereign debt crisis.

D. Relationship with Labor Market Reform

In my view, as a measure to raise long-term inflation expectations that already have declined to a low level, it is important to have structural policies, particularly labor market reform.

If long-term inflation expectations have some kind of relevance to the potential growth rate, it is necessary to raise both at the same time. To this end, one important measure is labor market reform. If such reform leads to rises in labor productivity and the labor force participation rate, the potential growth rate will increase from a longer-term perspective and firms' expected rates of return and households' permanent income also will increase. This will strengthen monetary easing effects and the inflation rate will increase. Then, the adaptive formation mechanism of inflation expectations, which is unique to Japan, will bring about a positive influence on long-term inflation expectations.

In Japan, some labor market practices could be constraints on raising long-term inflation expectations. Therefore, labor market reform should be actively pursued. Given that there is an increasing sense of labor shortage caused by the population decline, now is an ideal time to take a step forward in labor market reform. I will next focus on three possible reform measures.

First, a more flexible adjustment mechanism should be implemented in Japan's labor market. Let me elaborate on this point. The way people form their expectations could be affected by how labor market adjustments are made during periods of recession -- i.e., whether to have quantity adjustments in terms of headcount or price adjustments in terms of wages. For example, in the U.S. labor market, quantity adjustments are mainly made in the form of layoffs. Japan's labor market mostly makes price adjustments and layoffs tend to be avoided (Chart 12).

Let me add a few things about wage adjustments in Japan. In the face of the past shocks, including oil crises during early 1970s and 1980s, Japan's labor unions had a practice of prioritizing the job security of regular workers and accepting management's proposal to set lower wages. Under such coordination between labor and management, restraining wage increases of regular workers was effective in controlling inflation. Afterwards, the base pay of regular workers significantly shifted downward following Japan's financial crisis, and then became sticky at low levels. Since then, non-regular workers have acted as a buffer against wage adjustments as they are outside the protection of labor unions.

As illustrated, Japanese-style employment and wage practices of prioritizing the job security of regular workers and restraining wage increases may have influenced long-term inflation expectations to shift downward. If that is the case, the solution is to implement dynamic U.S.-style employment practices and allow the compensation of regular workers to reflect risk premiums.

I note that, in Japan's labor market, job mobility and a social safety net are not necessarily sufficient. In this situation, the U.S.-style employment system is unlikely to be socially acceptable. In fact, it has been difficult to reach a consensus between labor and management, and thus progress in labor market reform has been moderate.

I believe that a key to success in labor market reform is to implement dynamic U.S.-style employment practices while modifying them to fit Japan's own circumstances. For example, it is important to gain the understanding of labor unions by establishing a social safety net that leads to economic growth. One option is to build a framework for employment and reemployment assistance in coordination with the government, labor, and management.

Second, a forward-looking wage negotiation system should be established. Let me elaborate on this point. In Japan's wage negotiations, the observed rate of increase in the consumer price index (CPI) of the previous year is used as a benchmark in determining the rate of increase in wages for the following year (Chart 13). For this reason, even when a decline in the CPI is attributed to external factors, including a decline in crude oil prices, the low inflation rate tends to be referred to in wage negotiations. That said, such a price decline is a

positive factor in corporate profits with an improvement in the terms of trade at a macroeconomic level.[12]

In my view, it is necessary to replace the existing practice of referring to the observed CPI in the past and negotiating the wage increases for only one year in an adaptive manner. Instead, it is necessary to implement the practice of negotiating wage increases for several years in a forward-looking manner by sharing the outlook on the path of price changes over several years, or over the medium to long term.[13]

Third, there should be a change in the practice of applying the result of labor-management wage negotiations at large manufacturers to other industries. In Japan, the result of wage negotiations at large manufacturers -- especially automobile, steel, and other major manufacturers -- tends to be used as a benchmark for such negotiations in other industries, including non-manufacturing. Therefore, even when the terms of trade at a macroeconomic level improve due to the yen's appreciation, if a higher yen causes major manufacturers to have lower profits and depress the rate of wage increases, such a rate for non-manufacturers also tends to be depressed accordingly.

In Japan, the share of manufacturing in gross output is less than 20 percent. Therefore, it is not suitable at this time to use wages at major manufacturers as a benchmark for wage negotiations in other industries. I believe that wage increases should reflect individual firms' profits with forward-looking inflation expectations being used as a basis.

III. Addendum: Recent Discussion on Fiscal Policy Measures

The roles of fiscal policy measures have regained attention in Japan recently, following the insufficient increase in expectations even with the large-scale unconventional monetary

[12] The Bank has conducted a quantitative analysis on this point. See Appendix 4, Bank of Japan (2016).

[13] The Japanese government also recognizes the importance of forward-looking wage negotiations. At the Council for the Realization of Work Style Reform, Prime Minister Abe has asked the business community for wage increases that take inflation expectations into consideration.

policy. "Helicopter money" and the Fiscal Theory of the Price Level (FTPL) are examples of this (Chart 14).

The issue they have in common is whether or not additional fiscal expenditure will exert positive effects on the way people form their positive expectations in a sustainable manner. Households do not act as rationally as Ricardian equivalence assumes. Meanwhile, it also is plausible to assume that their concerns over possible tax hikes and an increase in social security tax burden provide a reason for their cautious outlook. These arguments might have given rise to the idea that it is desirable to have permanent fiscal policy expansion without an accompanying future tax hike.

Even if government debts are assumed to be financed in the future through inflation that will be triggered by fiscal expansion, empirical research on related theoretical models is still insufficient. Therefore, the models cannot be applied to the actual policy formulation, nor used as the basis for macroeconomic forecast for such formulation.

