

Is inflation (or deflation) “always and everywhere” a monetary phenomenon?

My intellectual journey in central banking

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Introduction

I feel honoured to be invited to the People’s Bank of China-BIS Research Conference in Beijing and to have the opportunity to talk before seasoned central bankers in the Asia and Pacific region. Although many things could be said along the theme of this conference, “Globalisation and Inflation Dynamics in Asia and the Pacific”, I will take advantage of the liberty of being the keynote speaker, and discuss a few issues in a related but somewhat broader context.

During my tenure as the governor of the Bank of Japan, which ended last March, I fought to achieve price stability, which is obviously the core mission of a central bank. Needless to say, the same is true for central banks and central bankers around the globe. This is always a challenging job, as illustrated by the sober fact that we often don’t know for sure about which we should worry more: inflation or deflation. For instance, in countries like India and Indonesia, inflation is definitely the principal concern. But in Japan, how to get out of deflation has been hotly debated over the years. And in China, while there have been intermittent concerns of overheating and related inflation over the decade, there is also recognition that persistently high levels of fixed asset investment might engender excess capacity, which could have a deflationary impact not only on China but also on the global economy.

There are ample episodes where policymakers and economists alike were not so prescient about future economic and price developments. Japan’s deflation immediately comes to my mind. In the mid-1990s, economists, market participants and investors at home and abroad alike did not foresee Japan’s deflation. Consensus forecasts one or two years ahead consistently overshoot realised inflation in Japan (Figure 1, top panel), and longer-term inflation expectations remained over 1% until 1999 despite realised inflation being well below that level since 1994 (Figure 1, bottom panel). In markets, JGB yields remained at higher levels in the mid-1990s, even after three-month rates had plummeted (Figure 1, centre panel).

And as for our prescience with regard to the Great Financial Crisis, we just need to remember that ahead of it in the mid-2000s, the buzzword to describe the current economic and financial situation was the Great Moderation!

And so, humility is in order. Today, I am going to reflect on issues bearing on price stability,¹ in a fashion that recalls my intellectual journey in central banking from the days of a junior staffer at the Bank of Japan to the hectic days as governor. In doing so, I will mainly draw on the Japanese experience and, if needed, I will briefly refer to experiences in other countries or regions as well.

The reason for my drawing mainly on Japan's experience is not because I think Japan's experience is somehow universally applicable in drawing lessons, but because I am most familiar with the Japanese case, and I also want to highlight some issues which I think have not received sufficient attention, in the hope that these issues are examined more carefully in future research and policy analysis.

Friedman's proposition

Probably, the best way to begin retracing my journey is to ponder an oft-quoted proposition by Milton Friedman, whose last class at the University of Chicago I took in 1975. He said, "Inflation is always and everywhere a monetary phenomenon."² At the time, this expression was quite fresh and punchy for a student who was trained in a Japanese university dominated by the Keynesian tradition, and it didn't take long to persuade me. His succinct account of the Great Depression in the US was so convincing that I came to look at the economy through this "lens".³ In terms of the Japanese economy, the supporting evidence was the observed correlation between money and prices, which was quite pronounced in Japan until the early 1980s (Figure 2). Although the Bank of Japan itself did not formally adopt money supply targeting, unlike other major central banks of the advanced economies, the Bank watched carefully the developments of monetary aggregates and succeeded in avoiding stagflation after the second "oil shock". Japan was praised by Friedman as a successful example of good management of monetary policy.⁴

¹ There are so many excellent speeches and writings on price stability and the role of central banks, obviously. Here, I will only mention the following speeches delivered this year:

- Paul Volcker, "Central banking at a crossroad", upon receiving The Economic Club of New York Award for Leadership Excellence, 29 May 2013.
- Ben Bernanke, "A century of U.S. central banking: goals, frameworks, accountability" at "The First 100 Years of the Federal Reserve: The Policy Record, Lessons Learned, and Prospects for the Future", a conference sponsored by NBER, Cambridge, Massachusetts, 10 July 2013.
- Raghuram Rajan, "A step in the dark: unconventional monetary policy after the crisis", Andrew Crockett Memorial Lecture delivered at the BIS on 23 June 2013.

² Milton Friedman, *Inflation Causes and Consequences*, Asian Publishing House, 1963.

³ Milton Friedman and Anna J Schwartz, *A Monetary History of the United States, 1867–1960*, Princeton, N.J.: Princeton University Press, 1963.

⁴ Milton Friedman, "Monetary policy: theory and practice", *Journal of Money, Credit, and Banking* 14, February 1982, pp. 98–118: "Internationally, those countries that have broadly followed the five-point monetarist policy have succeeded in controlling inflation and have done so while achieving relatively satisfactory economic growth. Among the advanced countries of the world, the outstanding example is Japan. In 1973, Japan's inflation rate was around 25 percent per year, following monetary growth at a similar rate. Japan brought the rate of monetary growth down drastically, to the neighborhood of 10 to 15 percent, and has continued to reduce it still further. After an intervening recession – by Japanese standards, not necessarily ours – of about eighteen months, inflation started to come down. It came down gradually and steadily, reached a level below

Although the relationship between money and prices itself was broken in many economies due to subsequent deregulation and technological change,⁵ the central message of Friedman's proposition remains basically intact, if we shift our attention away from monetary aggregates, and look at interest rates or prices more generally.⁶ After all, central banks play an essential role in achieving price stability. As a long-time central banker, I have held and still hold the same view.

Having said that, I also have come to view this proposition as somewhat loose and begun to wonder exactly what this proposition means in terms of actual policy formulation. The intellectual climate or mindset created by this proposition, which I would call the "omnipotent central bank view", is somewhat overstretched. The complexity of my feelings towards this proposition has been amplified by my experience over the past turbulent quarter century in Japan: a bubble, its collapse, a financial crisis and the emergence of mild deflation, among other phenomena. I have often voiced such reservations in various international meetings, but before the Great Financial Crisis reactions were rather muted. After all, Japan's experience tended to be regarded as something unique and arising from her own policy failures; in my view, it was not well understood by outside observers, with the notable exception of the BIS.⁷ But, the Great Financial Crisis has changed the landscape.

Can we still say "Inflation is always and everywhere a monetary phenomenon"? Can we also say "Deflation is always and everywhere a monetary phenomenon"? The latter expression, replacing inflation with deflation, has been used quite often in Japan during the past 15 years. If we take the episode of hyperinflation in the early 1920s or deflation in the 1930s, the answer to both questions appears rather straightforward. But what about the past quarter century? To what extent do these propositions describe price and economic developments and serve as useful guiding principles for policy conduct by central bankers? These are the questions which I would like to address today.

In what follows, I would like to raise seven issues to illustrate why I have come to feel some uneasiness with Friedman's proposition, or more precisely, its popular interpretation.

Monetary phenomenon vs monetary policy phenomenon

The first issue I would like to take up is about the very meaning of "monetary phenomenon". My guess is that when hearing Friedman's proposition, most people take the expression of monetary phenomenon as synonymous with "monetary policy phenomenon".

5 percent, then temporarily went up after the most recent oil shock. Since then, it is starting to come back down again, and clearly seems under control. And the reduction of inflation has been accompanied by a growing economy."

⁵ As Gerald Bouey, Governor of the Bank of Canada, put it in 1982: "[w]e didn't abandon the monetary aggregates, they abandoned us".

⁶ Stephen G Cecchetti, "Five years in the tower", remarks prepared for the 12th BIS Annual Conference, Lucerne, Switzerland, 20–21 June 2013.

⁷ William White and Claudio Borio, "Whither monetary and financial stability? The implications of evolving policy regimes", *BIS Working Papers* no 147, February 2004.

How different is monetary phenomenon from monetary policy phenomenon?

This further begs the question of what is monetary policy in the first place.⁸ In this regard, it is worthwhile to revisit Friedman's well-known AEA presidential address, "The Role of Monetary Policy", in 1968.

Let me quote his description of the role of monetary policy.⁹

The first and most important lesson that history teaches about what monetary policy can do – and it is a lesson of the most profound importance – is that monetary policy can prevent money itself from being a major source of economic disturbance... There is therefore a positive and important task for the monetary authority – to suggest improvements in the [monetary] machine that will reduce the chances that it will get out of order, and to use its own powers so as to keep the machine in good working order... A second thing monetary policy can do is [to] provide a stable background for the economy... Our economic system will work best when producers and consumers, employers and employees, can proceed with full confidence that the average level of prices will behave in a known way in the future – preferably that it will be highly stable.

What is intriguing here is that Friedman used the term monetary policy in a much broader context than we define it now. At least until the advanced economies experienced the Great Financial Crisis, the term monetary policy was almost equivalent to "the control of interest rates aiming at price stability". Monetary policy in this sense has been studied intensively and refined both in theory and in practice. Yet in his address, Friedman pointed to the maintenance of smooth functioning of the financial system and markets as the first role of monetary policy, and the maintenance of price stability as the second role.

