

Summary of a speech given by Kazumasa Iwata, Deputy Governor of the Bank of Japan, at the Fourth ECB Central Banking Conference, “The role of money: money and monetary policy in the twenty-first century” on November 10, 2006

The Role of Money and Monetary Policy in Japan

November 17, 2006

Bank of Japan

Introduction

The role of money in implementing monetary policy is one of the most controversial issues in Japan. Although the importance of the role of money in the transmission mechanism of monetary policy cannot be denied, there exists a wide divergence in views on the impact of changes in monetary aggregates on economic activity and prices among academics and policy makers. This is particularly true when faced of the zero bound on nominal interest rates in combating deflation.

In evaluating the role of money, I would like to take up three episodes in post-war Japan; namely,

- (1) the oil price hikes from the mid-1970s to early 1980s,
- (2) the emergence and bursting of the asset price bubble from the mid-1980s to early 1990s,
- (3) the experience of persistent deflation under the zero interest rate and the quantitative easing policy covering from the mid-1990s to March 2006.

First Episode: oil price hikes and the money supply-oriented monetary policy

In the first episode, the rapid acceleration of money supply growth amid expansionary fiscal policy after 1971 induced rampant inflation. In spring of 1973, Japan moved to the flexible exchange rate system to mitigate the tradeoff between the free international capital flows and the control of the money supply. Yet, the first oil price hike in late 1973 exacerbated the already strong inflationary pressures.

The Bank of Japan succeeded in overcoming the rampant inflation and its stagflationary impact arising from the two oil price hikes by monitoring the money supply (M2+CDs) carefully. After the mid-1970s, the money supply growth was held down steadily, while the volatility of money supply changes diminished significantly. Corresponding to the gradual deceleration of money supply growth, the inflation rate subsided remarkably (Chart 1).

In 1982, Milton Friedman described Japan's monetary policy in the 1970s as "less monetarist in rhetoric, yet far more monetarist in practice than the policies followed by the United States and Great Britain."

Despite the praise of Friedman, Japan's money supply-oriented monetary policy cannot be regarded as "monetary targeting policy". In 1975, the Bank of Japan employed monetary aggregates as one of the important information variables, yet it eschewed attaining the reference value of the monetary growth target (Bank of Japan (1975)).

Instead, from 1978 the Bank of Japan began to announce a quarterly forecast for money supply growth, yet the forecast was different from the "intermediate target growth rate" announced by the Federal Reserve or the M3 reference target rate by the ECB.¹ The forecast was close to the actual outcome, yet money supply reaccelerated and diverted from the trend nominal GDP growth after the mid-1980s in the wake of financial deregulation and innovation.

To conclude, the first episode reconfirms the lesson that the control of money supply (which was restored under the flexible exchange rate system) played an essential role in containing the rampant inflation prevailing in the early 1970s.

Second Episode: asset price bubbles and the real money gap

Let me turn to the second episode. Lax monetary policy after the mid-1980s was evidenced by the sustained deviation of actual real money stock from the equilibrium real money stock. Given the positive "real money gap", asset price bubbles emerged in the equity and real estate markets while general price stability was maintained (Chart 2).² Once land prices started to move up, the augmented collateral value of land triggered the rapid expansion of bank credit through the "financial accelerator mechanism" or the "credit cycle" on the imperfect financial market.³ On the other hand, price stability was reinforced by the yen appreciation after the Plaza Accord in 1985 in spite of the accelerating money supply.⁴

Plentiful market liquidity facilitated the active management of risk portfolios through relaxing the liquidity constraint and affected the willingness of investors to take more risks, leading to the reduction in risk and term premia.

From the second episode, we can draw the lesson that a positive "real money gap" can cause the asset price bubbles through the "financial accelerator mechanism" and the reduction in risk and term premia, precisely because price stability is maintained.

Third Episode: deflation and the quantitative easing policy

Turning to the third episode, after the bubble burst in the early 1990s, the required adjustment to the balance sheets of both the corporate and banking sectors tended to significantly lower the natural interest rate and reduce the potential growth rate from about 5% to about 1% in the mid-1990s.⁵ It is not difficult to gauge the consequence from the Wicksellian process perspective: deflation began to prevail as the natural interest rate became significantly lower than the real market interest rate.

