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Comments on "Price Stability and Japanese Monetary Policy"

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Abstract

This commentary summarizes the authors' main points of agreement and disagreement with respect to the proposal written by Dr. Hetzel. The authors agree with Dr. Hetzel's proposal on four points: after a central bank has lowered the interest rate to zero, (i) a central bank is not in fact powerless to stop deflation, (ii) it does not make sense to focus on the quantity of the monetary base per se, (iii) it is important to influence market expectations if monetary policy is to be effective, and (iv) central bank solvency holds some importance. The authors disagree with Dr. Hetzel's proposal on three points: (i) transmission channels of quantitative easing, (ii) potential costs and benefits of his proposal, and (iii) the timing of introduction of an explicit nominal anchor.

Key words: quantitative easing, deflation.
JEL classification: E51, E58, E43

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I. Introduction

The Institute for Monetary and Economic Studies invited Dr. Hetzel as a visiting scholar from September to November 2003. The purpose of this commentary is to confirm points of agreement, as well as our reservations, with respect to the contents of Dr. Hetzel's proposal.

II. Points of Agreement

We will begin by summarizing some of the major points on which we agree with Dr. Hetzel.

First, from the point of view of monetarism, Dr. Hetzel emphasizes that a central bank is not powerless to stop deflation after the bank has lowered the interest rate to zero. We agree. Indeed, the Bank of Japan (BOJ) has been making every effort to stop deflation by providing ample liquidity and influencing market expectations.[1] In this sense, the BOJ's view has nothing to do with what Dr. Hetzel calls the "liquidity view," that is, the view that "the central bank is impotent to end deflation after it has lowered the interest rate to zero."[2]

Second, we agree with Dr. Hetzel when he states that "at a near-zero call rate, for banks, CABs and short-term liquid debt instruments like Treasury and Finance bills are perfect substitutes."[3] Specifically, it does not make sense to focus on the quantity of the monetary base per se apart from other financial assets that yield virtually zero

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[1] Governor Fukui argued that "even after short-term interest rates had reached the zero boundary, the Bank did not throw up its hands in defeat but rather continued to make efforts by providing ample liquidity and 'borrowing' from the effects of future monetary easing." See Fukui (2003).

[2] See Hetzel (2004), p. 2.

[3] See Hetzel (2004) p. 21.

interest rates.[4]

It should be noted, however, that the "meaninglessness of focusing on the quantity of the monetary base itself under zero interest rates" does not necessarily mean that "quantitative easing is meaningless." Eggertsson and Woodford (2003), in their suddenly classic work in the economics of monetary policy, argue that their famous result, known as the "irrelevance proposition" applicable to open-market operations involving a variety of assets that the central bank might acquire, holds under the assumption that open-market operations do not change the expectations regarding the future course of conduct of monetary or fiscal policy. Eggertsson and Woodford (2003) then argue that open-market operations should be viewed as largely ineffective to the extent that these operations fail to change expectations regarding future policy; concluding that quantitative easing is not necessarily futile, and that the central bank's actions should be determined with a view to signaling the nature of its policy commitments, and not for the purpose of creating some sort of "direct effects."

Third, we share an understanding of the importance of credibility and expectations in any effective monetary policy. In his concluding remarks, Dr. Hetzel refers to the change in direction of U.S. monetary policy under the former FRB Chairman Paul Volcker and emphasizes the importance of establishing the credibility of the central bank. We fully agree with the importance of influencing market expectations, especially under zero interest rates, as a central bank has no reliable policy instruments other than its influence on market expectations. While Dr. Hetzel does not mention the

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[4] This also implies that it does not make sense to differentiate unsterilized intervention in foreign exchange markets from sterilized intervention under zero nominal interest rates. This is because unsterilized intervention simply corresponds to sterilized intervention coupled with the provision of reserves through the purchase of short-term government securities, a move that in itself has no effect.

irrelevance proposition of Eggertsson and Woodford (2003), we are sympathetic with their argument.