Of course, not much would be gained here by delving deeply into the precision of these definitions, but these words and the terms of Friedman strike a chord with central bankers for several reasons. First, although monetary policy in the conventional sense and financial system[s] policy are usually considered as different policy spheres, they become related in a complicated and delicate manner at critical points. Second, while policy instruments employed by a central bank essentially aim at providing or allocating liquidity, such instruments are not earmarked for each policy and its objective, namely, price stability or financial stability. The distinction between price and financial stability policies is often not that clear, which I will turn to in a few minutes.

Friedman succinctly points to the importance of maintaining financial system stability in a crisis. How a central bank acts as a lender of last resort, especially in a crisis, is an important factor affecting price developments. This point is clearly shown in a comparison between the US in the 1930s and Japan since the late 1990s. In the former case, the price level declined by around 30% within a few years. There are many causes for that sharp decline in the US, but the single most important one was that the Federal Reserve did not act aggressively enough as a lender of last

⁸ Masaaki Shirakawa, opening speech at 2008 International Conference "Frontiers in Monetary Theory and Policy" hosted by the Institute for Monetary and Economic Studies, Bank of Japan, in Tokyo on 28 May 2008.

⁹ Milton Friedman, "The role of monetary policy", *American Economic Review*, 58 (1), 1968, 1–17.

resort.¹⁰ But in the recent case of Japan, the CPI has declined by [a mere] 4% over the past 15 years (Figure 3). The key to understanding this notable difference lies in the functioning of the financial system.

In my experience, the most illuminating example of this role of the central bank was the Bank of Japan's decision to provide an unlimited amount of liquidity to Yamaichi Securities after massive off-balance sheet losses were revealed at the brokerage in the fall of 1997.¹¹ Yamaichi, which had assets of 3.7 trillion yen or 30 billion US dollars at that time, could be regarded as the Japanese equivalent to Lehman Brothers in 2008. Yamaichi also had a sizeable presence internationally, especially in European capital markets. At the time, Japan did not have a bankruptcy law that enabled an orderly resolution of securities companies. Given such circumstances, the Bank of Japan decided to provide an unlimited amount of liquidity to the firm. This measure essentially enabled an orderly resolution by effectively replacing all exposures of domestic and overseas market participants against Yamaichi with exposures against the Bank of Japan. The materialisation of systemic risk was thus prevented.

The decision to provide unlimited liquidity to Yamaichi was truly a tough one for the Bank of Japan. It was made without knowing whether the institution was solvent or insolvent. While the Bank of Japan eventually suffered some losses, I would say that the benefit of preventing the systemic risk from materialising far exceeded these costs: in contrast to the global economy after the collapse of Lehman Brothers (Figure 4), Japan did not experience a sharp and significant plunge in economic activity. If the Bank of Japan had been hesitant about acting as a lender of last resort, Japan would have suffered from a deflation analogous to that observed in the US in the 1930s. This experience is best understood as underscoring the importance of the first role of monetary policy in Friedman's formulation cited above, namely, the lender of last resort.

Price stability vs financial stability

The second issue I would like to take up is how a central bank, in carrying out its mission, should balance its price stability mandate against its financial stability mandate. In other words, how the first and second roles of monetary policy in Friedman's formulation are interrelated.

The ultimate objective of macroeconomic policy is to ensure economic stability, and central banks can contribute to this by achieving price stability. This has not always been well understood, and the experience of the Great Inflation in the 1970s was a bitter lesson, not least in Japan, which suffered from double-digit inflation. To be sure, inflation in Japan was much more controlled after the second oil shock, so much so that Friedman, as noted above, referred to Japan favourably in the early 1980s as a successful example of good monetary management.

¹⁰ Milton Friedman and Anna J Schwartz, *A Monetary History of the United States, 1867–1960*, Princeton, N.J.: Princeton University Press, 1963. Ben Bernanke, "On Milton Friedman's ninetieth birthday", remarks at the Conference to Honor Milton Friedman, University of Chicago, Chicago, Illinois, 8 November 2002.

¹¹ Masaaki Shirakawa, "Deleveraging and growth: is the developed world following Japan's long and winding road?", lecture at the London School of Economics and Political Science, 10 January 2012.

But success creates its own problems. An odd reality is that the “Lost Decade(s)” (though I think this phraseology is somewhat misleading) was preceded by much praised price stability. During the bubble period of the mid- and late 1980s, the rate of inflation of the consumer price index (CPI) was quite subdued at about 1% (Figure 3). This was followed, as we all know, by a period of sub-par growth, financial crisis and deflation. This bears striking similarities with the Great Moderation experienced by many industrial economies in the mid-2000s; namely, a period of benign price developments that was followed by severe economic downturn and financial crisis.

I don’t mean to say that price stability itself creates problems or bubbles, but there exists a subtle link between the two.¹² A prolonged period of high growth coupled with low inflation gives rise to optimistic sentiment, which is at least partly responsible for fostering financial bubbles. In addition, low inflation tends to justify prolonged monetary easing, which in turn can become one of factors contributing to the formation of bubbles.¹³

We should not treat these experiences lightly. We have to start by recognising this odd reality of bubbles being accompanied by price stability, yet then followed by instability of the financial system, subsequently bringing about low growth and often inflation that is lower than desired. From such a long-run perspective, we have to admit that central banks that have accommodated asset price bubbles failed to achieve economic stability, given that both financial and price stability are essential elements of economic stability. We also cannot separate the bubble period from its damaging aftermath, intertwined as they are through leverage and deleverage and through overly optimistic pricing followed by its correction. We certainly cannot say that problems can be solved by focusing solely on the latter period. We have to think deeply about how best to relate the price stability mandate to financial stability when the central bank conducts monetary policy.

In this regard, the pre-crisis orthodoxy was that price stability leads to financial stability and thus there is no inherent conflict. However, this position is no longer tenable and central banks are now increasingly paying more attention to financial stability when formulating monetary policy at least relative to the pre-crisis orthodoxy.¹⁴ What this new intellectual climate exactly implies in terms of optimal policy has to be clarified further.

There exists a general consensus that supervision and regulation of financial institutions as well as macroprudential policy measures are the primary instruments assigned to financial stability. What remains to be clarified is a response function for monetary policy. In other words, how should central banks lean against the wind? In fairness, I should note that even before the global financial crisis, policymakers were

¹² Masaaki Shirakawa, “Revisiting the philosophy behind central bank policy”, speech at the Economic Club of New York, 22 April 2010.

¹³ For the discussion on the relationship between monetary stability and financial stability, see Mervyn King, “Twenty years of inflation targeting”, The Stamp Memorial Lecture, London School of Economics, 9 October 2012.

¹⁴ Bernanke said in the recent speech: “Today, the Federal Reserve sees its responsibilities for the maintenance of financial stability as coequal with its responsibilities for the management of monetary policy, and we have made substantial institutional changes in recognition of this change in goals. In a sense, we have come full circle, back to the original goal of the Federal Reserve of preventing financial panics.” (“A century of U.S. central banking: goals, frameworks, accountability”, 10 July 2013.)

not neglecting financial conditions and, for that matter, financial stability. Financial conditions have been taken into consideration to the extent that they affect price developments. If we were to change the way in which monetary policy is conducted, I think there would be two possible routes of doing so:

The first approach would be to carefully examine and pay more attention to the effects emanating from the financial side of the economy on price developments. This could be done over the conventional time horizon of inflation targeting, say, a two- to three-year horizon. However, based upon past experience, I think it is highly unlikely that, solely due to financial pressures, the inflation rate would be anticipated to go up within that time horizon so much as to justify monetary tightening. Alternatively, we could further lengthen the time horizon of inflation targeting. Formally speaking, this could still be called “inflation targeting” or “flexible inflation targeting”, though the longer time horizon might not correspond to the natural connotation of the term “targeting”. The framing issue aside, I wonder whether a forecasted path of inflation in a main scenario is sufficient to capture all the major risks to economic stability, and whether such a forecasted path, even if it were to be accurate, could convince the population at large that monetary tightening was needed.

The second approach would be to place more emphasis on “tail risk” relative to the “main scenario” in our forecasts. Or we could simply say that the central banks are watching the economic and financial situation carefully from both price stability and financial stability perspectives. What would we best call this kind of approach? It may sound like a problem of semantics but I would have difficulty in calling such an approach “flexible inflation targeting”, since it does not attach overarching importance to an inflation number.

Price stability and “maximum employment”

The third issue I would like to take up is how a central bank should weigh price stability against short-run economic stabilisation or employment. As he explained in his AEA address, Friedman’s view was that if interest rate policy was conducted in order to achieve low and stable inflation, there was no trade-off between price stability and full employment, or “maximum employment” in the language of the Federal Reserve Act. Nevertheless, what we are now witnessing in the US and the euro area is high unemployment despite the fact that the inflation rate is low and stable, and inflation expectations are anchored. In fact, it is readings of labour market conditions that have been most scrutinised in the recent policy debate in the US over the timing and degree of “tapering” of asset purchases, and, further down the line, exit from exceptionally low policy rates.