After the “zero interest rate policy” from February 1999 to August 2000, the “quantitative easing policy” was initiated in March 2001. The quantitative easing policy set bank reserves as an operating target and reconfirmed the commitment to continue the virtual zero interest rate policy until the core CPI growth rate stands above zero in a stable manner.⁶

The perceived emergence of the “liquidity trap” under the zero short-term interest rate seemed to undermine the effectiveness of the quantity-oriented monetary policy, as the interest rate elasticity of demand for money became close to infinity at the zero short-term interest rate.⁷

Moreover, the linkage between monetary aggregates and income or prices has largely disappeared since 1997, mainly reflecting the increase in precautionary demand for money due to financial instability and nonperforming assets on the banks’ balance sheets.⁸

Yet the unstable demand for money as well as the zero bound on policy interest rate do not imply that money has no role to play in the transmission mechanism of monetary policy.

Citing the experience of Japan’s quantitative easing policy, Governor Mervyn King (2002) questioned whether the excess supply of money under the zero interest rate policy would lead to the potency or impotency of monetary policy.⁹

At the panel discussion of the Jackson Hole Conference in 2005, I gave my answer to this question: under the quantitative easing policy the extent of the zero interest rate was widened to cover the one-year maturity in tandem with the increasing amount of reserve target from 5 trillion yen to 30-35 trillion yen.

I argued that ample provision of liquidity contributed to preventing the economy from falling into a deflationary spiral. Besides, the additional injection of liquidity into the market complemented the commitment about the future path of the policy interest rate, thereby strengthening the “policy duration effect”.

Furthermore, at the satiation level of money holdings, a fiscal policy aimed at achieving a zero primary balance by FY2011, combined with the positive rate of

increase in the monetary base, contradicts the existence of the “deflation trap”, due to the violation of the transversality condition (Iwata (2005)).

The effect of liquidity injection can be interpreted in two ways. First, I recall that Fisher Black (1995) reformulated the role of interest rates as an option, assuming that the equilibrium shadow interest rate, or the natural interest rate, can become negative. Yet, individual investors can safely avoid negative interest rates by holding currency at zero interest rate. Thus, the observed zero interest rate can be regarded as a call option on the equilibrium shadow interest rate.

Black argued that the long-term interest rate will remain positive under the “liquidity trap” in the presence of a zero bound on nominal short rates, because of the more-than-usual term premiums and the expectation of future development of the short-term interest rate at zero embedded in the long-term interest rate.

The commitment on the duration of the zero interest rate policy suggests that the shadow interest rate will be negative, as long as deflation is expected to persist into the future; the longer the duration of the zero nominal interest rate, the larger the size of negative interest rate.¹⁰

Accordingly, while the additional liquidity injection strengthened the commitment on the duration of the zero interest rate policy, it was supposed to result in more currency holdings (Chart 3).

Secondly, we can add a new insight into the role of money; money provides a liquidity service which is not identical to the service provided by government bonds.

If we reformulate the utility function to include not only money but also bonds of various maturities (money and bonds in utility function), the zero short-term interest rate is not equivalent to the zero marginal utility of money, because there remains the arbitrage relationships with the longer maturity bonds with positive interest rates (Iwamura, Shiratsuka and Watanabe (2006)). As long as the marginal utility of money remains positive, the “satiation of money holdings” will not emerge even though the zero bound on short-term interest rates appears in the economy.

In this case, the increase of real money balance can affect the market interest rates, pushing down the forward rate relative to the future rate. As a result, the spread between the forward and the future rate has never closed under the quantitative easing policy (Chart 4, 5).¹¹

From the third episode, we can draw the following two lessons.

First, the large option-like value of nominal interest rates at zero, or close to zero under persistent deflationary expectations stimulates the incentive to hold currency. At the same time, the injection of liquidity complemented and reinforced the policy

duration effect of the zero interest rate policy, serving to flatten the yield curve (Ichiue and Ueno (2006)).

Secondly, in contrast, if money provides better liquidity services than government bonds, then the increase in real money balance affects the market interest rates, independently of the expectation channel arising from the commitment on the duration of expansionary monetary policy.