Even when short-term interest rates have declined to virtually zero, a central bank can produce further easing effects by a policy commitment.[5] A central bank can influence market expectations by making an explicit commitment to the length of time it will hold short-term interest rates at virtually zero. If the bank succeeds in credibly extending the duration of this commitment, it can then reduce long-term interest rates and stabilize the yield curve as a whole.[6]

Fourth, to a certain extent we also share a common perception of the role of central bank solvency. Dr. Hetzel argues that maintenance of solvency is an institutional safeguard to protect the central bank's independence, and that a central bank needs this protection against political pressure to use its seigniorage revenues to buy the debt of insolvent firms and banks. This argument echoes the view of board member Ueda, who says "political-economic constraints in the real world may prevent central banks from fulfilling their responsibility to maintain price stability, if the central bank's financial strength deteriorates substantially"[7]

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[5] See Reifschneider and Williams (2000), Jung, Teranishi, and Watanabe (2001), and Eggertsson and Woodford (2003) for detailed discussions on the policy commitment effect when a central bank faces the zero bound of nominal interest rates.

[6] We analyze the mechanism of the so-called "policy duration effect," in Fujiki, Okina, and Shiratsuka (2000), Fujiki and Shiratsuka (2002), and Okina and Shiratsuka (2004a).

[7] See Ueda (2004). Ueda (2004) also sums up the experiences of insolvent central banks, and concludes that the maintenance of a sound balance sheet is, in general, neither a necessary nor a sufficient condition for the fulfillment of a central bank's responsibilities, but that there have been cases in which an unhealthy balance sheet became a major obstacle to price stability. See also Fukui (2003).

III. Some Reservations with Dr. Hetzel's Arguments

Next we will discuss some reservations with Dr. Hetzel's arguments. Based on the quantity theory view, Dr. Hetzel proposes a quantitative strategy for stabilizing the price level, a strategy that renders the monetary base dependent on nominal variables such as money growth and nominal output. The Desk would exchange all short-term, liquid assets in its portfolio for illiquid assets like 10-year JGBs. He further argues that only then would open market purchases increase the ratio of liquid to illiquid assets in the portfolio in the private sector. In line with this understanding, Dr. Hetzel interprets the failure of a high number of CABs to stimulate money (M2+CDs) growth as a consequence of policies that make the monetary base dependent on the demand for excess reserves by banks, rather than on the behavior of a nominal variable such as money supply growth, nominal output, or the price level. We believe that this is the essence of his policy proposal. Our comments and reservations with respect to this proposal are as follows.

A. Transmission channels of quantitative easing

First, our experience to date suggests that while such policy decisions might potentially increase the size of the portfolios of economic agents, and might lead to a change in their portfolios and ultimately stimulate economic activity, the possibility of such an influence remains uncertain, and its stimulating effect on economic activity would be quite modest, at best. Dr. Hetzel argues that the failure of a high number of CABs to stimulate money (M2+CDs) growth is a consequence of policies that make the monetary base dependent on the demand for excess reserves.

In contrast to Dr. Hetzel's argument, we would conclude that the current quantitative easing conducted by the BOJ should be understood mainly as a device to

signal the future course of monetary policy. Indeed, recent BOJ monetary policy has been characterized by a heavy reliance on the policy duration effect. Under quantitative monetary easing, the bank commits to providing ample liquidity, easily exceeding the required reserve, until CPI inflation stabilizes at or above zero percent.

However, our experiences might suggest that the link between the increase in the monetary base and general price levels under the quantitative easing framework might not be as clear as many economists' theoretical predictions before the introduction of such a framework.[8] In this context, we ought to try to gain a better understanding of the transmission channels of the quantitative easing policy, based on data after 2001.

To examine the impact of policy changes on market expectations, we employ case study analyses to detect the effect of changes in monetary policy in the short term, following Okina and Shiratsuka (2004a). We focus on the short-term effects of four increases in the target range of CABs beginning in the spring of 2003: April 30, May 20, and October 10, 2003, as well as January 20, 2004.