Economic policy is implemented based on a critical decision that takes account of more than just gains and losses for various economic entities. This is because it is difficult to obtain the consent of stakeholders based on an economic model that considers future inflation to be inevitable but cannot predict when it will occur. Let me also note that actual policy management cannot help being prudent. The reason for this is that the policy authorities have to strongly recognize various constraints. In fact, macroeconomic policy is managed under various constraints -- such as those in terms of legal, accounting, and practical affairs, as well as the need for parliamentary consent.

Concluding Remarks

I will close by noting the lesson learned from the 4-year experience since the introduction of QQE. Once long-term inflation expectations decline, it is not easy to raise them, even through the large-scale unconventional monetary policy. Given that monetary policy on its own has limited effects, it is vital to make steady efforts, such as through the labor market reform that I discussed earlier, in order to change conservative inflation expectations that

are deeply rooted in people's mindsets. In particular, I consider it important to produce a change in the wage determination mechanism.

In the process of wage determination, it is desired that inflation targets set by central banks be the basis for the medium- to long-term path of inflation. For this purpose, central banks' inflation targets should gain sufficient credibility with the public. To this end, it is necessary to see achievements that prove monetary policy is able to change the inflation trend. It is not easy to regain credibility. As the frontrunner in combating deflation, however, the Bank of Japan will continue to endeavor to do so, always deliberating on what can be accomplished through monetary policy.

Thank you.

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Chart 1

Statement on Longer-Run Goals and Monetary Policy Strategy

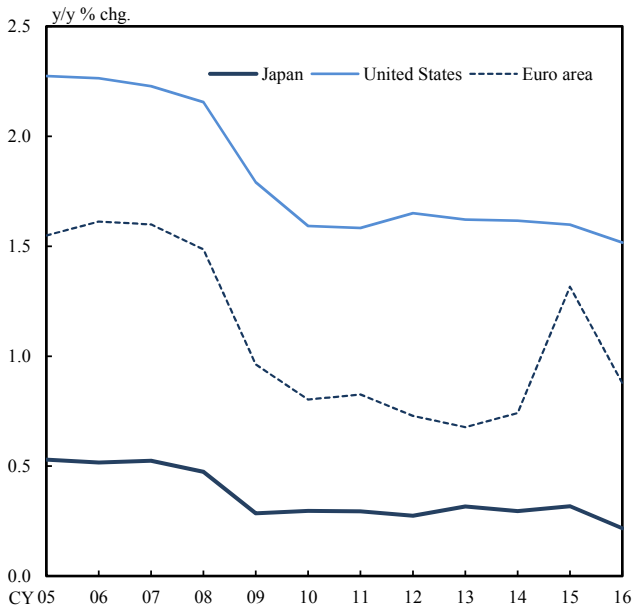
Board of Governors of the Federal Reserve System
Adopted effective January 24, 2012; as amended effective January 26, 2016

"The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation."

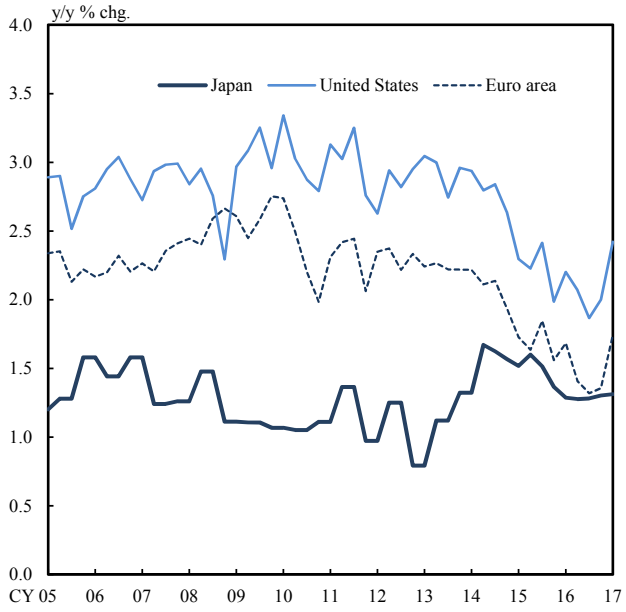
Chart 2

Potential Growth Rate and Inflation Expectations in Advanced Economies

(1) Potential Growth Rate



(2) Inflation Expectations



Note: As for inflation expectations, figures for Japan are the expectations for the CPI 6-10 years ahead and are based on the "Consensus Forecasts." Those for the United States and euro area are 5-year, 5-year forward inflation swap rates.
Sources: OECD; Bloomberg; Consensus Economics Inc., "Consensus Forecasts."

