June 8, 2017
Bank of Japan

The Role of Expectations in Monetary Policy: Evolution of Theories and the Bank of Japan's Experience

Speech at the University of Oxford

Haruhiko Kuroda
Governor of the Bank of Japan

Introduction

I am very honored to have the opportunity to give a speech at Oxford University today. At the same time, it is also an extremely emotional experience from a personal point of view. I was a graduate student at Oxford University from 1969 to 1971 and was able to enjoy Oxford, the university, and its colleges in my younger days. I was dispatched here by Japan's Ministry of Finance, planning to study public finance. However, since Lady Ursula Kathleen Hicks, a prominent scholar in public finance, had already retired, I decided to study monetary economics under Professor Richard Good Smethurst. In those days, Emeritus Professor John Richard Hicks provided a series of seminars on monetary economics for graduate students, and I participated in it. The lectures and seminars at Oxford gave me the opportunity to study monetary economics and monetary policy in earnest, but I certainly could not have imagined at the time that about half a century later I would give a speech here about monetary policy as Governor of the Bank of Japan.

In my speech today, titled "The Role of Expectations in Monetary Policy: Evolution of Theories and the Bank of Japan's Experience," I would like to talk about the evolution of theoretical ideas about monetary policy and the conduct of monetary policy by the Bank of Japan in recent years. In April 2013, the Bank of Japan introduced quantitative and qualitative monetary easing (QQE), which considerably differs from the policy framework employed until then and which has since been further enhanced and strengthened. These policies conducted by the Bank of Japan, together with policy initiatives by central banks in Europe and the United States in recent years, are frequently classified as unconventional monetary policies. However, the roots of the ideas underlying these policies can be traced back to work by economists in the United Kingdom nearly a century ago. In today's speech, I would like to provide an overview of the debate in economics since the first half of the 20th century, discuss the implications for monetary policy today, and consider remaining issues.

I. Intellectual Origins: Monetary Policy Discussions by Economists in the United Kingdom in the First Half of the 20th Century

Monetary policy discussions by economists in the United Kingdom in the first half of the 20th century provide extremely useful insights into monetary policy today. I am particularly surprised by the fact that those insights from almost a century ago are relevant to the unconventional monetary policies in advanced economies in recent years.

A British economist in the first half of the 20th century that everyone first and foremost thinks of probably is John Maynard Keynes (Chart 1). Keynes, the founder of macroeconomics, highlighted the role of central bank monetary policy in guiding long-term interest rates during a recession through the purchase and sale of long-term government bonds and other measures. As is well known, in 1933, Keynes sent an open letter to U.S. President Roosevelt, urging a reduction of long-term interest rates through purchases of long-term government bonds.

At the same time, Keynes, in his seminal book, *The General Theory of Employment, Interest, and Money* published in 1936, accurately pointed out that when long-term interest rates decline to certain levels, this can give rise to a "liquidity trap" -- a situation in which long-term interest rates do not fall further and the monetary authority loses effective control over interest rates because people expect interest rates to rise in the future and hold cash instead of investing in long-term bonds. What is surprising is that Keynes had predicted the possibility of a liquidity trap long before such a situation had ever arisen. In fact, although a liquidity trap had never actually arisen when the *General Theory* was written, he stated that "this limiting case might become practically important in future."

As you all know, Keynes not only discussed the liquidity trap but also keenly examined many other issues of macroeconomics from an academic standpoint and had a tremendous influence on macroeconomic policies afterward. However, regarding the topic of my speech today -- expectations and monetary policy -- another scholar providing extremely useful insights is Ralph George Hawtrey, a close friend and

intellectual sparring partner of Keynes. As a government economist known for numerous publications written while acting as Director of Financial Enquiries at the U.K. Treasury for a few decades, Hawtrey devised his own economic theories rooted in practice and highlighted the role of monetary factors in the business cycle.

From an extremely early stage, he identified the importance of conducting monetary policy in a forward-looking manner (Chart 2). In his book *Monetary Reconstruction* published in 1923, he stated that "it is not the *past* rise in prices but the *future* rise that has to be counteracted." He also pointed out that "[t]he problem is a psychological one" and that "a very relevant factor in the psychological problem is the traders' expectations as to the intentions of the authority which fixes rates." In other words, Hawtrey highlighted that private entities decide their actions based on expectations for the future, identifying -- at this extremely early stage in the study of economics -- that the central bank's policy stance toward future price stability is an important factor working on the expectations of such economic entities.