How and to what extent should central banks care about employment? There is no central bank that ignores fluctuations in economic output or employment. After all, that is why the monetary policy responses of central banks in many countries have been well described by the simple Taylor rule. This means that, regardless of how the mandate of a central bank is crafted in central bank law – single mandate or dual mandate or some variant – real-life central banks have been, more or less, operating in a “dual mandate” world.

In this regard, Japan’s experience with deflation and unemployment may shed considerable light on the grounds central banks have for concern about deflation

and how monetary policy is conducted as a result.¹⁵ As I have noted many times elsewhere, Japan's price decline over the 15 years or so contrasts starkly with the global episode of deflation in the 1930s both in terms of the severity of the price decline and the associated rise in unemployment. Japan's CPI started to decline from 1998, and the cumulative decline of CPI since then has been a bit less than 4% (Figure 3).

Although Japan has been frequently described over this period as having experienced exceptional economic malaise, Japan's labour market conditions have been rather stable, particularly compared with what happened in the major advanced economies after the bursting of the global credit bubble in the late 2000s. Japan's unemployment rate has long been low and its rise during the latest crisis was rather modest (Figure 5).

It follows that if we evaluate the performance of the Japanese economy based upon a "dual mandate" rather than a "single mandate", it fares not too badly in international comparisons. This can be verified by calculating the so-called "misery index", the original definition of which is a sum of the inflation rate and the unemployment rate. For the purpose of today's presentation, I sum the unemployment rate with the absolute value of the inflation rate so as to treat inflation and deflation in a symmetrical manner. In Figure 6, we see that since 2000, Japan recorded the lowest number of the "misery index" when compared with the US, the euro area and the UK. Even were we to penalise deflation more by measuring the degree of misery due to price changes as the gap between the actual and the desired rate of inflation, say 2%, the conclusion does not change materially.

Japan's relatively good score reflects the combination of mild deflation as well as low unemployment. But we should not forget that these two outcomes are intimately related. Namely, Japan's employment practices are one of the main factors behind low inflation rates in Japan relative to other economies. Nominal wage downward rigidity is not observed in Japan, which contrasts starkly with the US and Europe. Japanese society since the second half of the 1990s has prioritised employment over wages: it effected reductions in labour costs, [which is employment multiplied by wages,] largely by cutting back wages. Consequently, wages declined in absolute terms and prices fell (Figure 7).

To put it differently, mild deflation has been, to some extent, a price that Japanese society has paid to secure "maximum employment". This observation suggests that the desired level of inflation for any country does not exist in a vacuum, and a deeper and more holistic examination of price stability which pays due attention to differences in institutional factors across countries and time is in order.

¹⁵ See Kenji Nishizaki, Toshitaka Sekine and Yoichi Ueno, "Chronic deflation in Japan", *Bank of Japan Working Paper Series* No.12-E-6, July 2012; Takeshi Kimura and Kazuo Ueda, "Downward nominal wage rigidity in Japan", *Journal of the Japanese and International Economies*, 15, 2001, pp 50–67.

The effectiveness of unconventional monetary policy under the zero lower bound and ongoing balance-sheet adjustment

The fourth issue I would like to take up is whether monetary policy or interest rate policy is always and everywhere effective. More specifically, what is the effectiveness of unconventional monetary policy under the zero lower bound? The proposition “Inflation is always and everywhere a monetary phenomenon” implies that a massive increase in central bank money can bring about inflation or turn deflation into inflation. In Japan, central bank money more than doubled since 1997 but, as I said earlier, CPI declined by 4%. After the collapse of Lehman Brothers, we saw massive increases in central bank money in the major advanced economies including Japan, but again there was no sign of increases in the inflation rate (Figure 8). Of course, we could reinterpret Friedman’s proposition as implying that the central bank is capable of affecting the inflation rate through changing financial conditions rather than simply positing a mechanical link between money and prices. This is true qualitatively. The issue here is how and to what extent the central bank can affect the inflation rate by changing financial conditions in an economy under the zero lower bound and ongoing balance sheet adjustment.

The Bank of Japan has deployed all sorts of unconventional monetary policy measures ahead of other major central banks. Japan has been living in a world of zero interest rates for almost all of the past 15 years (Figure 9). The Bank of Japan hugely expanded its balance sheet, purchased non-traditional assets or risk assets such as stocks held by banks, commercial paper, corporate bonds, exchange-traded funds (ETFs) and real estate investment trusts (REITs), and adopted forward guidance on future policy. It is not an exaggeration to say that almost all the policies adopted by other central banks after the Great Financial Crisis, though often described as “innovative”, were policy measures which the Bank of Japan had “invented” much earlier, in uncharted waters, and without textbooks or precedents. When I was involved in first implementing these unconventional monetary policy measures at the Bank, in my days before becoming Governor, I never once thought of a situation where central banks in other major advanced economies might someday be also implementing the same sort of policy measures.

How does Friedman’s proposition fare in an economy constrained by the zero lower bound and ongoing balance sheet adjustment? The two mechanisms through which monetary policy can potentially affect inflation are either through narrowing the output gap or through raising inflation expectations. The issue is whether or not such mechanisms actually work under the zero lower bound and balance sheet adjustment. Although it is too early to draw any definitive conclusions, the emerging consensus seems to be that even though unconventional monetary policy affects prices of financial assets, its effect on real economic activity and hence the output gap is rather limited and uncertain.¹⁶ In this regard, the so-called “plug-in” approach that is often employed in estimating the effect of unconventional monetary policy is grossly misleading. Under this approach, the effect on real economic activity is assumed to be the products of the estimated impact of

¹⁶ Takeshi Kimura and Jouchi Nakajima, “Identifying conventional and unconventional monetary policy shocks”, *Bank of Japan Working Paper Series*, May 2013.

unconventional monetary policy on the long-term interest rate and the estimated response of real economic activity to interest rate changes in a normal period. This approach, however, assumes away any decline in the effectiveness of monetary policy.

In this regard, an interesting observation is the comparison of post-bubble periods in Japan and the US. If we compare the paths of real GDP following the collapse of Japan's bubble in the early 1990s, and the collapse of the US bubble in the late 2000s, Japan's GDP growth was actually a bit better than that of the US, despite supposedly much more "aggressive" monetary policy in the latter (Figure 10).

It is posited that favourable financial conditions engendered by unconventional monetary policy can positively influence economic activity by encouraging spending by economic entities that are not constrained by balance sheet problems. Whether or not this kind of mechanism has worked recently is an empirical question, and the answer appears to vary across economies depending on the size of the initial bubble, the flexibility of the economic system, including the environment for startups, and the share of economic entities subject to balance sheet constraints.

What about the expectations channel? If narrowing the output gap is not a promising route, the hoped-for change in expectations might conceivably be brought about through arithmetical increases in inflation reflecting increases in central bank money, although Chairman Bernanke himself has recently been dismissive of the existence of such a mechanism.¹⁷

Monetary phenomenon and real factors

The fifth issue I would like to take up concerns the role played by "real factors". In my view, the effectiveness of unconventional monetary policy also depends critically on real factors. More specifically, it depends on the ability to create a gap between the natural rate of interest and the market interest rate. If, after the collapse of a bubble, the natural rate of interest declines and remains depressed for an extended period of time, the effectiveness of unconventional monetary policy is diminished, compared to its effectiveness in a world without such declines in the natural rate.

Particularly relevant in the light of Japan's experience is the implication of a decline in the natural rate of interest which is secular in nature. The rationale for unconventional monetary policy is that if we can just succeed in lowering the long-term real interest rate, we will stimulate demand and thus return the path of economy to full employment. But the implicit assumption here is that the economy has only been hit by a temporary demand shock or is in a Keynesian situation of demand deficiency. In this case, unconventional monetary policy at least in theory should be effective by bringing future demand to the present. On the other hand, what if the economy is faced with a secular decline in the natural rate of interest? In this alternative case, the longer we rely on this mechanism, the less demand to be

¹⁷ Bernanke said in his press conference on 12 December 2012: "We want to be sure that there's no misunderstanding, that there's no effect on inflation expectations from the size of our balance sheet."

brought forward from the future there is and the less effective the intertemporal substitution mechanism will be.

Japan is now experiencing rapid ageing, at a pace that is unprecedented in modern economic history. Rapid ageing or, more precisely, the rapid rise in the “dependency rate”, is one of factors lowering potential growth and hence the natural rate of interest.¹⁸ It is noteworthy that there is a clear correlation between the potential growth rate and the long-term expected inflation rate in Japan (Figure 11). I can only say that we cannot fully understand Japanese macroeconomic performance without understanding its demography, and how it interacts with the economy and society.

To be sure, demography is one of the real factors that could affect inflation dynamics by affecting the natural rate of interest, but there are other real factors such as changes in the terms of trade. The way in which such real factors affect inflation dynamics varies across countries and time. Also, their importance relative to monetary factors depends on the degree of variation of the real factors.