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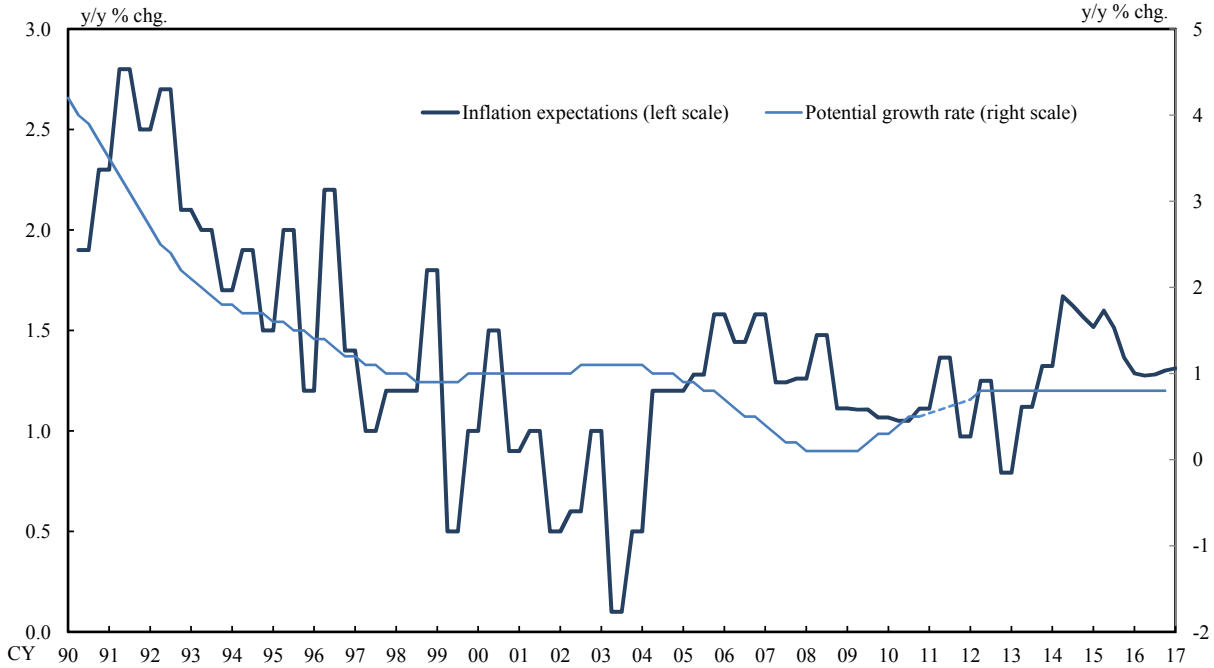
Chart 3

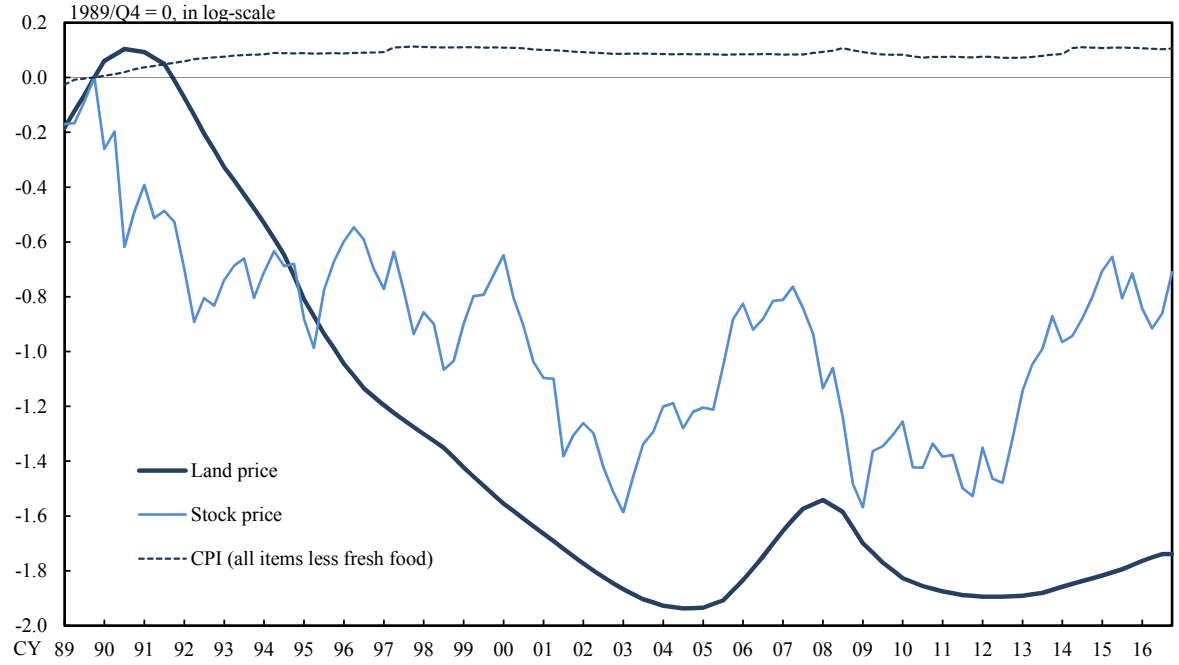
Japan's Inflation Expectations and Potential Growth Rates



Note: Figures for inflation expectations are the expectations for the CPI 6-10 years ahead and are based on the "Consensus Forecasts."
Figures for potential growth rate do not include those of 2011, in which the Great East Japan Earthquake occurred.
Sources: Cabinet Office; Consensus Economics Inc., "Consensus Forecasts."