Hawtrey also provides us with instructive insights about why interest rate control by the central bank produces significant policy effects (Chart 3). In his 1938 book *A Century of Bank Rate*, he argues that "[t]he pressure applied to traders by a moderate rise in the short-term rate of interest, say, 1 percent, is undeniably very slight. Yet apparently the Bank of England always counted on a rise of 1 percent or even of 0.5 percent having a noticeable effect." He continues by stating that, when the Bank of England raises the official discount rate by 1 percent, "a trader would reason that this was intended to have a restrictive effect on markets, and that, if the effect was not brought about, the rate would simply go higher and higher till it was." Hawtrey thus probably was the first to clearly point out that the reason why a minor change in the policy interest rate creates a major policy effect is people's expectations regarding the future monetary policy stance of the central bank.

I vividly remember hearing about this last point from Professor John Richard Hicks during my days at Oxford. However, while Hawtrey called this policy effect resulting

from people anticipating the intentions of the central bank the "psychological effect," Hicks argued that the effect was based on extremely rational behavior of economic entities (Chart 4). From a theoretical perspective, Hicks found this to be a stronger argument with regard to the transmission mechanism of monetary policy than Hawtrey's argument. Hicks called this the central bank's "announcement effect," saying that the central bank's policy "should almost immediately result in a shift in expectations," and that "[w]hat I learn from Hawtrey's analysis is that the 'classical' Bank Rate system was strong, or could be strong, in its announcement effects." This identification of the announcement effect by Hicks is based on the so-called expectations theory with regard to long-term interest rates. He therefore can be said to have pointed out at an early stage the importance of what today is called "forward guidance."

This brief outline indicates that, nearly a century ago, British economists such as Keynes, Hawtrey, and Hicks had already introduced or anticipated key concepts related to the unconventional monetary policies implemented today, such as the liquidity trap, forward-looking monetary policy, and forward guidance. Although their arguments were largely conceptual, they were later formalized by scholars such as Friedman and Lucas as well as the New Keynesians, and the essence of their arguments lives on in contemporary economics in a refined form.

Central bank policy makers like myself have been influenced both directly and indirectly by the contributions of these British economists. Of particular importance is the point that a strong determination by the central bank to stabilize prices will work on people's expectations and increase the effectiveness of monetary policy. This is also the essence of the monetary easing that the Bank of Japan is currently pursuing. Based on these background considerations, I would now like to explain the Bank of Japan's policy conduct in recent years.

II. Deflation in Japan: Declines in Potential Growth Rate and Inflation Expectations

Since the 1990s, economic volatility has sharply decreased in many advanced economies. Former Federal Reserve Chairman Ben Bernanke referred to this as the "Great Moderation" and argued that a major reason was the dramatic improvement in the ability of central banks in those economies, including the United Kingdom, to stabilize inflation expectations through the introduction of measures such as inflation targeting.

Meanwhile, Japan's economy found itself in a completely different situation. Japan experienced a major asset bubble from the late 1980s to the early 1990s and, following the collapse of the asset bubble, suffered a sharp economic slowdown and serious financial instability. Moreover, firms had to deal with the so-called three excesses -- excess production capacity, excess employment, and excess debt -- while financial institutions had to grapple with the nonperforming loan problem. While the negative legacy of the asset bubble had been more or less dealt with by the mid-2000s, Japan's potential growth rate, which had been around 4 percent in the early 1990s, dropped to about 1 percent by the late 1990s (Chart 5). On the price front, the annual rate of change in consumer prices fell into negative territory in 1998 and generally remained negative over the following decade and a half. Against this background, inflation expectations also seem to have declined, although they were not accurately captured in a timely manner.

On the monetary policy side, the policy interest rate, which was 6 percent in the early 1990s, had been lowered to 0.5 percent by 1995. At this point, conventional monetary easing measures through cuts in the short-term policy interest rate had been more or less exhausted. Paul Krugman dubbed this situation "Japan's trap" and stated that Japan had actually fallen into a liquidity trap, which had long been regarded as just a theoretical possibility written in the back pages of macroeconomic textbooks. In order to get out of this trap, the Bank of Japan introduced a zero interest rate policy in 1999, followed, in 2001, by quantitative easing, in which the outstanding balance of current accounts that financial institutions hold at the Bank of Japan was set as the operating target for money market operations. Thus, the Bank of Japan pioneered the introduction of unconventional

monetary policies, but unfortunately Japan was unable to overcome deflation.