New framework for the conduct of monetary policy

In early March 2006 the Bank of Japan introduced a “new framework for the conduct of monetary policy” when it ended five years of quantitative easing policy. The “understanding of medium- to long-term price stability” provided “common knowledge” to the market participants.¹²

Further, the new framework introduced two perspectives on examining economic activity and prices; the first perspective is examining, as regards economic activity and prices one to two years in the future, whether the outlook deemed most likely by the Bank follows a path of sustainable growth under price stability. In the second perspective, we identify the potential risks beyond the forecast period. For instance, excessive investment induced by sustained expansionary monetary policy may give rise to undesirable wide fluctuations of economic activity.

The second perspective is designed to cope with the situation where the probability of the event is low, yet the damage to the economy could be quite large if it materializes. This second perspective corresponds to the risk management approach to monetary policy of Greenspan or the “mini-max approach to monetary policy management under Knightian uncertainty”.

We have observed the upward revision of the potential growth rate under the circumstances of low real long-term interest rates on the global market. Recent developments in monetary aggregates suggest a return to the equilibrium trend, after the sustained upward deviation from the equilibrium trend under the zero interest rate and the quantitative easing policy.

Given the lessons from the second episode, we should cautiously watch the developments in money and credit, and examine the policy implications of changes in monetary and credit aggregates, as the role of money is more subtle and far-reaching as suggested by the option-like value of currency holdings and liquidity effect under the quantitative easing policy.

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- ¹ Neuman (2003) justified the reference value of M3 growth rate by the ECB based on the link from core money to core inflation. Given the means of the range (4.5%) consisting of the potential growth rate (2-2.5%), normative rate of inflation (less than 2%) and the trend decline of velocity ranging from 0.5% to 1%, he detected the true normative rate of inflation to be equal to 1.5%.
- ² Gerlach and Svensson (2002) compared the usefulness of the "real money gap" (which can be decomposed into the "GDP gap" and the "velocity gap") as an information variable with the GDP gap. They thus noted that the deviation of actual monetary growth from the "unconditional" monetary growth target is likely to be a misleading indicator of risks to the price stability because of the tradeoff between the price stability and monetary growth target stability: in their view the Bundesbank actually gave priority to price stability rather than monetary target stability when the tradeoff between the "unconditional" money growth target and the inflation target becomes serious.
- ³ Kiyotaki and Moore (1997) developed the "credit cycle" theory, on the assumption of the financial constraint to borrow on the imperfect financial market. Regarding the emergence of the asset price bubble, the explanation based on the "Pigou cycle" of boom-bust of industrial fluctuation is plausible: the expectation on the strong technological progress stimulates the investment boom, although the expectation is not realized ultimately (Pigou (1926), Christiano and Fujiwara (2006)).
- ⁴ Aside from the well-maintained price stability, we can mention factors which might work to delay the timing of tightening of monetary policy as follows: the need for international cooperation at the time of the October crash in 1987 with Japan as the largest creditor country as well as tax reforms to introduce the consumption tax in 1988-89, in addition to the apprehension of the consequences of the rapid yen appreciation on economic activity. Ikee (2006) put emphasis on the absence of corporate governance due to the joy ride of "developmentalism" and the eroded role of the "main bank" as delegated monitor in explaining the excessive credit provision by banks.
- ⁵ On the cause of lower potential growth in the 1990s, Prescott and Hayashi (2002) focused on the importance of the negative supply shock arising from the shortening of labor hours.
- ⁶ Yet, this did not imply that "nominal income targeting" by using the monetary base as an operating instrument was adopted.