Chart 4

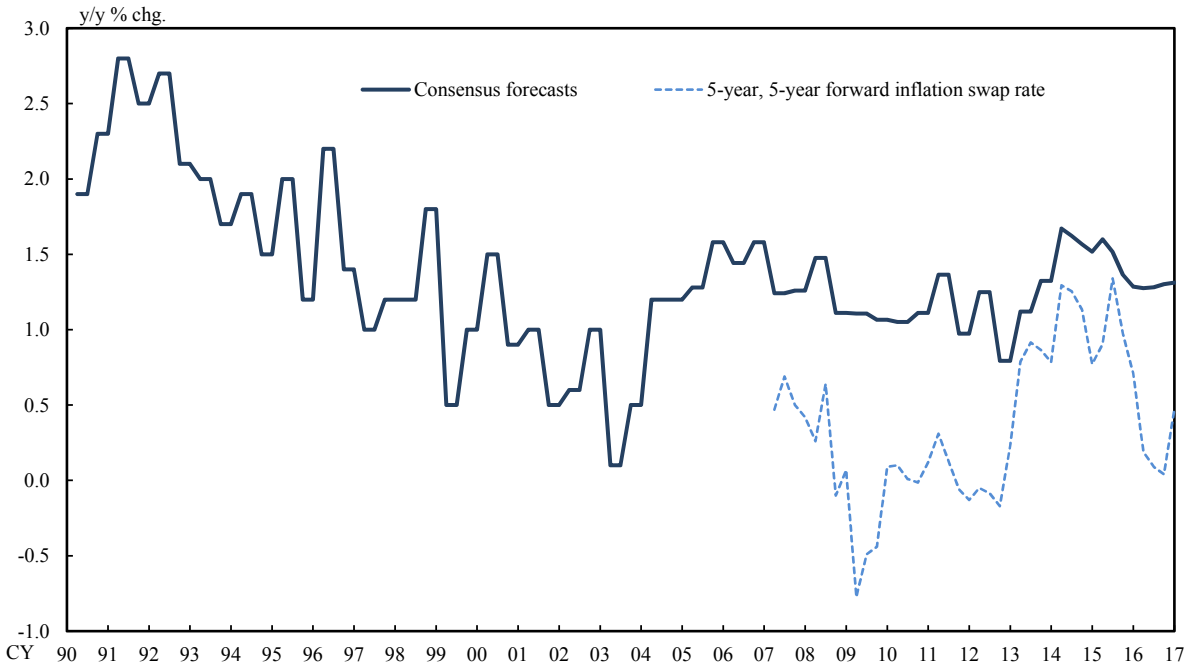
Japan's Asset Price Deflation



Note: The CPI (all items less fresh food) is seasonally adjusted by X-12-ARIMA with options of (0 1 2) (0 1 1) ARIMA model and level shifts when the consumption tax was introduced in April 1989 and subsequently raised in April 1997 and April 2014.
Sources: Okina, Kunio, and Shigenori Shiratsuka. "Asset Price Fluctuations, Structural Adjustments, and Sustained Economic Growth: Lessons from Japan's Experience since the Late 1980s." *Monetary and Economic Studies* 22, no. S-1, December 2004; Bank of Japan; Ministry of Internal Affairs and Communications; Japan Real Estate Institute.

Chart 5

Japan's Inflation Expectations

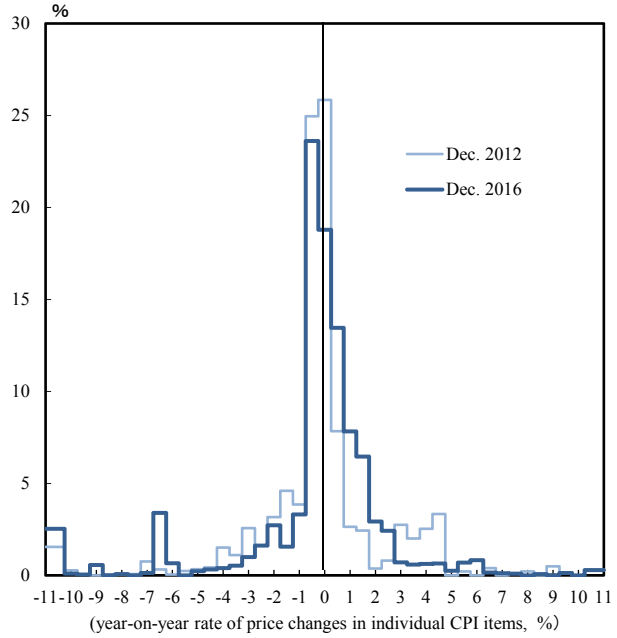


Note: Figures for consensus forecasts are the expectations for the CPI 6-10 years ahead and are based on the "Consensus Forecasts."
Sources: Bloomberg; Consensus Economics Inc., "Consensus Forecasts."