Fiscal issues and government solvency

The sixth issue I would like to take up is the relationship of monetary policy to government finance. When government solvency is threatened, there are only three possible ways out of the situation.

One option is to improve the fiscal balance, which includes not only “austerity measures” but also efforts to increase tax revenue by enhancing growth potential. Needless to say, this is the most desirable option. In a democratic society, however, it requires a difficult political process of forming a nationwide consensus on the need to take the necessary steps, such as cutting fiscal expenditure, increasing tax rates and social security contributions, and implementing institutional reforms to strengthen the growth potential of the economy.

The second option, which is definitely undesirable, is outright default. Because government bonds are widely held by financial institutions as safe and convenient financial assets, a default would damage financial institutions’ capital positions and subsequently destabilise the financial system. Instability in the financial system would trigger a negative feedback loop in which the adverse impact on the real economy would invite a further deterioration in the fiscal balance and damage the entire financial system.

The third option, which is also undesirable, is inflation. This essentially aims to compensate for a decline in the government’s repayment capacity by increasing seigniorage through a significant increase in currency issuance, or in other words, fiscal monetisation by the central bank. The problem here is that giving up on price stability as a policy goal will impair the basis for sustainable growth and social stability.

When government solvency is undermined, unless necessary economic and fiscal structural reform measures are taken, the economy will inevitably face a harsh

¹⁸ Daisuke Ikeda and Masashi Saito, “The effects of demographic changes on the real interest rate in Japan”, *Bank of Japan Working Paper Series*, 27 February 2012.

trade-off between financial system instability and inflation. The unfolding of the European debt crisis vividly demonstrated the negative feedback loop involving government finance, financial system and real economic activity. Doubts about fiscal sustainability affect financial institutions that hold sizeable amounts of government debt, which in turn weigh on real economic activity. All this can threaten price stability as well. Of course, the actual economic outcome could vary significantly depending on several factors, such as how the public assesses the extent of government solvency impairment, how a central bank acts when the financial system is on the verge of a crisis, and how private agents anticipate responses by the central bank.

A critical issue here is whether central banks can actually stop this negative feedback loop. In theory, two views are offered on how the inflation rate is determined: monetary dominance or fiscal dominance. According to the former view, the government conducts fiscal policy that is consistent with the goal pursued by the central bank. It is the perceived path of monetary policy set by the central bank that determines the price path. But, if the government does not implement fiscal reforms despite deteriorating finances, the central bank is forced into a position of choosing between two evils: inflation or financial system instability. In this case, it is the perceived fiscal path and the central bank's reaction that determines the price path.

The issue here is how the central bank can avoid being trapped in a situation of fiscal dominance. Friedman's proposition unfortunately does not address such difficulties and challenges which central bankers are faced with in the real world. In such situations, the supporting logic and perceptions of the central bank's monetary policy regime are important as well.

International dimension

The seventh and final issue I would like to take up is the international dimension of Friedman's proposition. How does Friedman's proposition fare in an open economy? The standard argument is that central banks can pursue an independent or autonomous monetary policy aiming at price stability, as long as they adopt a flexible exchange rate system. According to this view, global factors do not affect the domestic inflation rate, at least in the long-run. To the extent that global factors do affect the domestic inflation rate, it is due to the authorities' resistance against currency appreciation.

This logic is quite forceful and persuasive when I recall the consequences of attempts to stem the appreciation of the yen: both during the 1971–73 period which engendered double-digit inflation, and then after the Louvre Accord in 1987, which expanded the bubble. In both periods, attempts to stem the appreciation of the yen exchange rate were important contributors to the subsequent economic instability. These were valuable lessons for Japan about the problems with attempts to resist currency appreciation. Similar lessons could also be found in other advanced economies, and thus policymakers in major advanced economies often explain the importance of flexibility of exchange rates to emerging economy peers who resist currency appreciation.

Until relatively recently, I did not have any additional thoughts on this issue. But, as events have unfolded, I have come to realise that the story is much more

complicated. Events that influenced my thinking have been the growth of the yen carry trade and the experience of the zero interest rate policy in multiple countries.

In the mid-2000s, Japan was the only country which had adopted a zero interest rate policy, which widened interest rate differentials between Japan and the rest of the world, particularly amidst high growth. Coupled with low volatility of exchange rates, this encouraged the yen carry trade, which in turn resulted in a depreciation of the yen in the mid-2000s (Figure 12). In those days, when I attended international meetings, I often heard complaints about appreciation pressures from countries with high-yielding currencies in the Asia and Pacific region.

At the time, I was not convinced by their argument. My reaction was the textbook argument: if you are uncomfortable with inflows of capital due to the carry trade, you can discourage it by allowing your currency to appreciate and adjust your monetary policy stance to reflect domestic economic conditions. On top of that, I was sceptical about the continuation of massive carry trades on the ground that it violated the principle of uncovered interest rate parity.

Some years later, I have come to realise that my argument was a bit one-sided for several reasons. First of all, the carry trade has become even more prevalent. Second, it is clear that the size of capital inflows and subsequent outflows can be quite large relative to the financial markets of recipient countries. Third, the implications for the global economy can be quite different depending on whether only one country adopts the zero interest rate policy or multiple countries adopt such a policy. To the extent that the effect of the exchange rate channel in the advanced economies is mutually offset and to the extent that those economies are constrained by balance sheet adjustment, the spillover effects of aggressive monetary policies by the advanced economies to the rest of the world cannot be negligible. Equally, spillover effects can also result from the inflexibility of exchange rates in emerging economies. As emerging economies become large, the possible adverse effects of exchange rate inflexibility on other emerging economies as well as the global economy could become large as well.

Every policy decision may be reasonable from the perspective of the individual economy, but the aggregate effects or cross-border spillovers might point towards a global easing bias. With the deepening of globalisation, no responsible policymaker can now dismiss the importance of cross-border spillovers and feedbacks from their policies.¹⁹ At the same time, it is unrealistic to hope that central banks fully “internalise” those effects in their policy decisions, given that each central bank is governed by central bank law in its jurisdiction that focuses on “domestic stability”.²⁰ At any rate, the monetary phenomena of Friedman’s proposition have become more global.

¹⁹ Masaaki Shirakawa, “The consequences of the great financial crisis: five years on”, remarks at the Institute of International Finance (IIF) 30th Anniversary Annual Membership Meeting in Tokyo, 12 October 2012.

²⁰ Charles Bean, “Global aspects of unconventional monetary policies”, panel remarks at the Federal Reserve Bank of Kansas City Economic Policy Symposium, Jackson Hole, Wyoming, 24 August 2013.

My current thinking and some conclusions

So far, I have reviewed seven issues showing the difficulties and challenges which central banks have been faced with, under the broad framework of Friedman's proposition, and offered my personal reflections as an economist and central banker. You might wonder where I now stand, after a long intellectual journey, in terms of understanding the determination of prices and monetary policies aimed at price stability. I think my views can be summarised in the following six statements.

First, central banks play an important role in achieving price stability and have to fully recognise their responsibility. Whether a country experiences severe inflation or deflation crucially depends on the determination and actions of the central bank. This means that central banks must properly conduct monetary policy in the broad sense – both interest rate policy, which can include “leaning against the wind”, and acting as a lender of last resort.

Second, price stability is a medium- to long-run concept, not a short-run concept, and sustainability is the key. High inflation or sharp deflation is easily identifiable as an unsustainable phenomenon and central banks know what they should do in such situations in a technical sense, even though actual implementation in some cases may be politically difficult. More difficult perhaps is a situation in which sustainability is being threatened, even though price stability is being attained on the surface. Bubbles and their collapse will result in a state in which price stability is not attained in the medium to long run, even though in the initial phases inflation may be quite subdued and sometimes negative. How to recognise the financial imbalances threatening sustainability is a daunting task but is crucially important. After all, deposit money, which has a major share in broad money, is created as a product of maturity mismatches and leverage of private financial institutions. Friedman's term – “monetary phenomenon” – should be understood as a broad concept including accumulation of financial imbalances.

Third, in order to achieve price stability on a sustained basis, cooperation among various policymakers is imperative. Viewing the central bank at all times as an omnipotent institution is misleading and sometimes could be perilous. Maintaining fiscal sustainability, implementing good supervision and regulation of financial institutions, and nurturing prudent behaviour are all important. To fully recognise the essential roles and responsibilities of central banks is one thing, and to recognise their limits and the need for cooperation is another. Such cool-headed recognition of their powers and limitations is what is needed for truly responsible central banks.

Fourth, international cooperation is important. Global financial conditions are becoming important as a determinant of the global economy and thus also as a determinant of the domestic economy and prices. At the same time, it is also true that each central bank is governed by the central bank law in each country. With the deepening of globalisation, however, no responsible policymaker can now dismiss the cross-border spillovers and feedbacks of their policies. In this environment, at a minimum, deliberate efforts to consider the external effects of domestic monetary policies and their feedback effects are quite important. And actually, discussions at BIS meetings and joint research projects under BIS initiatives like the one we are observing in this conference are not only useful but also becoming indispensable.