Figure 1 plots four indicators, *PD*, *R*(*PD*), *SL*, and *LFR*, for the period from 20 days before to 40 days following each policy event.[9] In each panel, a solid black line

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[8] For example, the increases in the target range of CABs on October 10, 2003 and January 20, 2004, which were "apparently undertaken to emphasize the BOJ's commitment to maintaining the policy of quantitative easing," as Dr. Hetzel states in his paper. However, such increases seem to have had no significant impact on market expectations regarding the future course of the economy.

[9] The four indicators, which are derived from the estimation results for instantaneous forward rate curves, extract market expectations for the duration of the policy commitment as well as the flatness of the yield curve. *PD*, policy duration, corresponds to the length of the flattened shape in the shorter end of the forward rate curve, thus capturing the market expectation as to the length of time the BOJ will continue to maintain a zero interest rate. *R*(*PD*), the estimated spot rate at *PD*, shows the flatness of the forward rate curve in the shorter end, indicating the confidence of market participants in the strength of BOJ's commitment to a zero interest rate. *SL* is the maximum slope of the forward rate curve in the second stage, upward-trending after *PD*, indicating market expectations as to how rapidly the economy will recover from zero interest rate conditions. *LFR* is the long-term forward rate, and is viewed as a proxy for the sum of expected inflation and expected

shows the estimated parameters, while the solid grey lines show the upper and lower boundaries of the respective confidence intervals, obtained by adding and subtracting two times the standard errors of the estimated coefficients. The solid horizontal line indicates estimates of each indicator on the date of the event. We can see little or no evidence that policy changes produced any persistent impact on market expectations, except for the event of May 20, 2003.

Figure 2 further plots four indicators over time since 1998, which includes the periods of the above case studies. We see that the most significant changes in market expectations since the spring of 2003 occurred in the summer between the second and third cases in Figure 1. During this period, the forward rate curve shifts upward in the medium-to-long term, as evidenced by increased *SL* and *LFR*, indicating brightening market expectations for the long-term performance of the economy. At the same time, *PD* shortens, partly because such positive expectations in turn shorten the expected duration of the policy commitment to a zero rate or to quantitative monetary easing.

B. Cost-benefit comparison

Admittedly, Dr. Hetzel's proposal to end deflation regardless of the magnitude of the needed expansion in the monetary base should have a strong effect on market expectations. However, in the current Japanese situation, which Dr. Hetzel describes in footnote 1, noting that real GDP grew steadily in 2002 and 2003 at a rate of almost 3 percent, while the CPI remained basically stable in 2003, with a falling unemployment rate, this kind of experiment ought to be compared closely with other policy options in terms of feasibility and costs.

As for the costs, first we must address the significant issue of the decline in the

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economic growth, or expected nominal economic growth. See the Appendix for details of the indicators of policy duration effects.

functioning of financial markets, especially the money market. The more the BOJ proceeds with a policy of monetary easing to secure stability in the financial market, the more demand for current account deposits will increase due to the impaired functioning of the market. As a result, the BOJ will have to meet this demand for increased liquidity in order to stabilize the market. This is the dilemma the BOJ currently faces.[10]

In this context, it should be noted that the purchase of illiquid assets in an environment of zero interest rates necessarily leads to fiscal consequences. Estimates of potential costs and benefits of this option are required to maintain accountability to taxpayers. Taxpayers should be able to compare various unorthodox policy options in terms of the societal consequences, which are not addressed in Dr. Hetzel's paper.[11]

C. Timing of introduction of explicit nominal anchor

Finally, as for the importance of a nominal anchor in monetary policy, Dr. Hetzel makes an argument for price stability within his model of the quantity theory of money. A simple model and a historical lesson drawn from the 1970s US FRB provide us with a clear view of his position. We agree that the application of a nominal anchor to achieve price stability is, in theory and in practice, a very important element of monetary policy.

That being said, we must be very careful in the current environment in Japan. In practice, the situation in this country is much more complicated than Dr. Hetzel argues.

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10 See Fukui (2003).