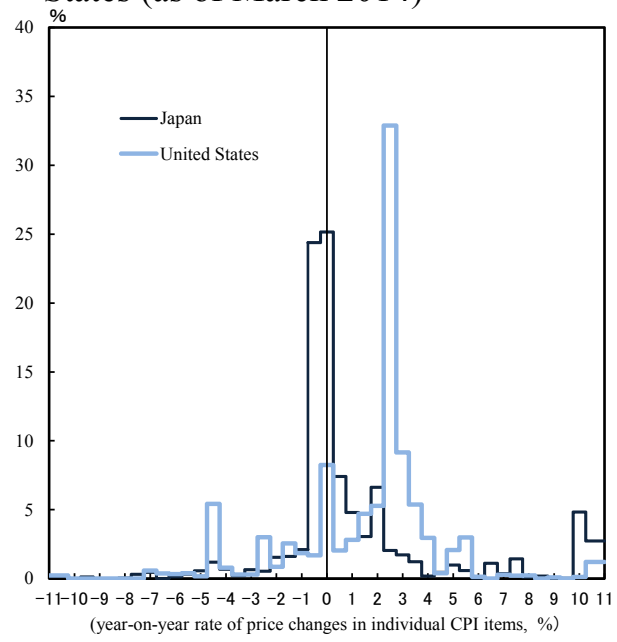
Chart 6

Frequency Distribution of Price Changes in Individual CPI Items

(1) Changes after the Introduction of QQE



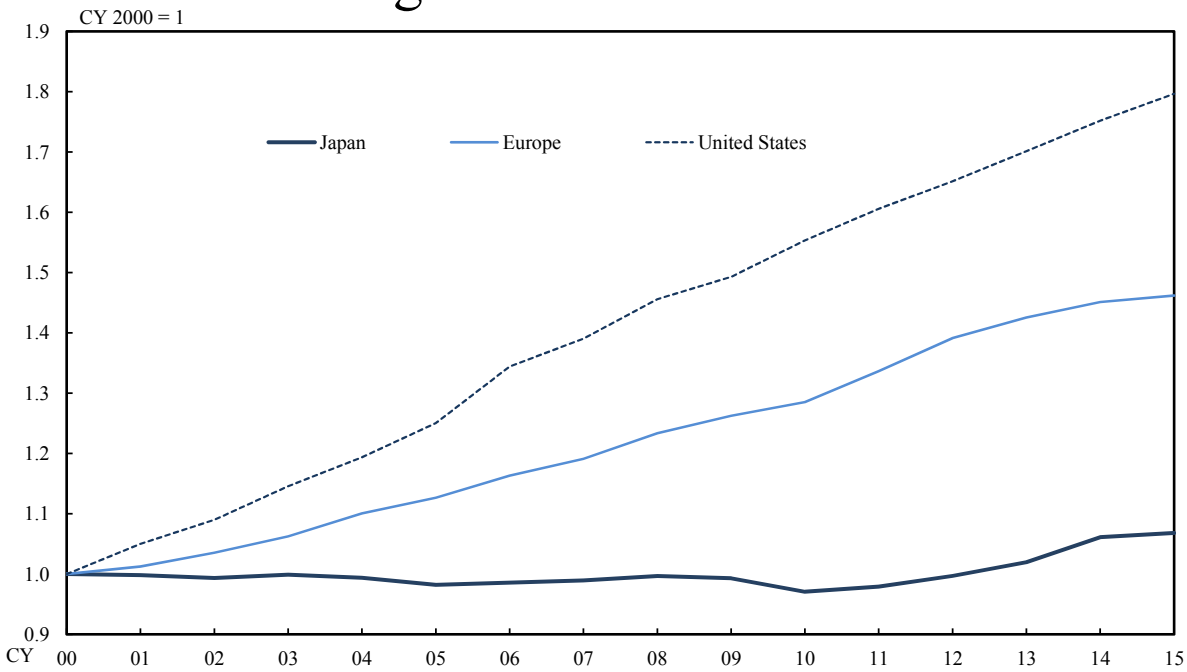
(2) Comparison of Japan and the United States (as of March 2014)



Sources: Watanabe, Tsutomu 渡辺努, and Kota Watanabe 渡辺広太. "Defure-ki ni okeru kakaku no kōchokuka: Geiin to gan'i" デフレ期における価格の硬直化：原因と含意 [Increased price rigidity during the deflationary period: Causes and implications]. *Bank of Japan Working Paper Series* 日本銀行ワーキングペーパーシリーズ, no. 16-J-2, February 2016; Ministry of Internal Affairs and Communications.

Chart 7

Comparison of Administered Prices among Advanced Economies

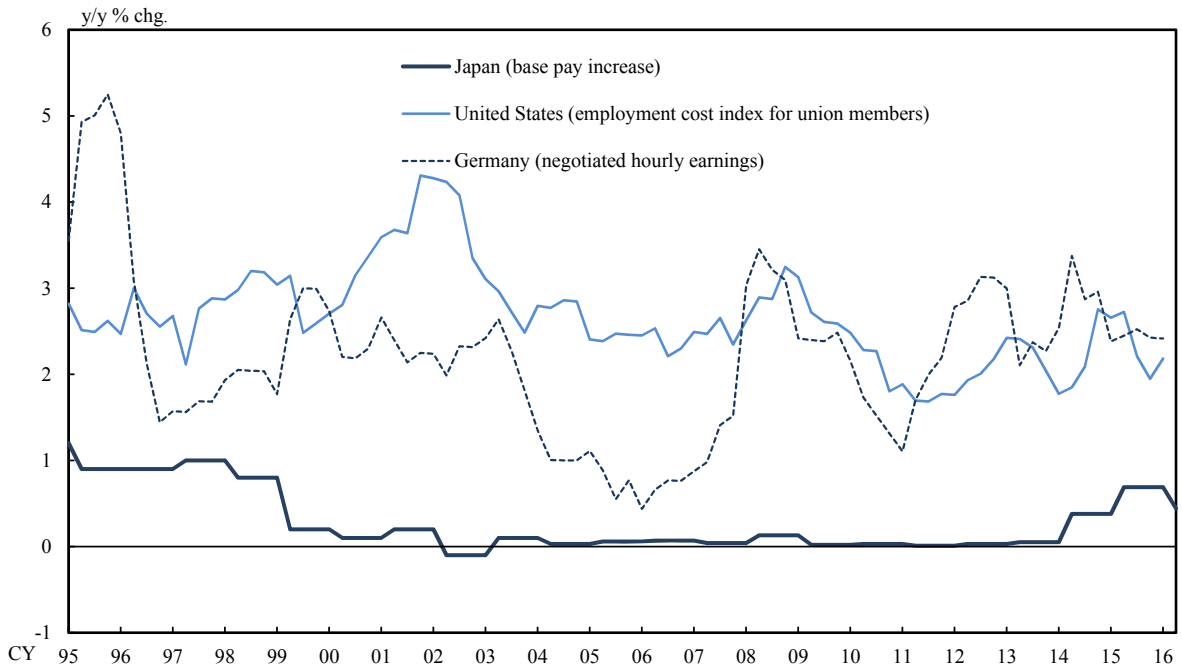


Note: Figures for Japan are aggregates of "public services" and "electricity, manufactured & piped gas & water charges" in the CPI. Figures for Europe are weighted averages of administered prices in the harmonized index of consumer prices (HICP) of OECD member countries in the EU.

Sources: Shintani, Kohei, Yoshiyuki Kurachi, Shinichi Nishioka, and Takashi Okamoto. "Administered Prices in Japan: Institutional Comparisons with Europe and the United States." *Bank of Japan Review Series*, no. 16-E-9, July 2016; Ministry of Internal Affairs and Communications; U.S. Bureau of Labor Statistics; Eurostat.