Fifth, inflation dynamics can vary across countries and time. We should not dismiss factors unique to each country, which includes “real factors”.

Labour market practices including the degree of downward nominal wage rigidity, rapid changes in demographics and terms-of-trade changes are examples of factors unique to each country. Japan’s deflation cannot be well understood without considering such real factors. Based upon my observations on the evolving debate on Japan’s deflation, I think we must make more deliberate efforts to incorporate such factors to better understand inflation dynamics. There are many issues which are worthy of further examination. Considering that a vast supply chain network has emerged and continues to evolve in East Asia, studies on the effects of its development on inflation dynamics in the region are one possible avenue for research.

Sixth and finally, how to frame issues on price stability and policy is quite important and proper consideration for this aspect of policy is needed in the communication of monetary policy and the design of the policy framework.

A case in point is the evolution of inflation targeting and the debates surrounding it. The adoption of inflation targeting was effective in bringing down inflation and anchoring it at a low level in those economies that suffered from high inflation, in that it succeeded in making people focus on inflation, which was one of the core problems. But, this simplicity can backfire, if the intellectual climate or mindset created under inflation targeting makes central banks become inattentive to financial stability.

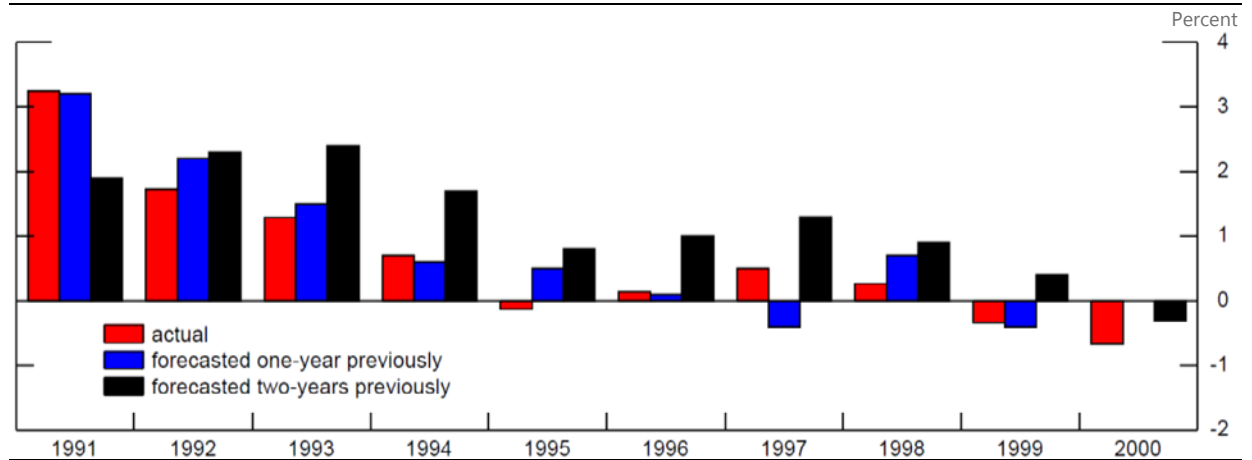
Each of these issues is demanding in its own right, but the recognition of the challenges is the starting point. I hope that central banks in this region and the BIS, together with the assistance of prominent academic researchers, will continue to make significant progress in furthering our understanding of inflation dynamics and their policy implications.

Thank you for your attention.

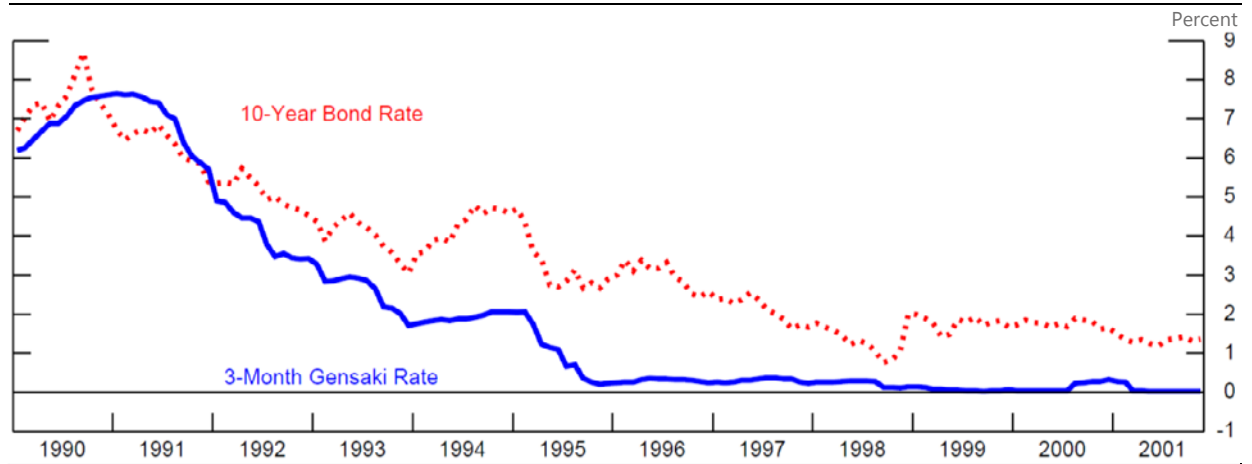
Graphs

Inflation expectations from Consensus forecast¹

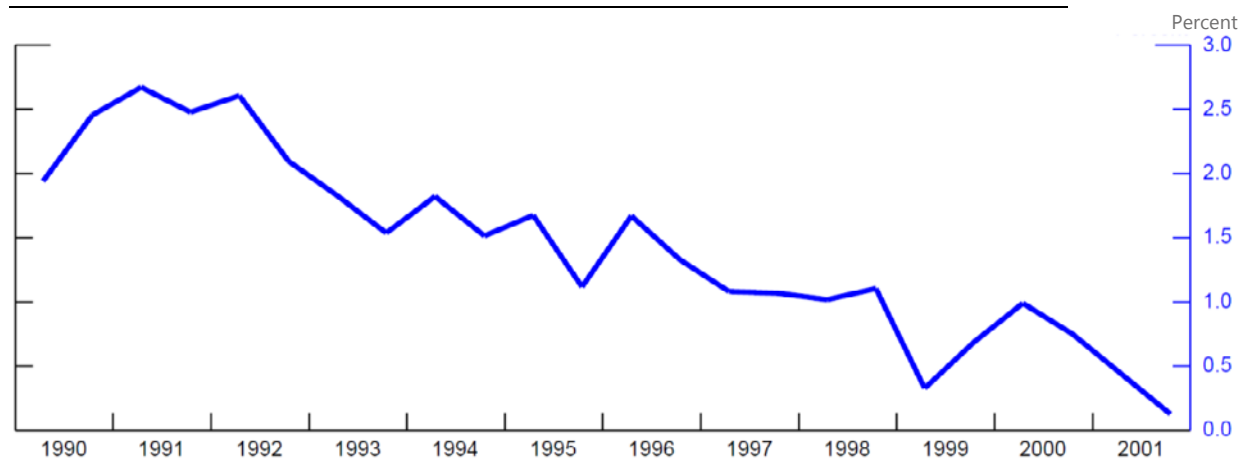
Figure 1



10-year and 3-month Gensaki rates



10-year inflation expectations²



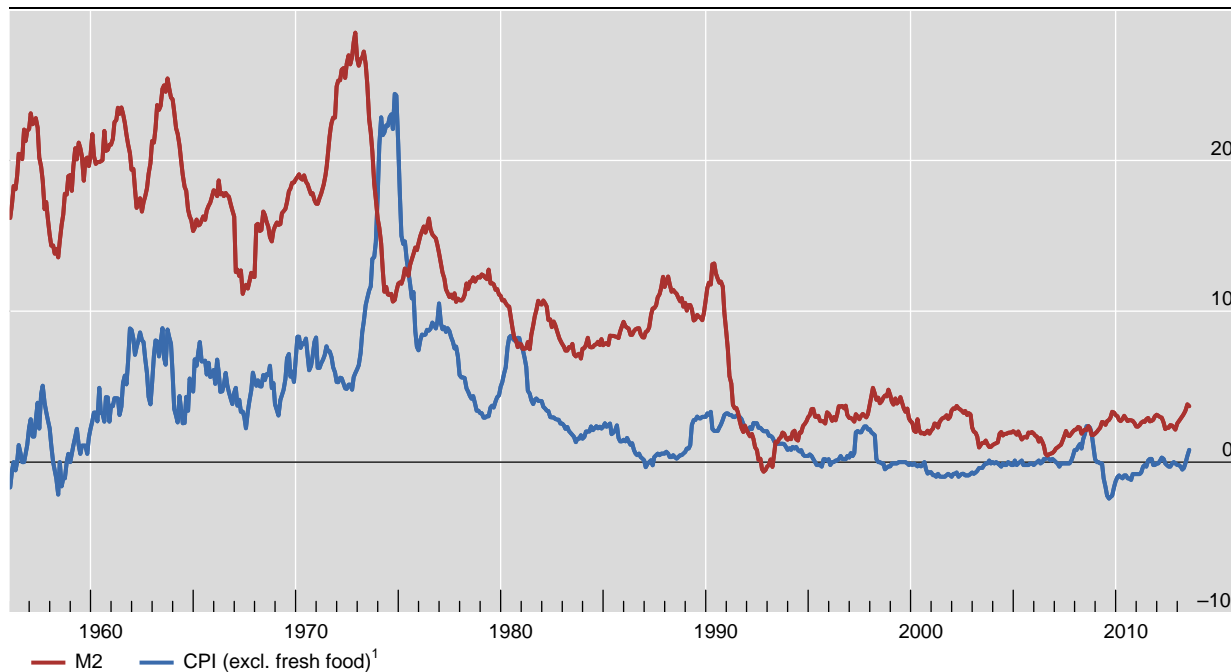
¹ Change in CPI on a year-average-over-year-average basis (Q4/Q4 not available), adjusted from April 1997 through March 1998 for consumption tax increase. ² Consensus Economics forecast of average CPI inflation (year-average-over-year-average basis) for the next ten years.