11 In 2001, then Deputy Governor Yamaguchi argued that "The basic rule in a democratic society is that fiscal policy using taxpayer's money needs to be approved as part of a budget by a parliament composed of members elected by the people. I am not worrying about inflation when deflation is a concern, but claiming that a policy of purchasing various assets should be discussed publicly in the context of governance in a democratic society." See Yamaguchi (2001).

For example, fluctuations in the GDP deflator (which Dr. Hetzel cites in his paper) and in the CPI applied by many central banks (including the BOJ) display characteristics unique to Japan (Figure 3), particularly since the mid-1990s.

More importantly, asset prices have continued to decline remarkably for a decade after the bursting of the asset price bubble at the beginning of the 1990s, while consumer prices have remained almost constant (Figure 4). Stock prices plunged in the early 1990s and have since followed a downward trend, albeit with continual ups and downs. Land prices started declining with a two-year lag relative to stock prices, and have since continued to decline at an annual rate of around ten percent. Mild deflation of less than one percent per annum, which naturally attracts public attention, is deemed far less significant than asset price deflation. As a result, the relative price system has dramatically changed in the context of extremely stable consumer prices since the mid-1980s.[12] Raising the rate of inflation of general prices by a couple of percentage points would not mean much in terms of asset prices. In fact, it is the ratio between asset and general prices that must be adjusted, as Ueda (2003) argues.

IV. Conclusion

We would like to conclude by emphasizing that we thoroughly enjoyed reading Dr. Hetzel's paper, and that we and the staff of the BOJ gained a great deal from our long discussions with him during his stay in Japan. We hope that we will have the opportunity for further discussions and even greater agreement in the future.

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[12] For details of the relative price change, see Okina and Shiratsuka (2004b).

Appendix: Indicators for the Policy Duration Effect

Okina and Shiratsuka (2004a) derive indicators for the policy duration effect using the parameters of an extended version of Nelson and Siegel's (1987) model, proposed by Söderlind and Svensson (1997).

The extended Nelson-Siegel model specifies the instantaneous forward rate (IFR) for a settlement at period m, denoted by $r(m)$, as

$$r(m) = \beta_0 + \beta_1 \cdot \exp(-\frac{m}{\tau_1}) + \beta_2 \cdot (\frac{m}{\tau_1}) \cdot \exp(-\frac{m}{\tau_1}) + \beta_3 \cdot (\frac{m}{\tau_2}) \cdot \exp(-\frac{m}{\tau_2}), \quad (1)$$

where β_0, β_1, β_2, β_3, τ_1, and τ_2 are parameters to be estimated from the data. We expect β_0, τ_1, and τ_2 to be positive.

In order to detect market expectations on the duration of the policy commitment as well as the impact of the policy, Okina and Shiratsuka (2004a) define four indicators for the policy duration effect, as shown below. First, policy duration, denoted by *PD*, is defined as point τ_2, where $r(m)$ becomes increasingly upward-trending in the second-stage increase, typically at the year-to-settlement of one year or more. As mentioned earlier, the fourth term on the right-hand side of equation (1) takes a minimum value at this point. All downward factors are exhausted at this point, since τ_2 always takes a larger value than τ_1.

Second, the estimated spot rate at *PD*, $R(PD)$, is regarded as a measure of market confidence in the BOJ's policy commitment to a zero interest rate.[13] This is because, as shown in equation (2), $R(PD)$ is equivalent to the lower area of the IFR curve from zero to *PD*. That is,

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[13] As shown by Fujiki and Shiratsuka (2002), $r(m)$ is also affected by the liquidity concerns of financial institutions, especially at the time of large liquidity events, such as the Y2K problem and the introduction of the real-time gross settlement system.

$$R(PD) = \frac{1}{PD}\int_{s=0}^{PD} r(s)ds \,. \tag{2}$$

In other words, $R(PD)$ is the averaged IFR between zero and PD. A smaller $R(PD)$ implies that financial market participants expect a lower path of short-term interest rates and have greater confidence in the BOJ's commitment to zero interest rates.