Why did Japan's economy fail to get out of the liquidity trap even though the Bank of Japan had taken unprecedented monetary policy steps? With the benefit of hindsight, we now know that Japan faced a simultaneous decline in the natural rate of interest and in inflation expectations. Under these circumstances, as nominal short-term interest rates faced the zero lower bound, it was difficult to lower real interest rates to levels well below the natural rate of interest and achieve sufficient monetary easing. As a result, the downturn in growth during this period caused a decline in prices, further reducing growth through the rise in real interest rates, so that weak economic growth and deflation reinforced each other over a long period.

Then, in 2008, the global financial crisis led to another sharp contraction in Japan's economy (Chart 6). Even though Japan's financial institutions had already resolved the nonperforming loan problem by that time and had only limited exposure to subprime-related products, Japan experienced a precipitous decline in real GDP that was more severe than that in Europe and the United States, which was the epicenter of the crisis. There are a number of reasons for this, but what certainly played a role is that at the time the policy interest rate in Japan was only 0.5 percent, so that -- unlike in Europe and the United States, where rate cuts of 3-4 percentage points were possible -- there was little room for a monetary policy response through cuts in the short-term policy interest rate. This episode highlights the importance of bringing about an increase in the so-called neutral interest rate -- that is, the nominal interest rate level that is neutral to economic activity -- by anchoring inflation expectations at about 2 percent and of securing the ability of monetary policy to respond.

III. QQE: Monetary Policy to Work on Expectations

I took office as Governor of the Bank of Japan in March 2013 and immediately introduced a monetary policy regime -- quantitative and qualitative monetary easing (QQE) -- that is quite different from past regimes. QQE consists of two pillars: (1)

directly working on people's expectations through a price stability target of 2 percent and a strong and clear commitment to doing whatever it takes to achieve this, and (2) directly encouraging a decline in long-term interest rates through large-scale purchases of long-term Japanese government bonds (JGBs). If inflation expectations rise as a result of the former and nominal long-term interest rates fall as a result of the latter, this will push real interest rates to levels below the natural rate of interest even in the face of the zero lower bound.

In additional steps, the Bank of Japan in January 2016 introduced a negative interest rate policy in order to address the strong headwinds caused by turbulence in global financial markets. The negative interest rate policy aims at exerting further downward pressure on interest rates across the entire yield curve by pushing down the short end of the yield curve, in combination with large-scale purchases of JGBs. Thereafter, in September 2016, the Bank conducted a comprehensive assessment on developments in economic activity and prices as well as policy effects since the introduction of QQE; based on the findings, the Bank introduced yield curve control, which focuses on long-term interest rates in addition to short-term interest rates as the operating target. However, the basic approach of lowering nominal interest rates across the entire yield curve and lowering real interest rates by raising inflation expectations has remained unchanged.

In modern central banking, QQE is classified as unconventional monetary policy, but from a somewhat longer-term perspective, it can be said to be a contemporary application of Hawtrey's theory on the importance of guiding expectations and Keynes' theory that monetary easing can be conducted through the purchase of long-term government bonds. An old East Asian proverb -- "visiting old, learn new" -- says that one can derive new understanding from learning the lessons of the past, and I think this is particularly apt with regard to the intellectual journey leading up to QQE.

In practice, QQE has produced its intended effects. Inflation expectations climbed notably after the introduction of QQE. This demonstrates that a strong determination by the central bank pushes up people's forward-looking inflation expectations. In addition,

the large-scale purchases of JGBs as part of QQE have exerted downward pressure on nominal interest rates across the entire yield curve. As a result, the Bank of Japan has succeeded in reducing real interest rates to levels well below the natural rate of interest for the first time in its two-decade long battle with the zero lower bound on the short-term policy interest rate (Chart 7).

These monetary easing effects have stimulated economic activity both in the corporate and household sectors, and the output gap has improved substantially. Corporate profits are at record highs. The unemployment rate has fallen to less than 3 percent, meaning that Japan has almost achieved full employment (Chart 8). Wages are rising moderately with the tightening of labor market conditions. An especially noteworthy change is that the practice of regular increases in base pay, which had disappeared during the prolonged deflation since the second half of the 1990s, has returned and has now been observed for the fourth consecutive year. A virtuous cycle between rising inflation and wage increases has been operating. In other words, Japan is no longer experiencing deflation in the sense of a sustained decline in prices.

IV. New Challenges under Low Inflation

It can be said that Japan's experience over the past four years illustrates the effectiveness of the kind of monetary policy approach that works on expectations first pointed out by economists in the first half of the 20th century. That being said, while the policy approach has steered Japan's economy in the right direction, our intellectual journey has not yet been completed. The rate of change in the consumer price index (CPI) recently has been around 0 percent and there is still a long way to go until the price stability target of 2 percent is achieved.