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- ⁷ The “vector-error-corrections model” confirmed the breakdown of the long-run cointegrating relation between money supply and income or prices, although the cointegration linkage still exists with respect to the total fundraising by moneyholders and economic activity (Bank of Japan (2003)). Miyao (2005) also confirmed the disappearance of the predictive content of M2+CDs in the late 1990s by carrying out cointegration analysis.
- ⁸ Actually Kimura, Kobayashi, Muranaga and Ugai (2002) confirmed the possibility of the infinite interest rate elasticity of money demand in the vicinity of the zero short-term interest rate.
- ⁹ In other words the question is whether the excess supply of money at the zero marginal utility of money or at the satiation level of money holdings will lead to massive substitution for risky financial and real assets or the accumulation of “idle money balance”. Notably, critics on the quantitative easing policy pointed to the useless and harmful accumulation of idle money balance by the banking sector. Yet it may be noted that the effect on the risk premium or the credit spread through portfolio rebalancing under the zero short-term interest rate is not excluded, though the effect seems to be small (Kimura and Small (2006)).
- ¹⁰ The empirically estimated shadow price reflected the policy duration effect linked to the persistence of deflation under the quantitative easing policy; it reached the bottom (the negative value of 6%) in early 2003, when the deflationary expectation reached the peak. It became close to zero, when the quantitative easing policy was expected to be abandoned (Ichiue and Ueno (2006)).
- ¹¹ Iwamura, Shiratsuka and Watanabe (2006) argued that this fact is difficult to explain in the absence of differentiated liquidity services provided by money and government bonds. Yet, there arises a further question as to why money can provide liquidity services superior to bonds. The technological function of money as memory on record-keeping on market transactions may be a partial answer (Kocherlakota (2005)).
- ¹² The public information shared commonly by Board Members and market participants is likely facilitate coordinated action toward returning to the normal state of the economy.

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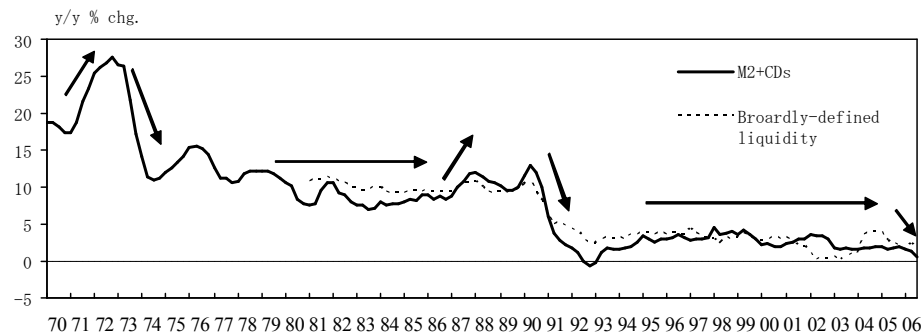
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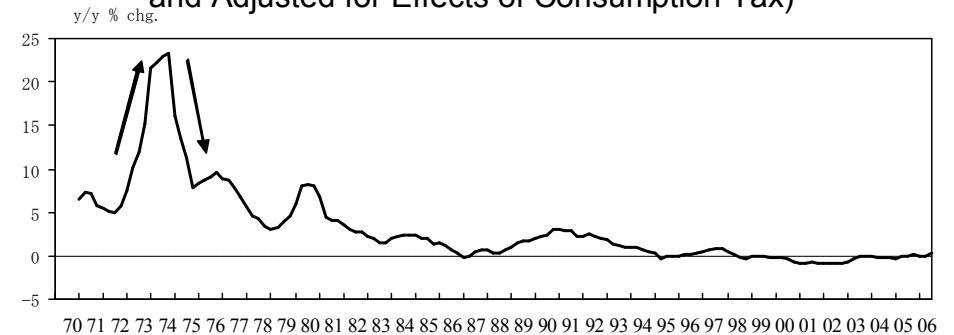
Chart 1