Third, the slope of $r(m)$ at the inflection point is used as a proxy for the flatness of the whole shape of the curve. Based on the definition of the inflection point, this is the maximum grade of $r(m)$ in the second- stage increase. $r(m)$ then gradually converges to the long-term forward rate, given by β_0. This slope is denoted as SL. Given that the inflection point approximately corresponds to $2*\tau_2$ in our specifications, the slope at this point is:

$$SL = \arctan(r'(2*\tau_2)) \,. \tag{3}$$

Fourth, β_0, which corresponds to the long-term forward rate, or LFR, is regarded as a proxy for the sum of expected inflation and expected economic growth, or expected nominal economic growth.[14] More precisely, the steady-state nominal interest rate i^* is equal to the sum of the steady-state real interest rate r^* and the steady-state rate of inflation π^* by Fisher's equation. Thus, LFR can be written as

$$LFR = i^* + \rho = r^* + \pi^* + \rho \,, \tag{4}$$

where ρ is a risk premium. This is deemed to reflect market expectations for long-term economic performance.

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[14] In examining the time-series movements of the long-term forward rate, we need to be careful to account for the possible effects of supply and demand in financial markets showing long-term maturity.

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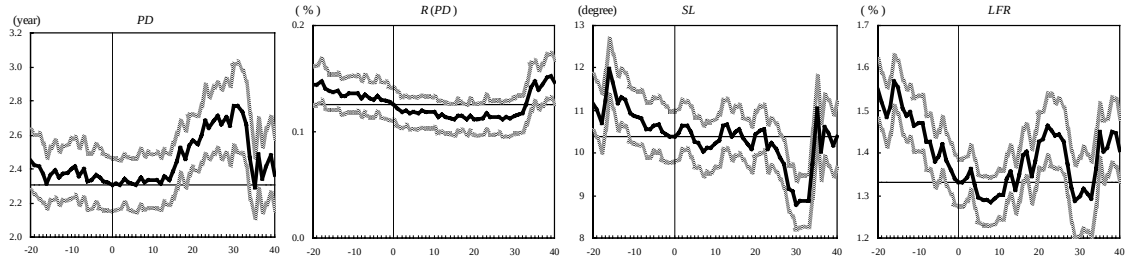
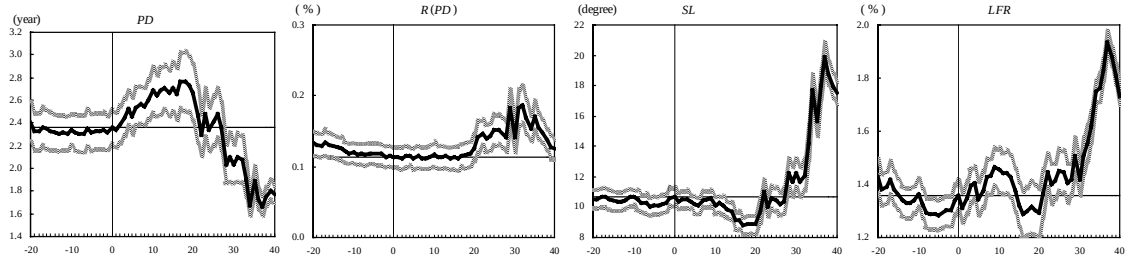
Figure 1. Case Studies of Policy Events

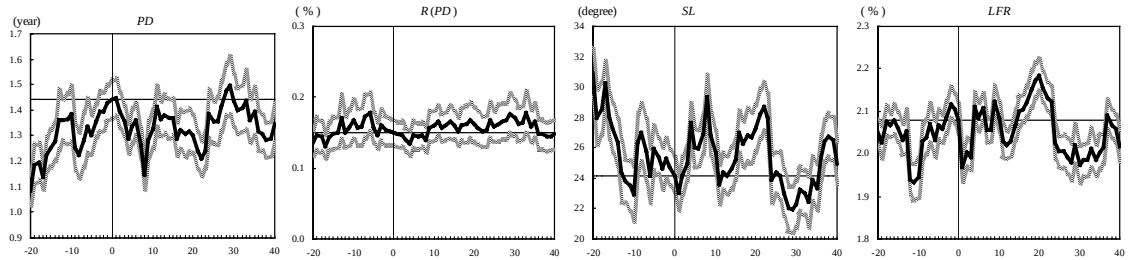
[1] MPM on April 30, 2003: CAB target 17-22 trillion yen → 22-27 trillion yen