The main reason is that inflation expectations, which had clearly risen as a result of the introduction of QQE, have since declined again and have continued to be subdued (Chart 9). Analysis by the Bank of Japan suggests that, as a result of prolonged deflation, the backward-looking, or adaptive, component in the formation of inflation expectations

continues to be much stronger in Japan than in Europe and the United States. Therefore, if, for whatever reason, the observed inflation rate declines -- even if only temporarily -- this will tend to drag down inflation expectations. With the observed inflation rate having fallen due to a drop in crude oil prices since autumn 2014 by more than 70 percent and to turbulence in global financial markets in 2015 and 2016 reflecting uncertainty regarding the prospects of emerging economies, this meant that inflation expectations also declined. The Bank of Japan aims to fundamentally dispel the deflationary mindset that has become entrenched among the public, but changing people's inflation perceptions is not easy. As Hawtrey argued, the problem is psychological.

In response to this situation, when the Bank of Japan introduced "QQE with Yield Curve Control" in September last year, it also introduced an inflation-overshooting commitment (Chart 10). Specifically, the Bank of Japan committed itself to expanding the monetary base until the year-on-year rate of increase in the observed CPI exceeds 2 percent and stays above the target in a stable manner. The idea is that if people actually experience inflation above 2 percent, inflation expectations will rise through the adaptive component of expectation formation. At the same time, if people experience inflation above 2 percent, this will boost the credibility of the Bank of Japan's price stability target and the formation of inflation expectations will become more forward-looking, helping the Bank of Japan to anchor inflation expectations at about 2 percent.

The problems that Japan's economy has faced since the second half of the 1990s were long regarded as specific to Japan. However, following the global financial crisis, which saw the collapse of an asset bubble and severe damage to the financial system, a relatively prolonged slowdown in economic growth and a fall in the inflation rate have become an experience shared by many economies. As a result of the bold response of central banks based on the knowledge and insights gained in the field of economics over the decades, a recurrence of the Great Depression was avoided and global concerns over deflation have faded to a considerable extent. However, the performance of the global economy today is by no means satisfactory.

Looking back, monetary policy to work on expectations has played a major role in keeping inflation in check following the bout of high inflation worldwide during the 1970s. The introduction of inflation targeting in many economies since the 1990s as well as the remarkable developments in monetary policy theory implicitly focused on responding to high inflation. While these policies and theoretical developments helped to bring about the Great Moderation, central banks at the same time started to face a new challenge, namely, how to appropriately manage inflation expectations in a low-inflation environment under the zero lower bound.

Central bankers and scholars have only just started to find responses to this new challenge, both from a policy and a theoretical perspective. In particular with regard to the inflation expectation formation process, which likely differs across countries, regions, and periods, more empirical analysis is needed. As a central bank, we need to examine concrete measures to appropriately manage inflation expectations based on such analysis. The inflation-overshooting commitment introduced by the Bank of Japan last year is one answer, representing a response to the specific situation in Japan, but I strongly hope that scholars and policy makers will further deepen the debate from a global perspective.

British scholars produced sharp insights into the importance of expectations in monetary policy nearly a century ago. Nevertheless, the role of expectations continues to provide challenges -- both old and new -- today.

Thank you very much for your attention.

The Role of Expectations in Monetary Policy: Evolution of Theories and the Bank of Japan's Experience

Speech at the University of Oxford

June 8, 2017

Haruhiko Kuroda

Governor of the Bank of Japan

Chart 1

Monetary Policy Discussions by Economists in the UK in the First Half of the 20th Century (1)

John Maynard Keynes
(1883-1946)

by Walter Stoneman, bromide print, July 1940

Liquidity trap

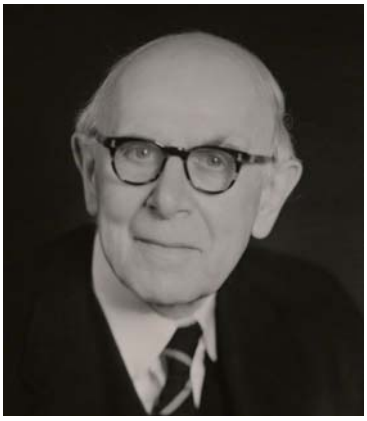
"…***after the rate of interest has fallen to a certain level,*** *liquidity-preference may become virtually absolute in the sense that almost everyone prefers cash to holding a debt which yields so low a rate of interest. In this event* ***the monetary authority would have lost effective control over the rate of interest****.*