Money Stock, Real GDP, CPI, Stock Prices, and Land Prices

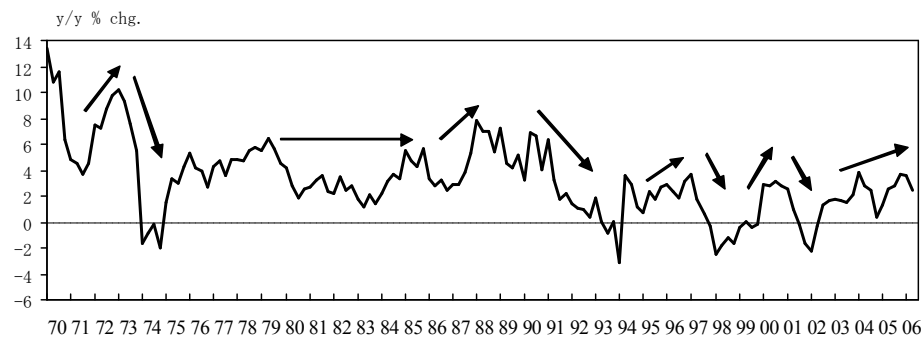
(1) Money Stock



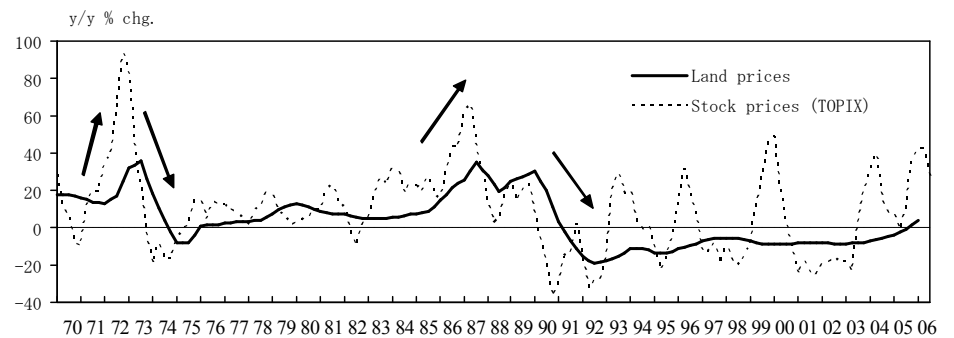
(3) CPI (General, Excluding Perishables and Adjusted for Effects of Consumption Tax)