[2] MPM on May 20, 2003: CAB target 22-27 trillion yen → 27-30 trillion yen



[3] MPM on October 10, 2003: CAB target 27-30 trillion yen → 27-32 trillion yen



[4] MPM on January 20, 2004: CAB target 27-32 trillion yen → 30-35 trillion yen

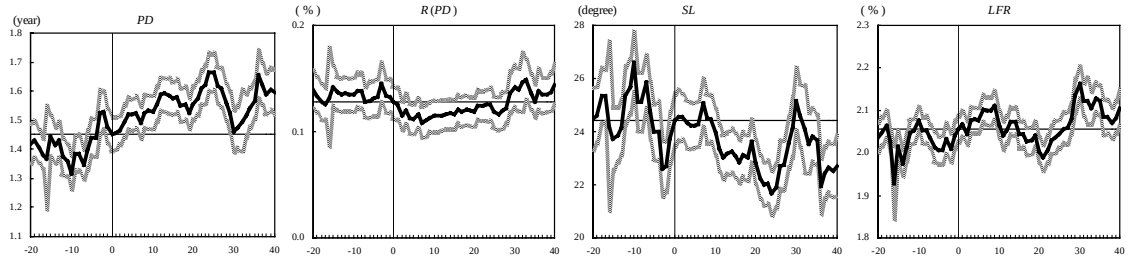
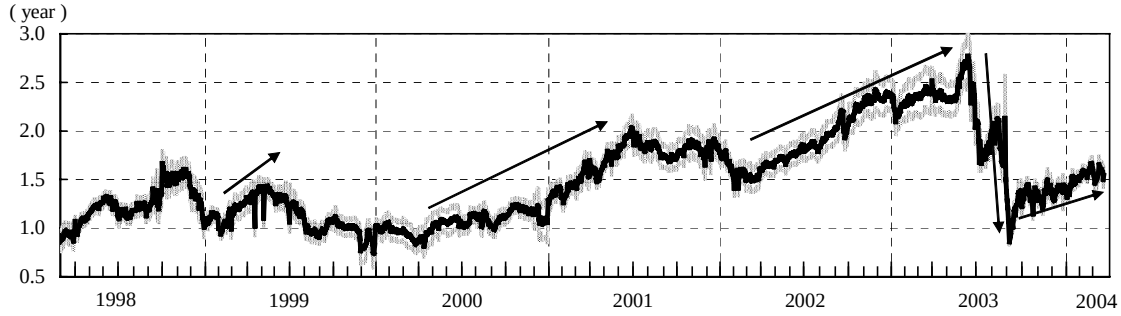
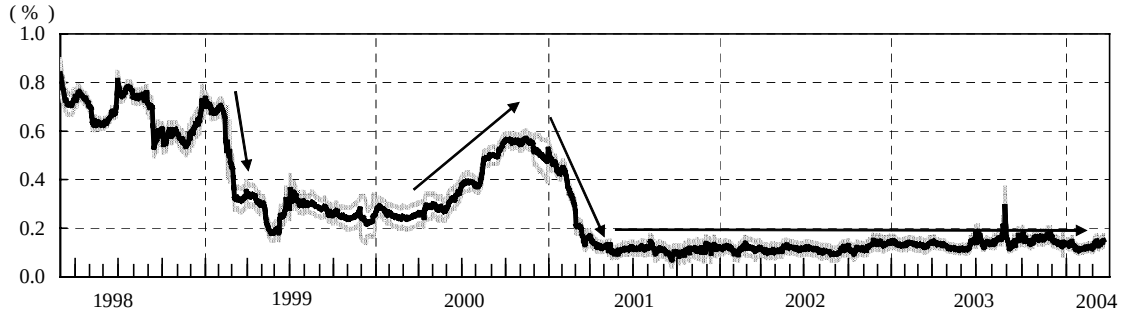