Chart 8

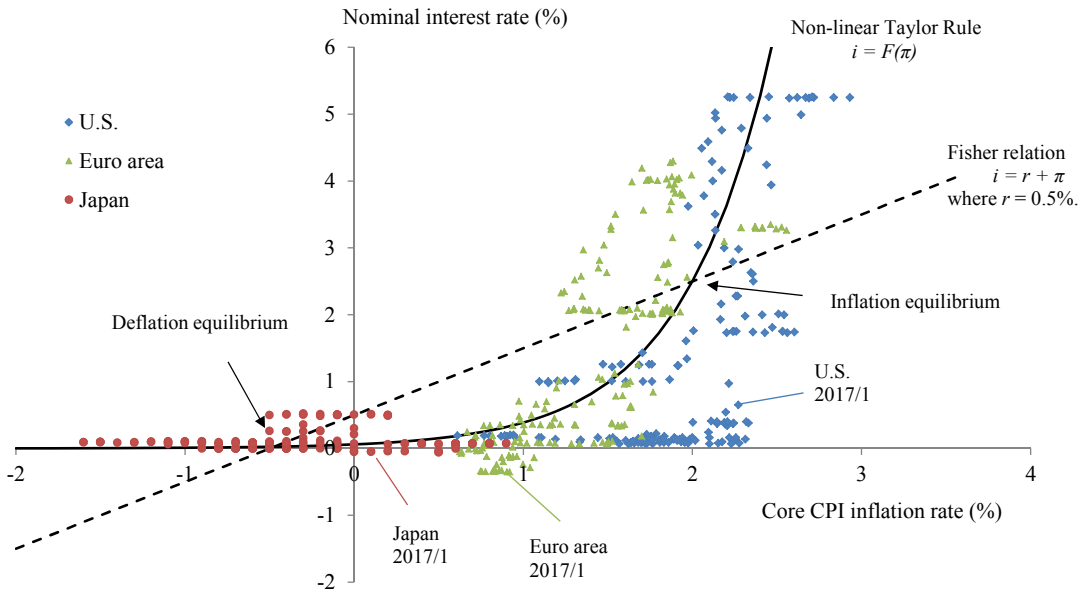
Base Pay Increases in Advanced Economies



Sources: Central Labour Relations Commission; Japanese Trade Union Confederation (*Rengo*); U.S. Bureau of Labor Statistics; U.S. Congressional Budget Office; Federal Statistical Office of Germany; Deutsche Bundesbank.

Chart 9

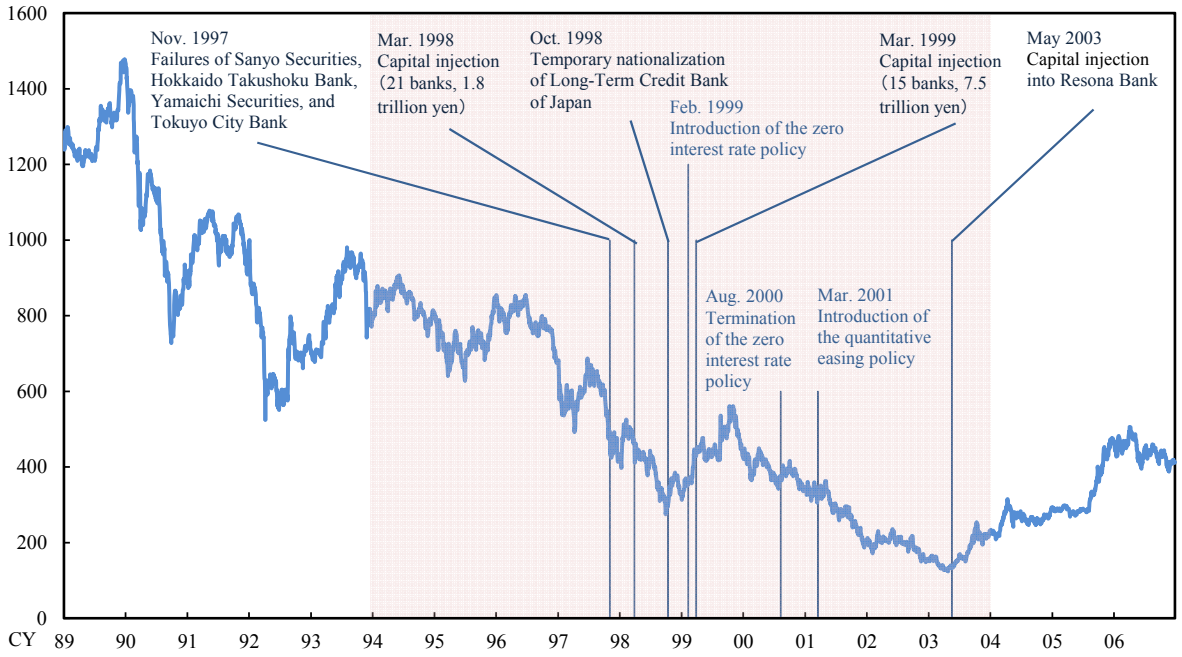
Inflation and Deflation Equilibrium



Note: Nominal interest rate and core CPI inflation rate are in terms of realized rates. Core CPI inflation rate is in terms of CPI excluding food and energy. Figures for Japan exclude effects of changes in consumption tax.
Source: Bullard, James. "Seven Faces of 'The Peril.'" *Federal Reserve Bank of St. Louis Review* 92, no. 5 (September/October 2010): 339-52.