But whilst ***this limiting case might become practically important in future****, I know of no example of it hitherto. Indeed, owing to the unwillingness of most monetary authorities to deal boldly in debts of long term, there has not been much opportunity for a test."*

-- The General Theory of Employment, Interest, and Money (1936)

Monetary Policy Discussions by Economists in the UK in the First Half of the 20th Century (2)

Ralph George Hawtrey
(1879-1975)



by Walter Bird, bromide print, 1958

Forward-looking monetary policy

"*The explanation is that* ***it is not the past rise in prices but the future rise*** *that has to be counteracted.*

The problem is a psychological one. *As soon as the rate is high enough to offset the traders' hopes of future profits it becomes deterrent. And* ***a very relevant factor in the psychological problem is the traders' expectations as to the intentions of the authority which fixes rates****."*

-- Monetary Reconstruction (1923)

Monetary Policy Discussions by Economists in the UK in the First Half of the 20th Century (3)

Ralph George Hawtrey
(1879-1975)

by Walter Bird, bromide print, 1958

Effects of interest rate policy

"*The pressure applied to traders by a moderate rise in the short-term rate of interest, say, 1 percent, is undeniably very slight. Yet* ***apparently the Bank of England always counted on a rise of 1 percent or even of 0.5 percent having a noticeable effect****."*

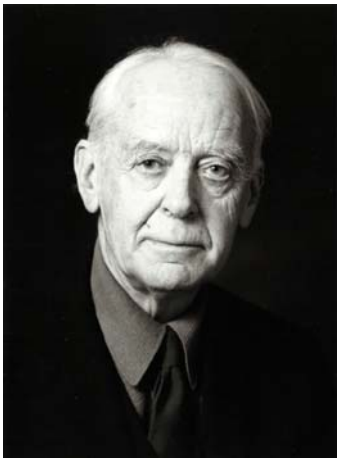
"*In the first place, when the use of Bank rate to restrict credit became an established practice,* ***traders, being aware of the intentions of the Bank, were inclined to anticipate them****.* ***When Bank rate went up from 3 to 4 percent, a trader would reason that this was intended to have a restrictive effect on markets, and that, if the effect was not brought about, the rate would simply go higher and higher till it was****. Those who took that view would restrict their purchases and demand would fall off, and so the 4 percent rate might be found potent enough, even though, if unsupported by traders' anticipations, a 6 or 7 percent rate might have been necessary."*

-- A Century of Bank Rate (1938)

Chart 4

Monetary Policy Discussions by Economists in the UK in the First Half of the 20th Century (4)

John Richard Hicks
(1904-1989)



Source: All Souls College, University of Oxford

Announcement effect of monetary policy

"I want to use ***the announcement effect*** *of an act of policy to mean the change which takes place in people's minds, the change in the prospect which they think to be before them, before there is any change which expresses itself in transactions of any kind.* ***It is the same as what Hawtrey calls 'psychological effect'; but that is a bad term, for it suggests something irrational, and this is entirely rational****.*

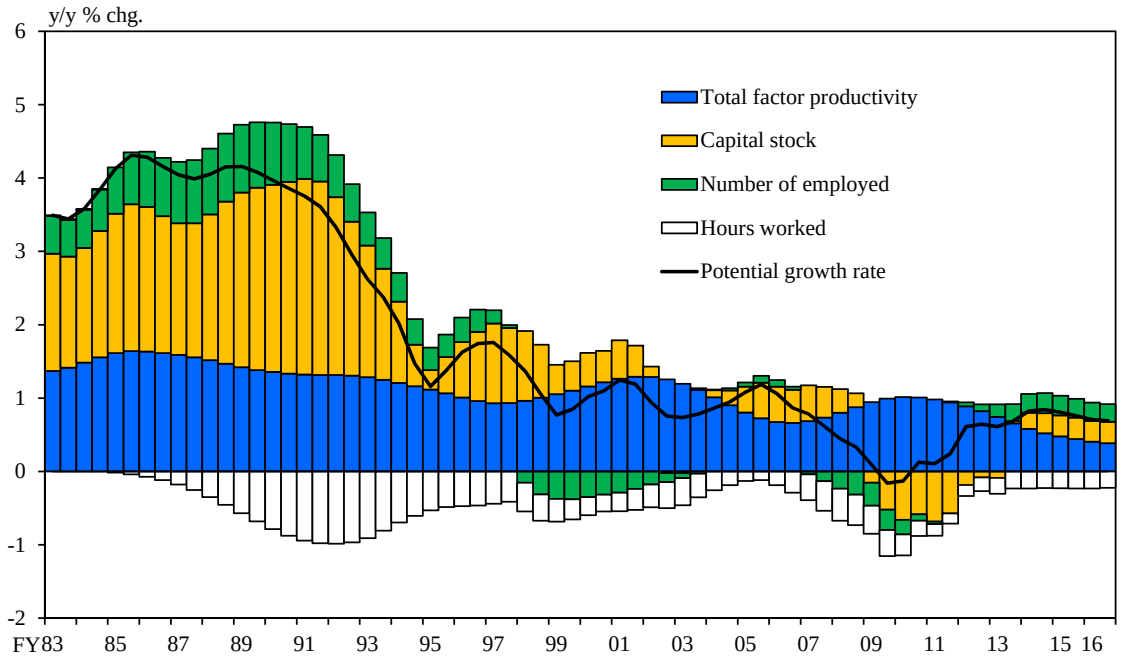
Expectations of the future (entirely rational expectations) are based upon the data that are available in the present. ***An act of policy is a significant addition to the data that are available; it should result, and should almost immediately result, in a shift in expectations.*** *This is what I mean by an announcement effect.*