Figure 2. Policy Duration Indicators

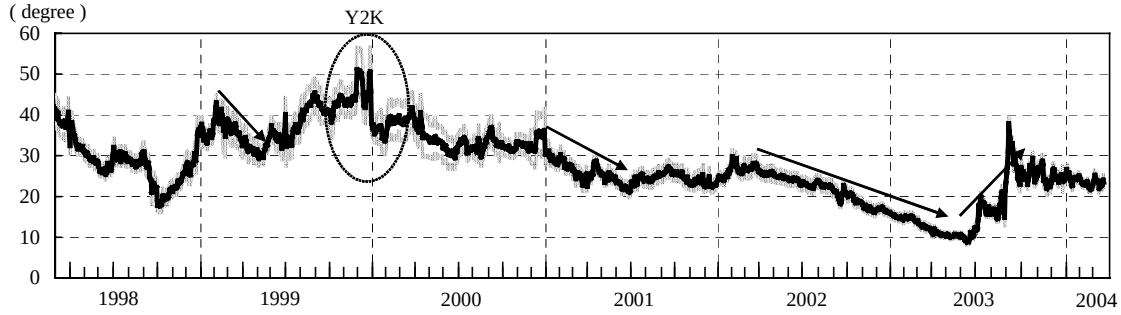
[1] Policy duration: *PD*



[2] Estimated spot rate at *PD*: *R*(*PD*)