Chart 10

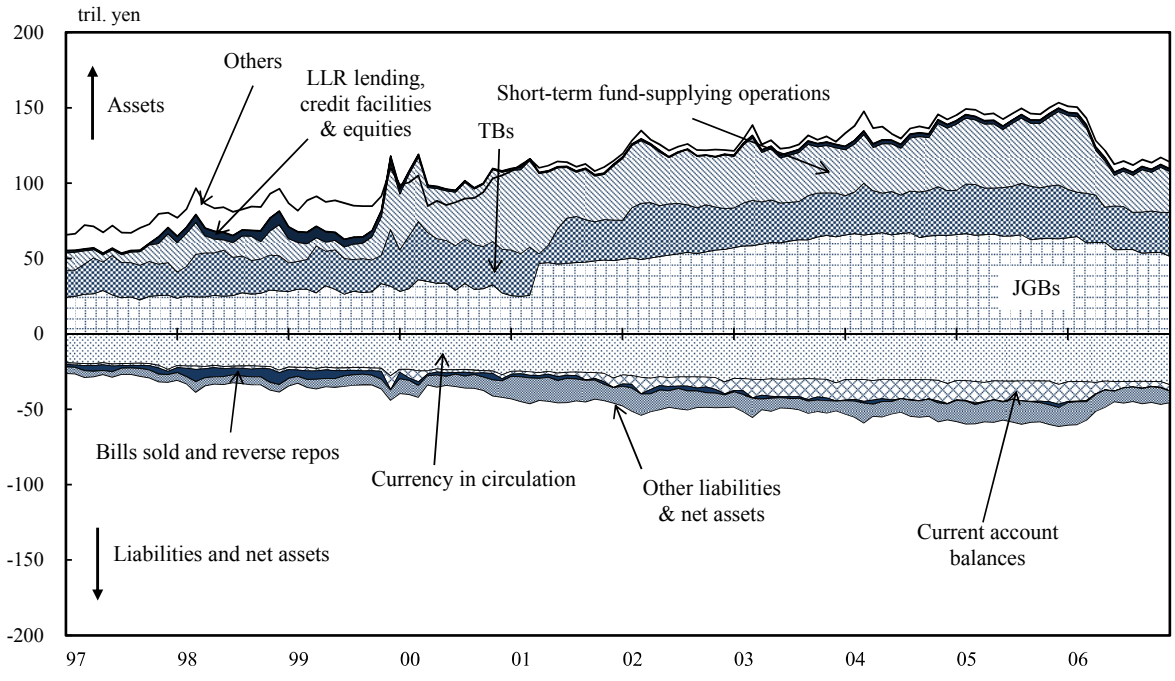
Bank Stock Prices at around Time of Japan's Financial Crisis



Note: TOPIX Banks Index.
Source: Bloomberg.

Chart 11-1

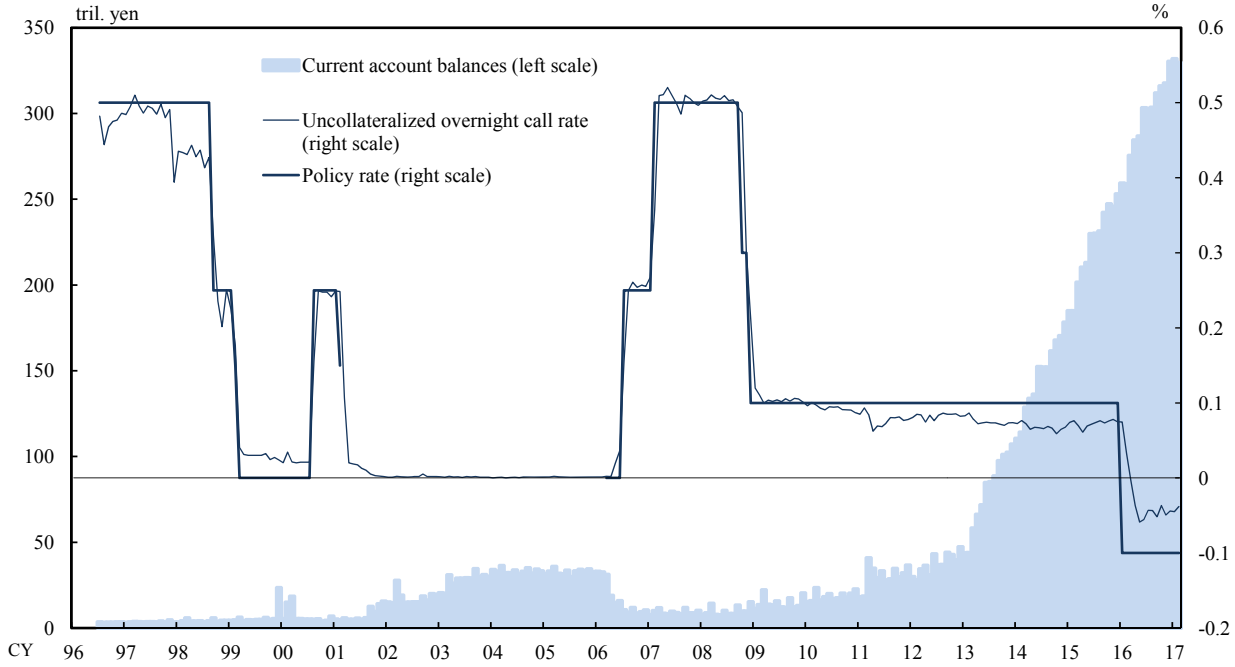
Balance Sheet of the Bank of Japan at around Time of Japan's Financial Crisis



Source: Bank of Japan.

Chart 11-2

Current Account Balances and Call Rate

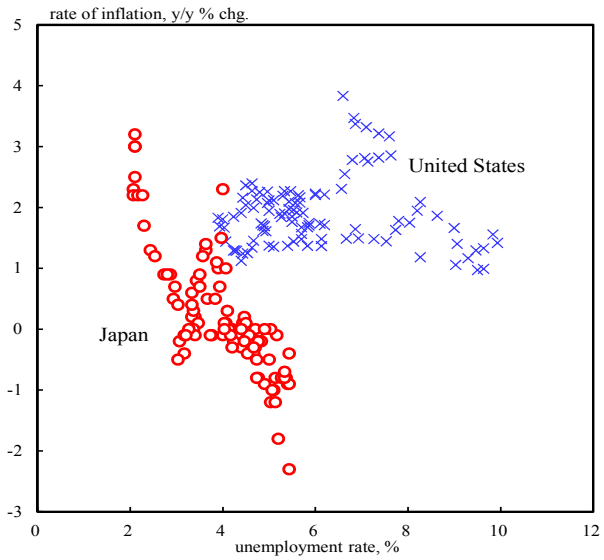


Note: Figures for policy rate before October 2010 are targets for uncollateralized overnight call rates, those from October 2010 to January 2016 are interest rates applied to excess reserves, and those from January 2016 onward are interest rates applied to Policy-Rate Balance.
Source: Bank of Japan.