What I learn from Hawtrey's analysis is that ***the 'classical' Bank Rate system was strong, or could be strong, in its announcement effects****."*

-- Economic Perspectives (1977)

Chart 5

Japan's Potential Growth Rate

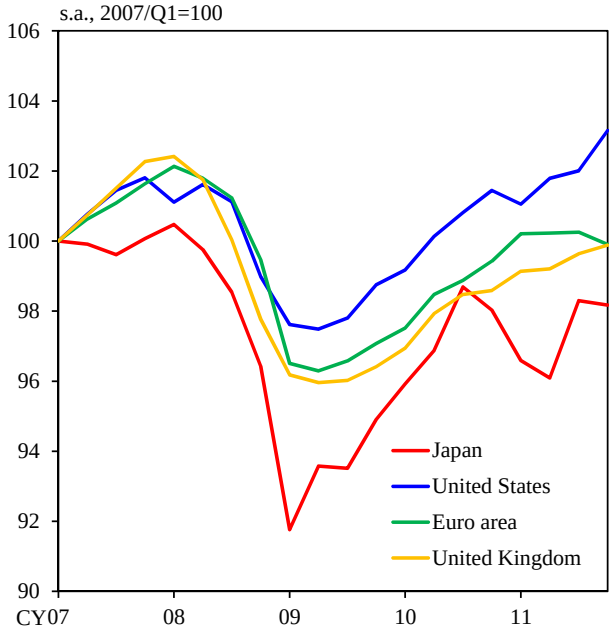


Note: The potential growth rate is estimated by the Research and Statistics Department, Bank of Japan.
Sources: Cabinet Office; Bank of Japan; Ministry of Internal Affairs and Communications; Ministry of Health, Labour and Welfare; Ministry of Economy, Trade and Industry; Research Institute of Economy, Trade and Industry.