[3] Slope of FR curve at inflection point: *SL*



[4] Long-term FR: *LFR*

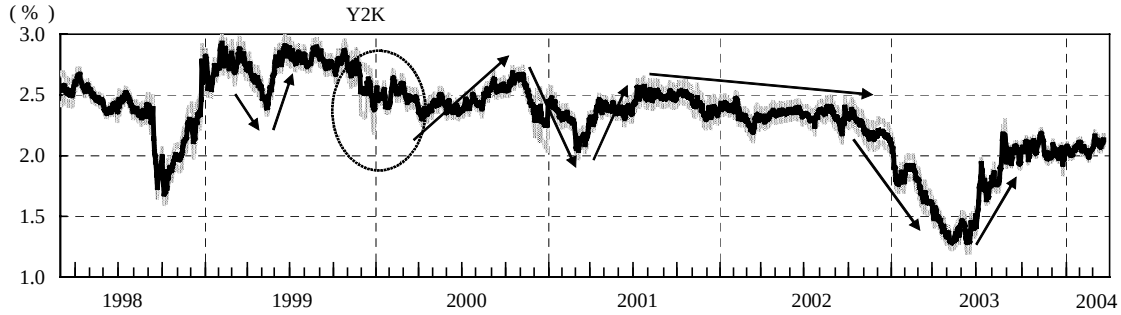


Figure 3. CPI and GDP deflator

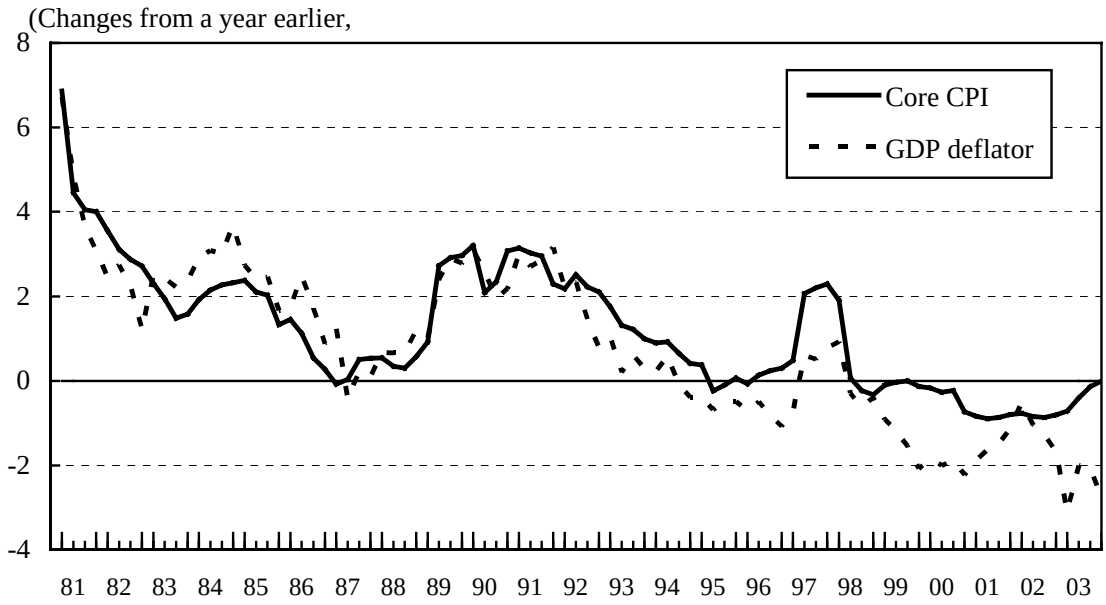
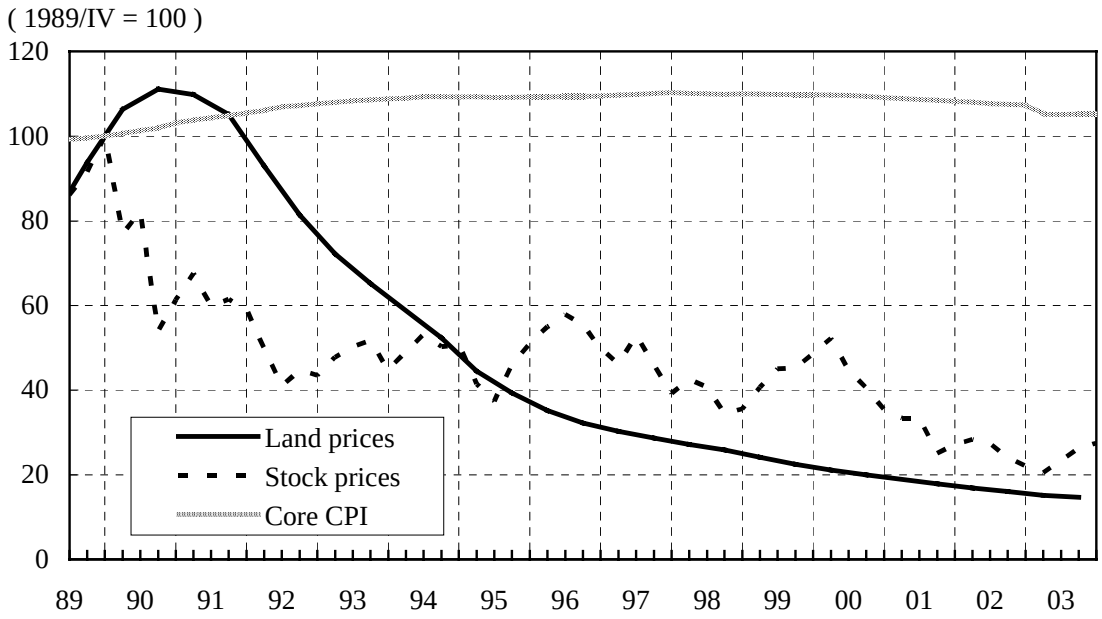


Figure 4. Asset Prices and General Prices



Sources: Bank of Japan, *Financial and Economic Statistics Monthly*; Ministry of Public Management, Home Affairs, Posts and Telecommunications, *Consumer Price Index*; Japan Real Estate Institute, *Urban Land Price Index*.

Notes: CPI excluding fresh food is seasonally adjusted by X-12-ARIMA with options of (0 1 2)(0 1 1) ARIMA model and level shifts in April 1989 and April 1997, when the consumption tax was introduced and subsequently increased, respectively.