Source: Alan G. Ahearne; Joseph E. Gagnon; Jane Haltmaier; Steven B. Kamin (June 2002) "Preventing Deflation: Lessons From Japan's Experience in the 1990s", International Finance Discussion Papers, 2002-729.

Broad money and CPI in Japan

Year-on-year percentage change

Figure 2

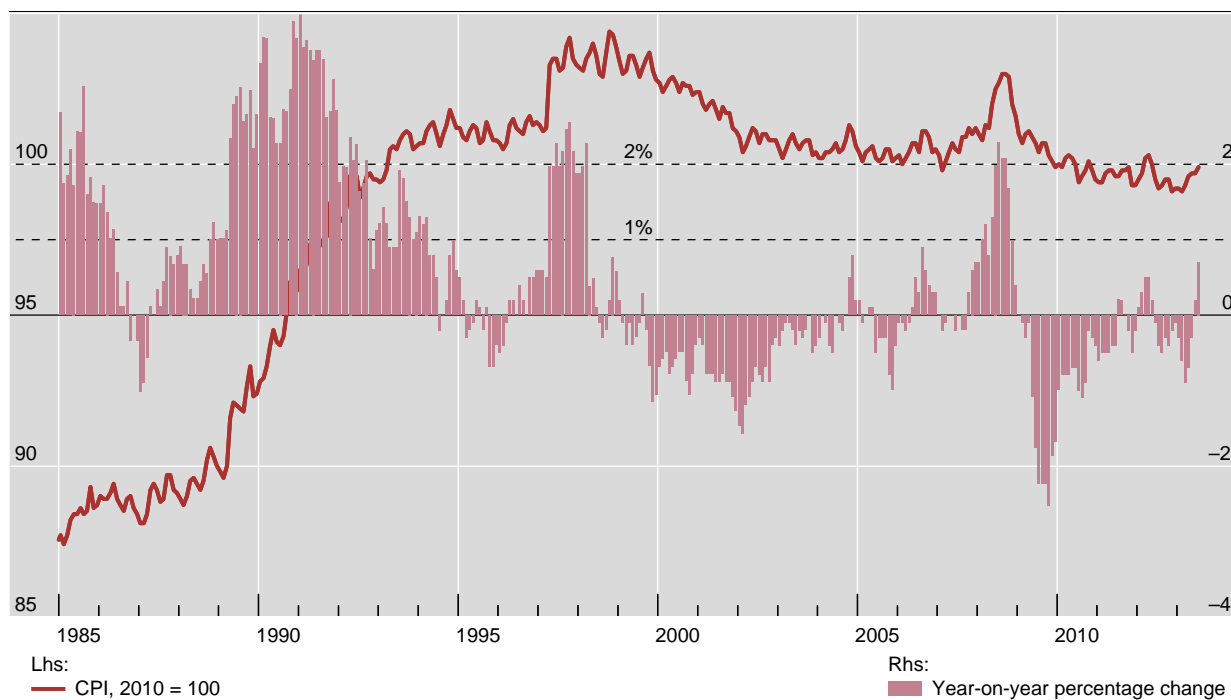


¹ Backdated from 1956 to 1969 with CPI excluding imputed rent.

Sources: CEIC; Datastream; national data.

CPI inflation in Japan

Figure 3

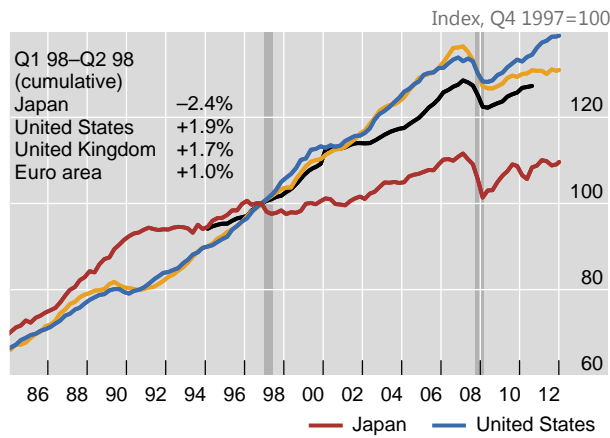


Source: National data.

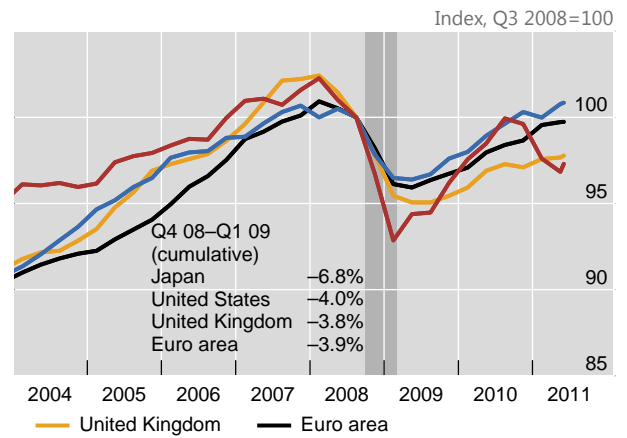
Comparison of GDP following financial turmoil in Japan in 1997 and US in 2008

Figure 4

Following the financial turmoil in Japan



Following the failure of Lehman Brothers

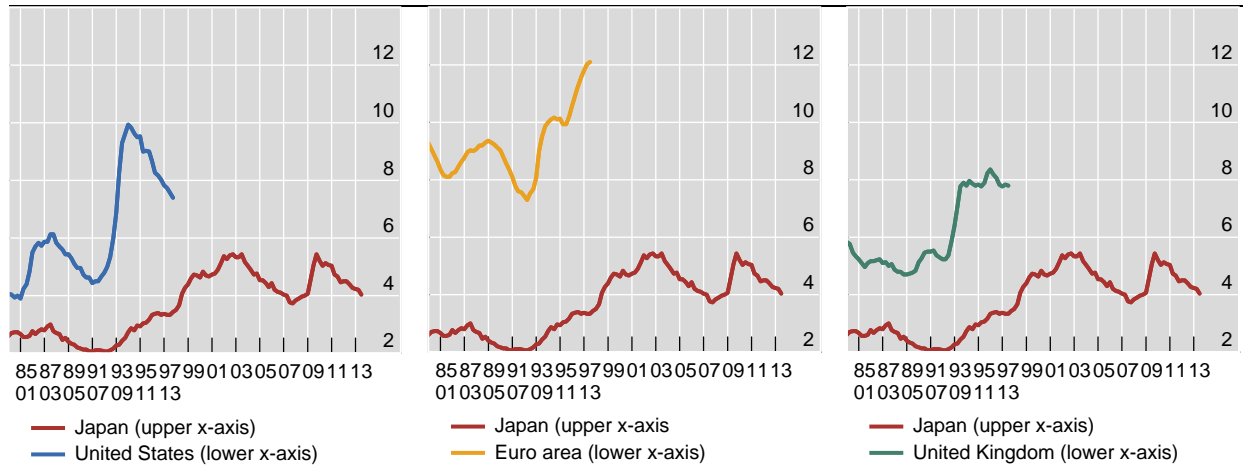


Sources: National data; author's calculations.