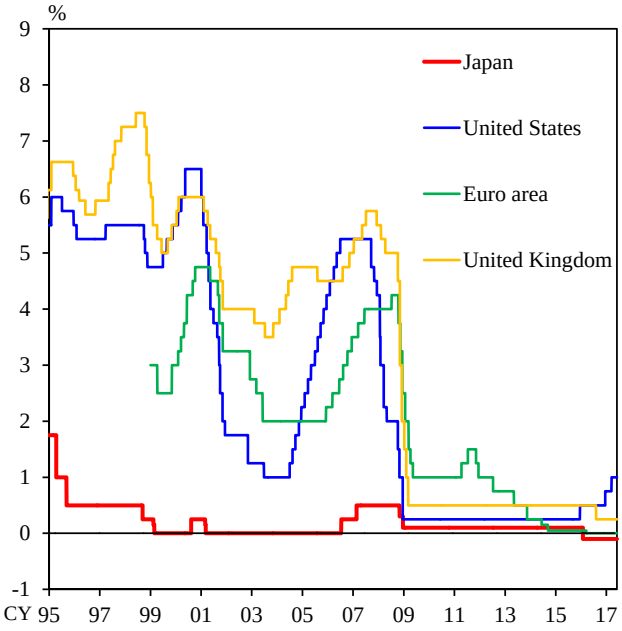
Chart 6

Real GDP and Monetary Policy Responses after the Global Financial Crisis

Real GDP



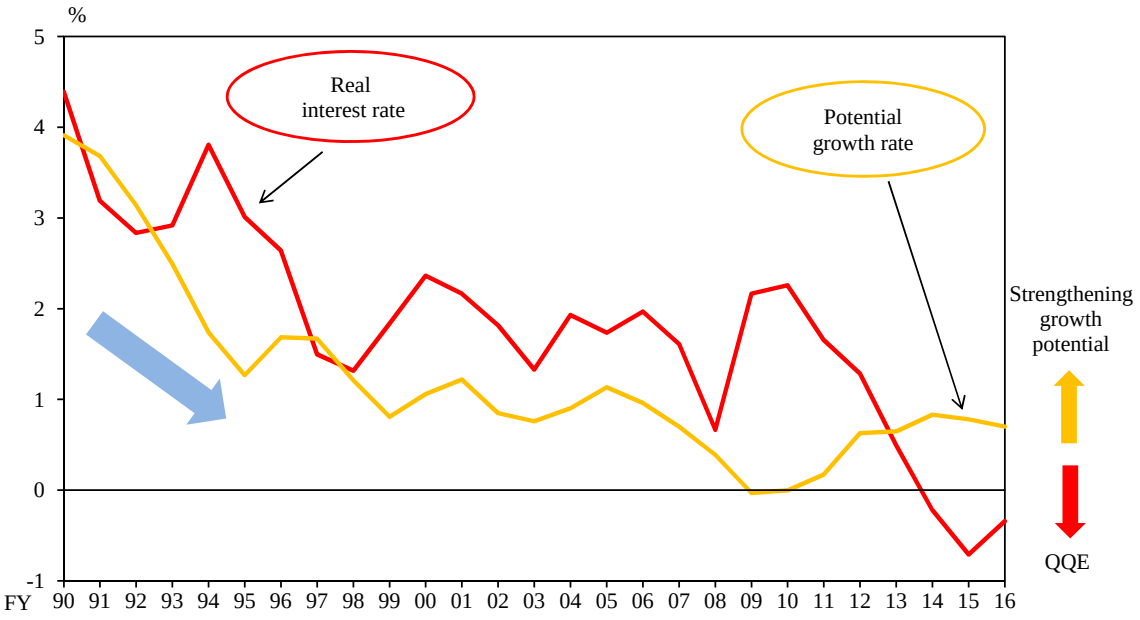
Policy Rates



Note: For Japan, for the period when no target interest rate was adopted, figures for the policy rate are the interest rate applied on excess reserves.
Sources: Cabinet Office; Haver; Bank of Japan; Federal Reserve; European Central Bank; Bank of England.

Chart 7

Real Interest Rate and Natural Rate of Interest (Potential Growth Rate)

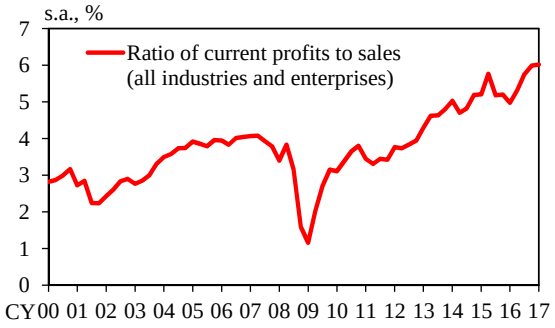


Notes: 1. The real interest rate is calculated by subtracting the year-on-year rate of increase in the CPI (excluding fresh food and energy) from the yield on 10-year JGBs.
2. The potential growth rate is estimated by the Research and Statistics Department, Bank of Japan.
Sources: Ministry of Internal Affairs and Communications; Bloomberg; Cabinet Office; Bank of Japan; Ministry of Health, Labour and Welfare; Ministry of Economy, Trade and Industry; Research Institute of Economy, Trade and Industry.

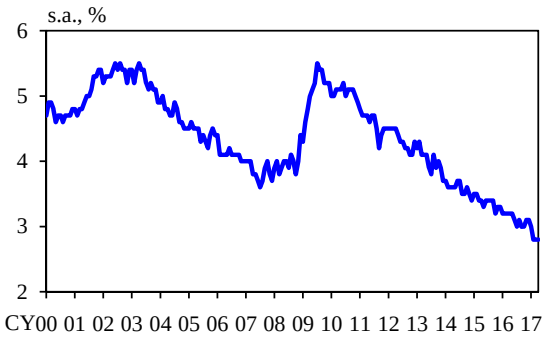
Chart 8

Effects of "Quantitative and Qualitative Monetary Easing"