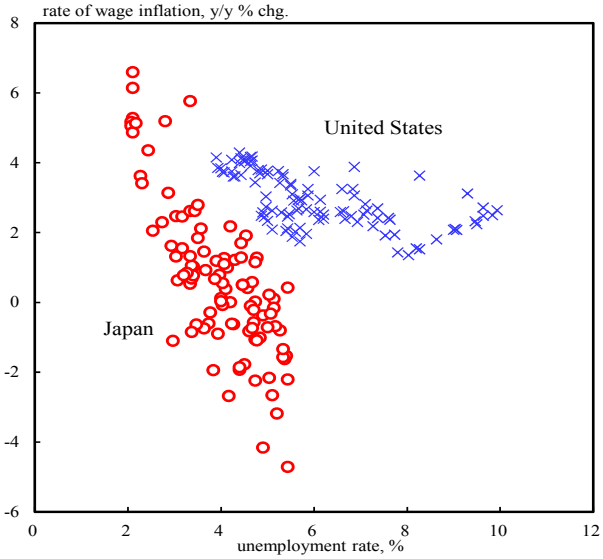
Chart 12

Phillips Curve in Japan and the United States

(1) Rate of Inflation and Unemployment Rate

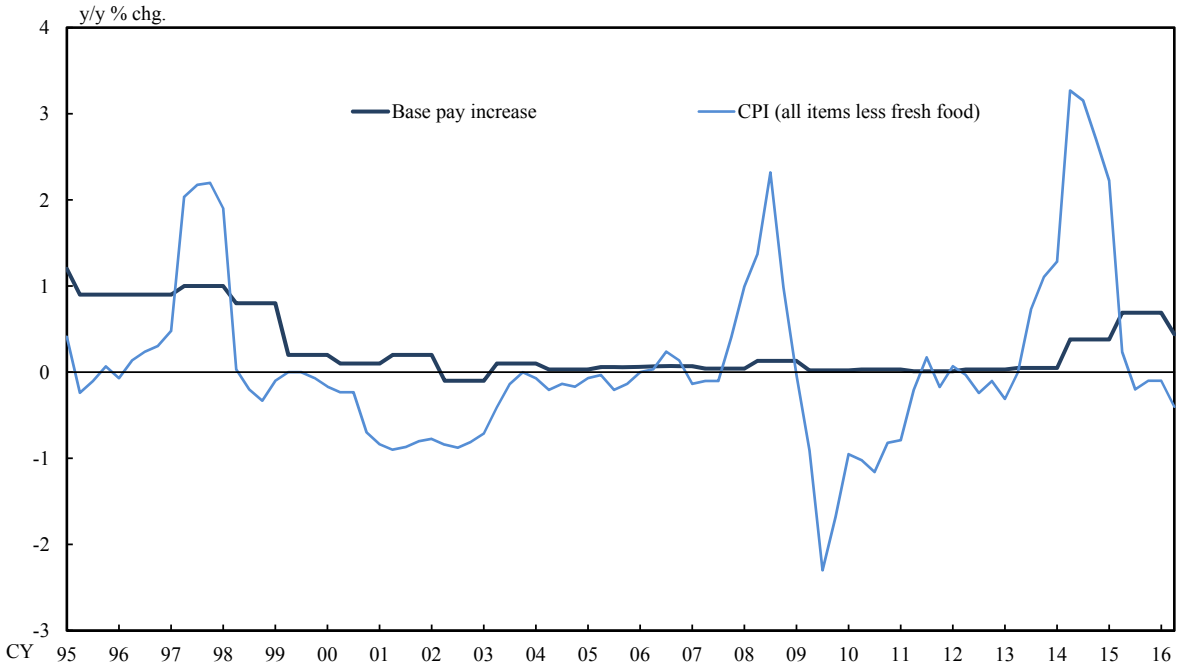


(2) Rate of Wage Inflation and Unemployment Rate



Notes: 1. The wage is the hourly wage. Figures for wages in Japan are calculated as "total cash earnings (establishment with 30 or more employees)" divided by "total hours worked." Those in the United States are "average hourly earnings of production and nonsupervisory employees: total private."
2. Rate of inflation for Japan is indicated in terms of the CPI for all items less fresh food and that for the United States is in terms of personal consumption expenditures excluding food and energy.
3. The CPI in Japan is adjusted to exclude the effects of the consumption tax hikes.
Sources: Ministry of Health and Welfare; Ministry of Internal Affairs and Communications; U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statistics, Bloomberg.

Base Pay Increase and Prices



Note: As for the CPI (all items less fresh food), effects of the consumption tax hikes are not adjusted.
Sources: Central Labour Relations Commission; Japanese Trade Union Confederation (*Rengo*); Ministry of Internal Affairs and Communications.

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1. Determinants of Long-Term Inflation Expectations
2. Negative Effects of Excessively Low Long-Term Inflation Expectations

II. Issues regarding Long-Term Inflation Expectations
1. Formation Mechanism
2. Reasons for Low Expectations in Japan
3. Relationship with Japan's Financial Crisis
4. Relationship with Labor Market Reform

III. Addendum: Recent Discussion on Fiscal Policy Measures

Concluding Remarks

Recent Discussion on Fiscal Policy Measures

- Helicopter Money
- FTPL (Fiscal Theory of the Price Level)

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