Unemployment rate after the collapse of the bubble

In per cent, seasonally adjusted

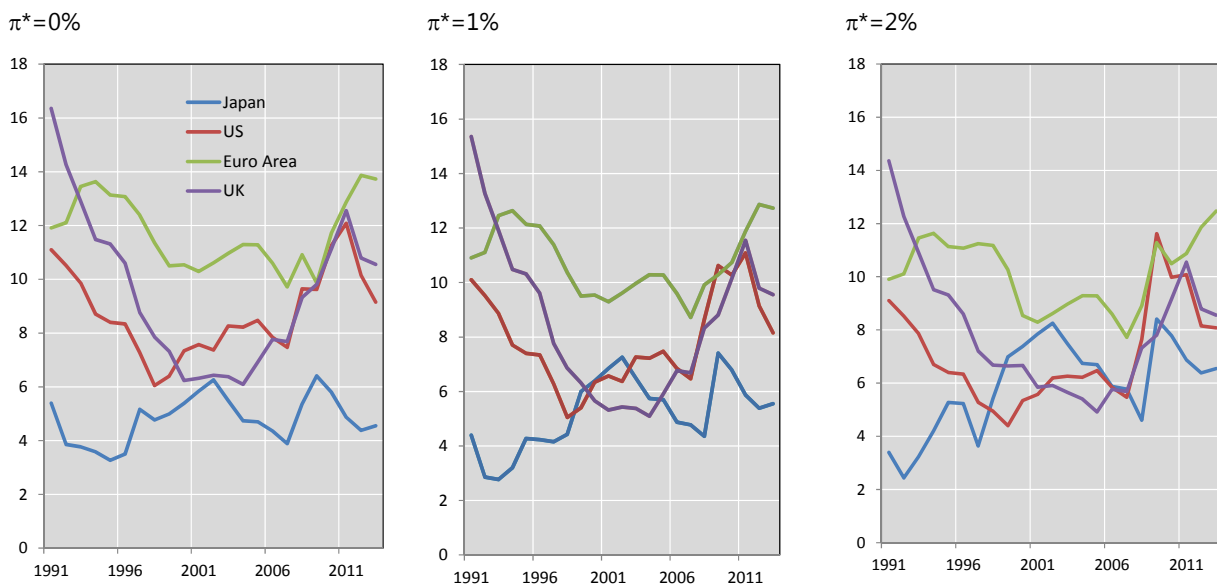
Figure 5



Sources: Datastream; national data.

Misery index¹

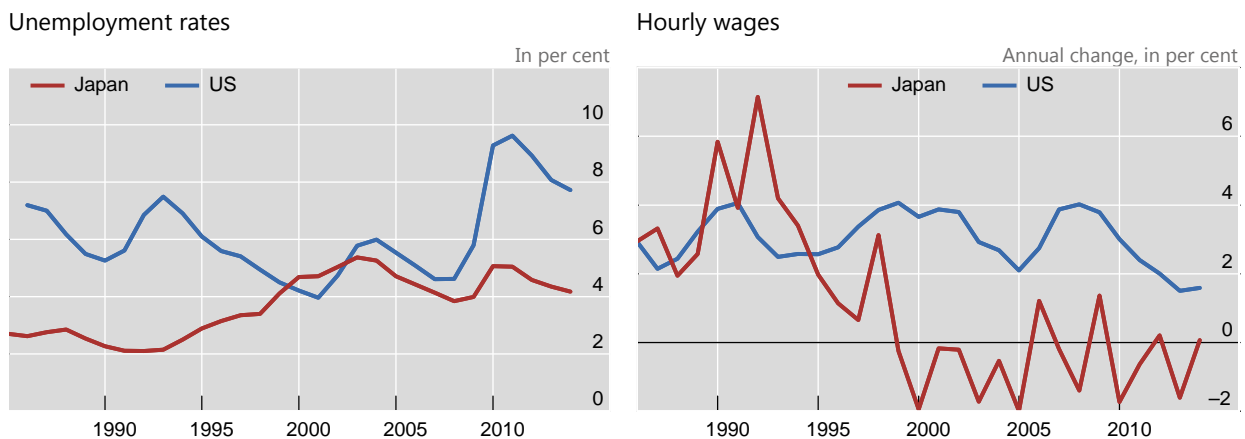
Figure 6



¹ Misery index is calculated as $|\pi - \pi^*| + u$, where π is actual inflation rate, π^* is desired inflation rate and u is actual unemployment rate.

Unemployment rates and hourly wages

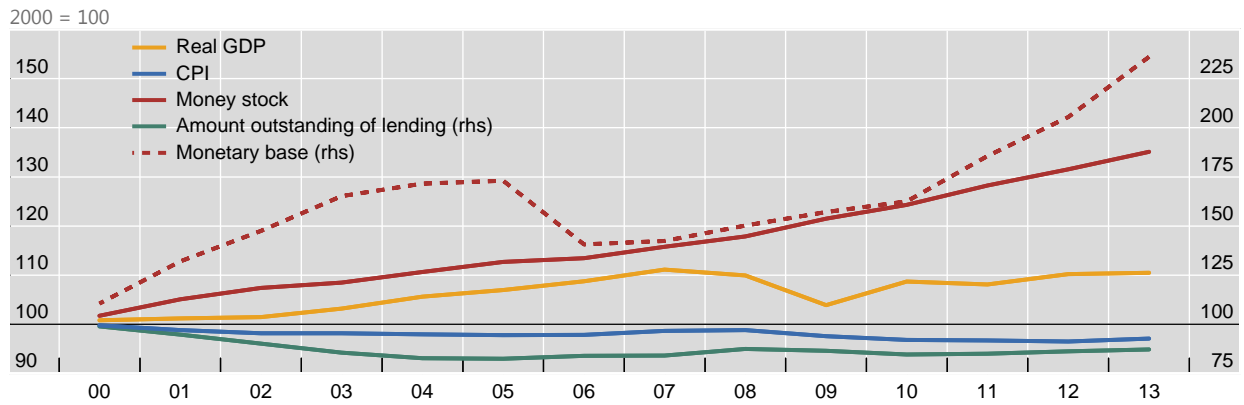
Figure 7



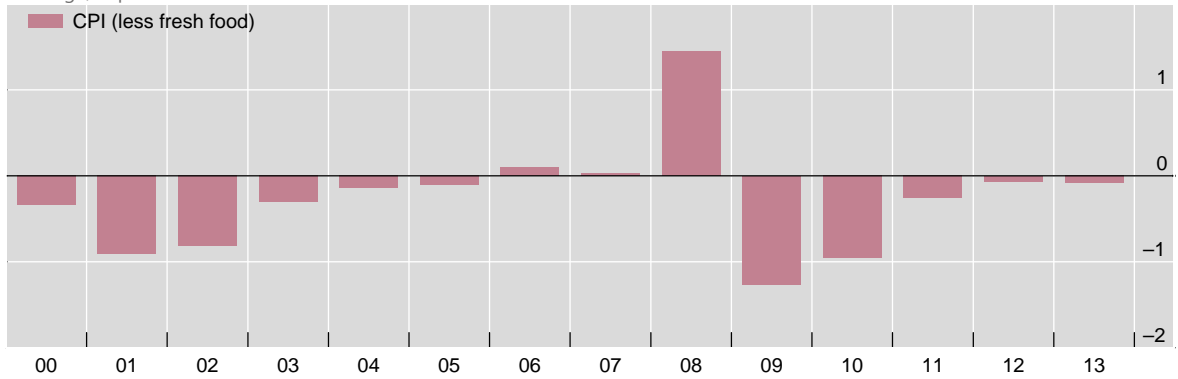
Sources: CEIC; Datastream; national data.

Growth of monetary base and inflation rate in Japan

Figure 8



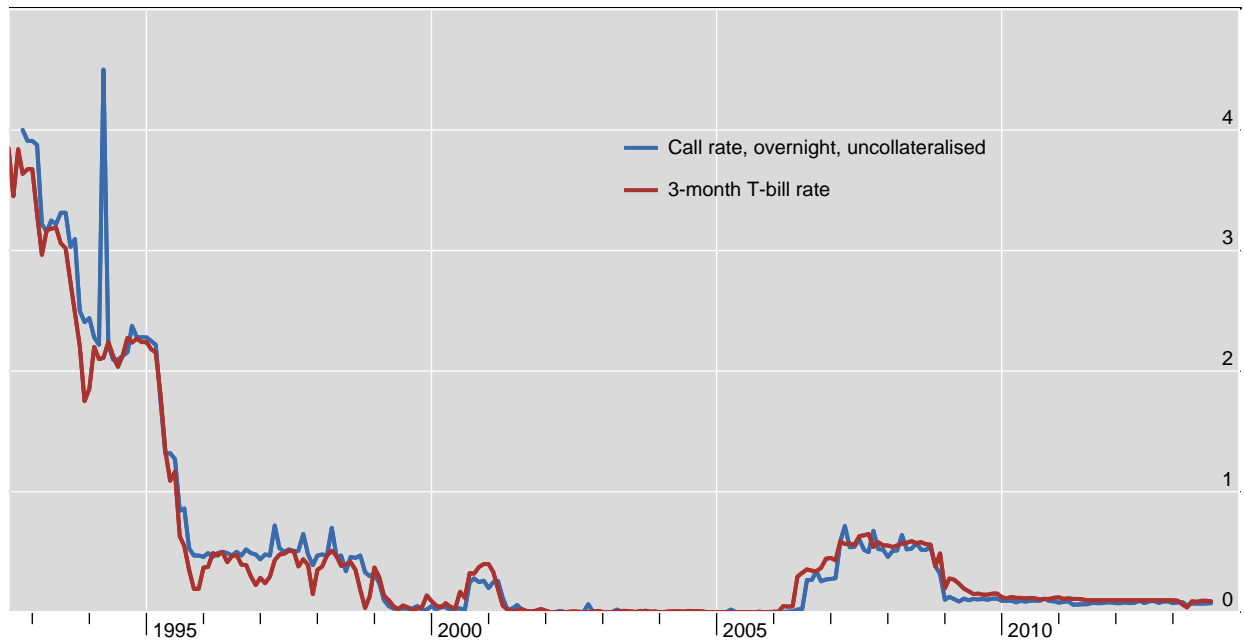
Annual change, in per cent



Sources: CEIC; Datastream; national data.