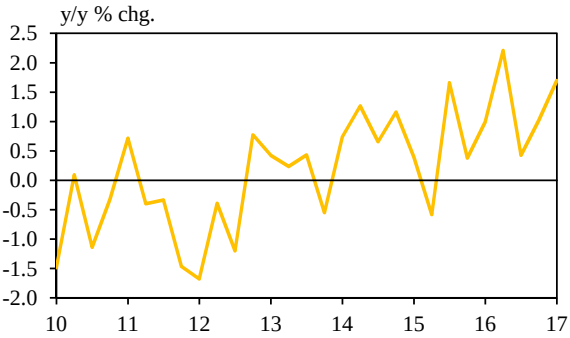
Corporate Profits



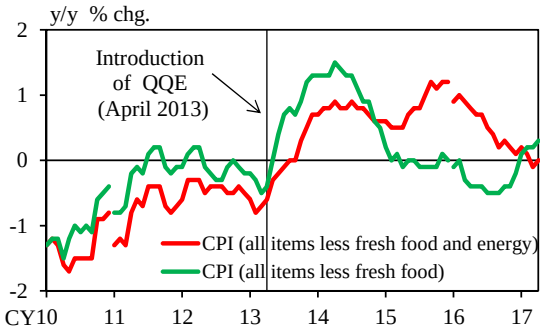
Unemployment Rate



Hourly Cash Earnings



Consumer Prices

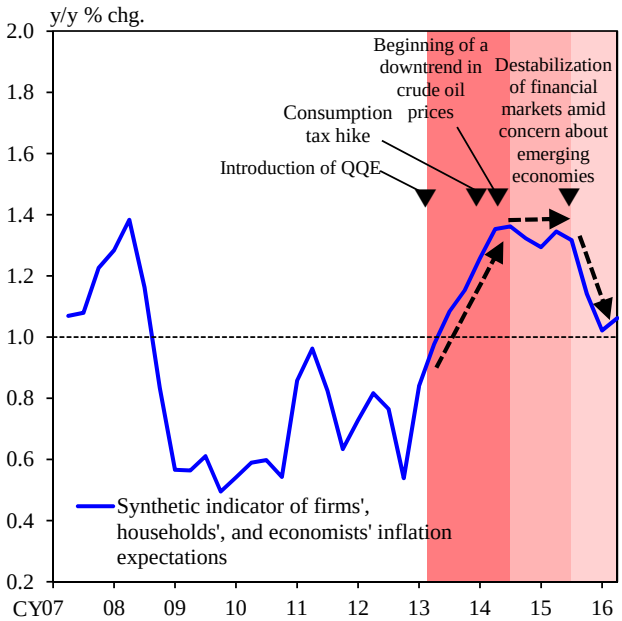


Sources: Ministry of Finance; Ministry of Internal Affairs and Communications; Ministry of Health, Labour and Welfare.

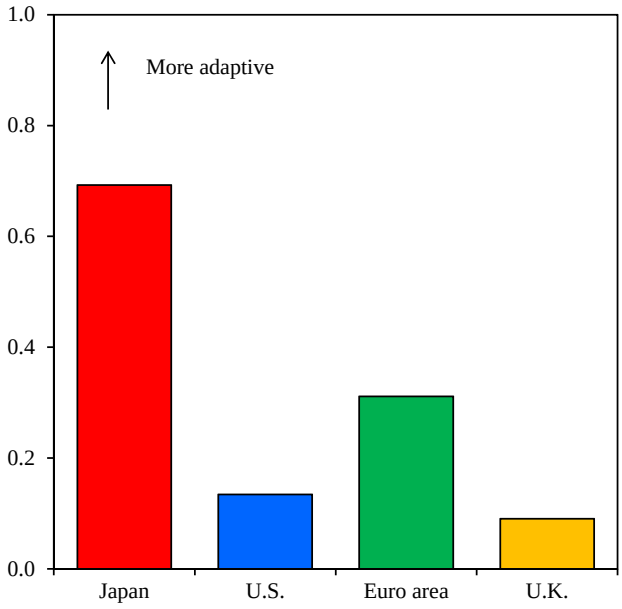
Chart 9

Inflation Expectations

Synthetic Indicator of Inflation Expectations



Contribution of Adaptive Component to Inflation Expectations



Note: The chart shows the contribution of observed inflation to inflation expectations 1 year ahead.

Sources: Bank of Japan "Comprehensive Assessment: Developments in Economic Activity and Prices as well as Policy Effects since the Introduction of Quantitative and Qualitative Monetary Easing (QQE)" (September 2016).
Consensus Economics Inc., "Consensus Forecasts" , etc.

Inflation-Overshooting Commitment

- The Bank continues expanding the monetary base until the year-on-year rate of increase in the observed CPI (all items less fresh food) exceeds the price stability target of 2 percent and stays above the target in a stable manner.