Development of short-term interest rates in Japan

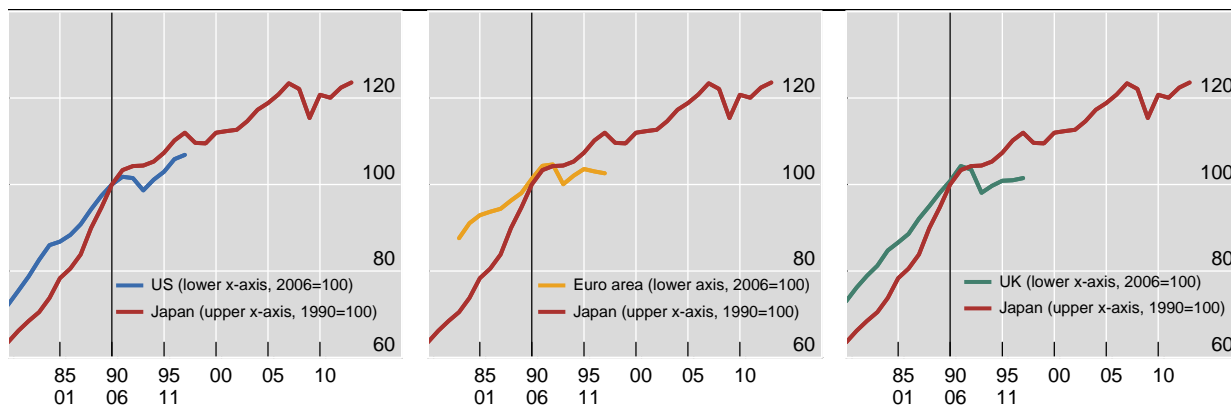
Figure 9



Source: Bloomberg.

Real GDP in advanced economies after the bursting of bubbles

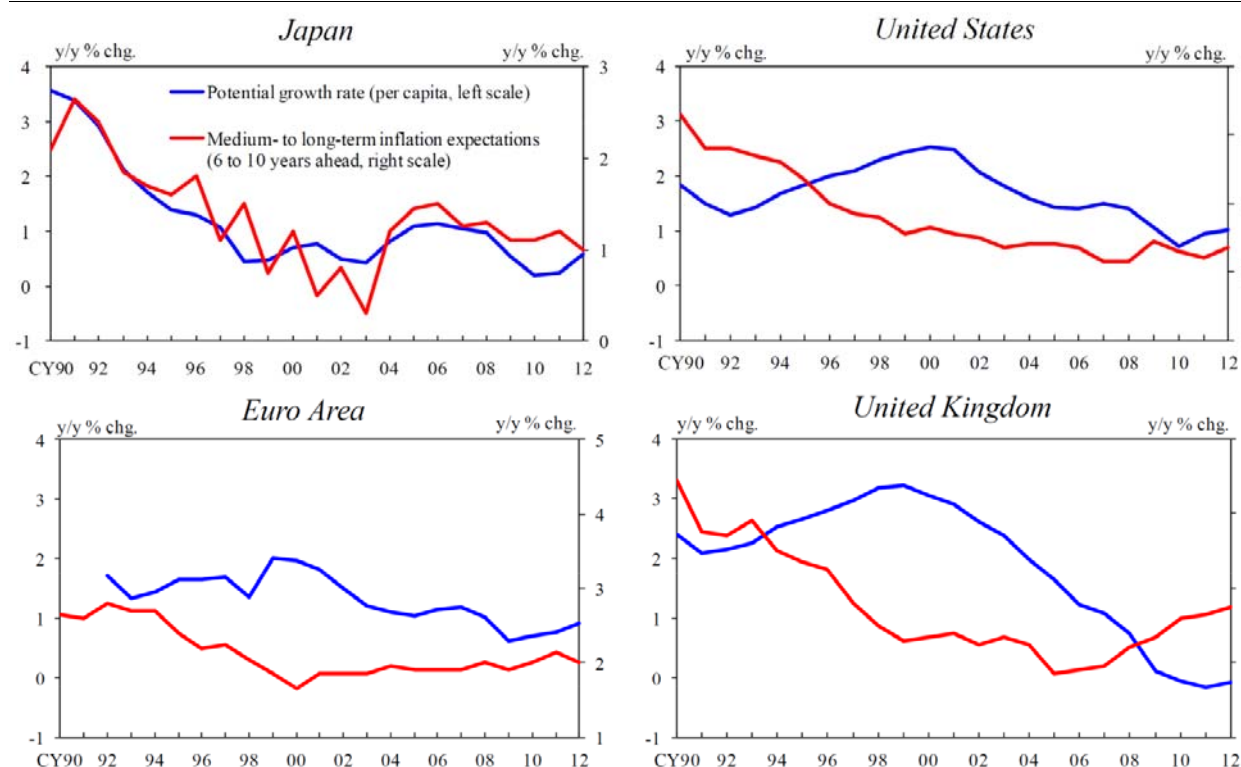
Figure 10



Sources: Datastream; national data.

Correlation between inflation expectations and potential growth rate

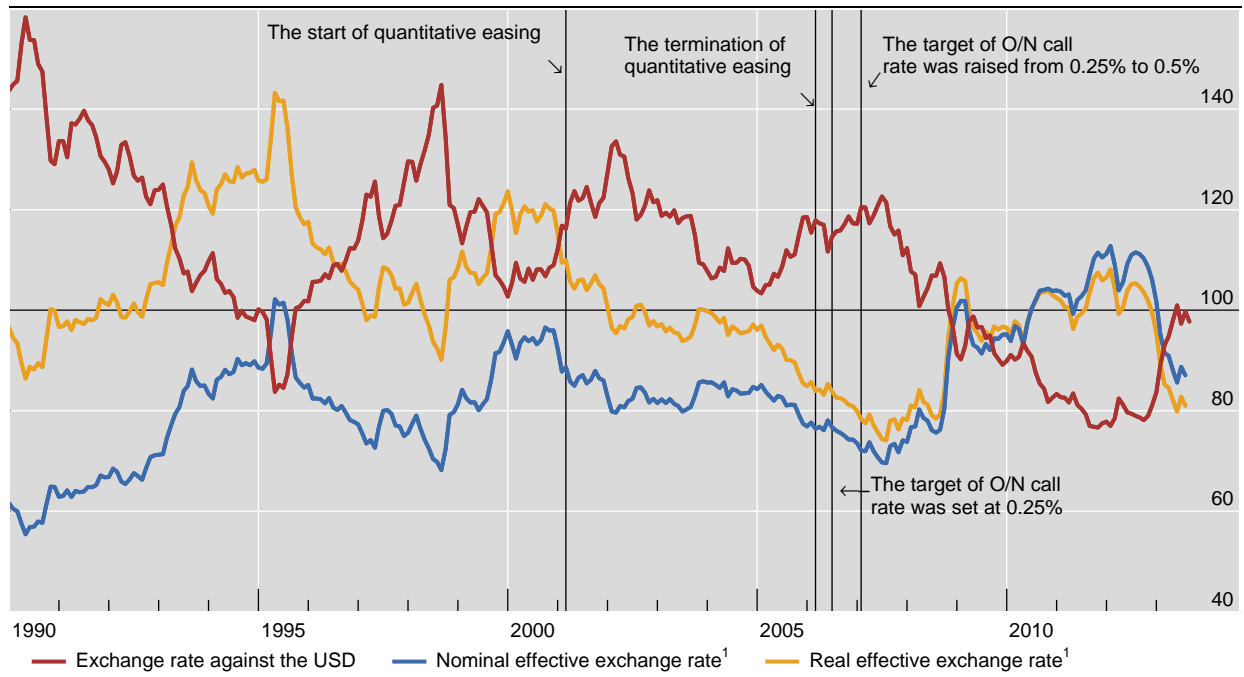
Figure 11



Source: Masaaki Shirakawa, "Toward strengthening the competitiveness and growth potential of Japan's economy", speech at the Executive Member Meeting of the Policy Board of Nippon Keidanren (Japan Business Federation) in Tokyo, 28 February 2013.

Japanese yen exchange rates

Figure 12



¹ BIS narrow index, 2010 = 100.

Sources: Datastream; BIS.