(2) Real GDP



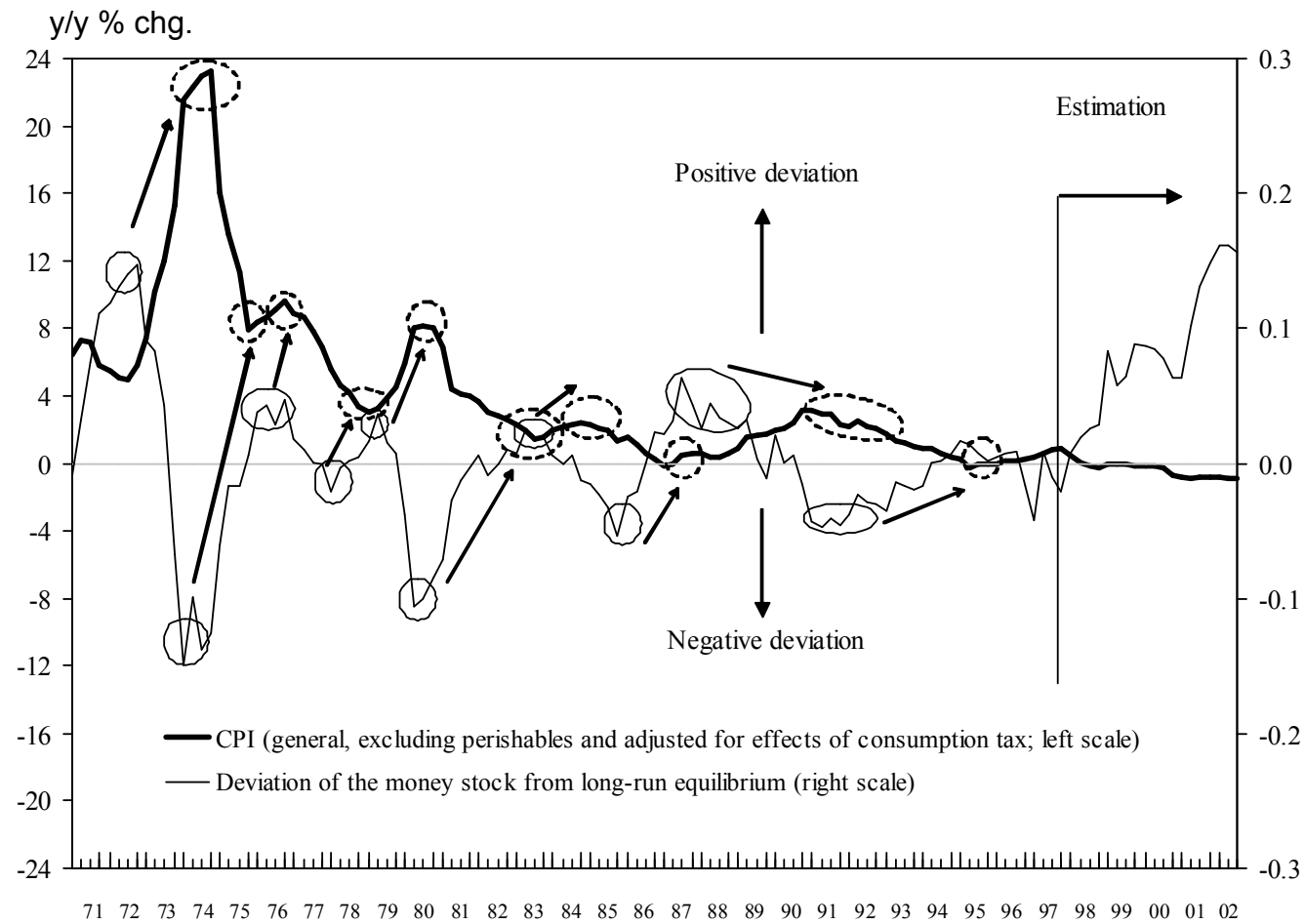
(4) Stock Prices and Land Prices



Source: Bank of Japan

Chart 2

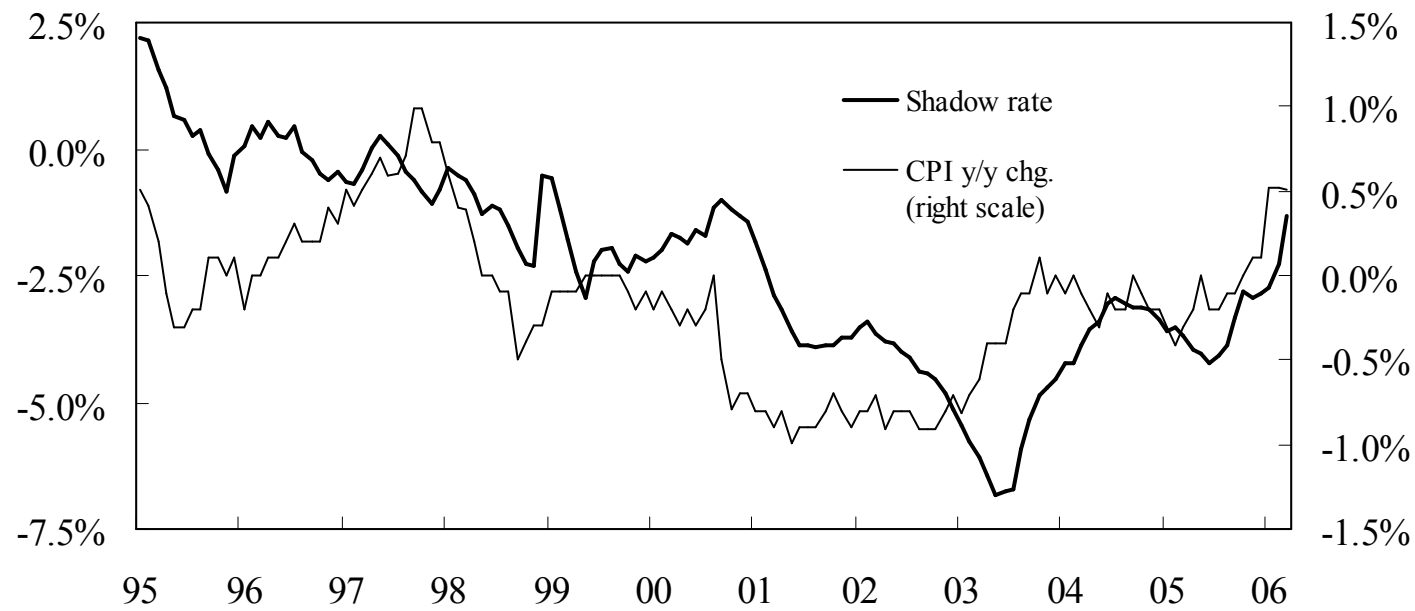
CPI and Deviation of Money Stock from Long-Run Equilibrium



Source: Bank of Japan (2003)

Chart 3

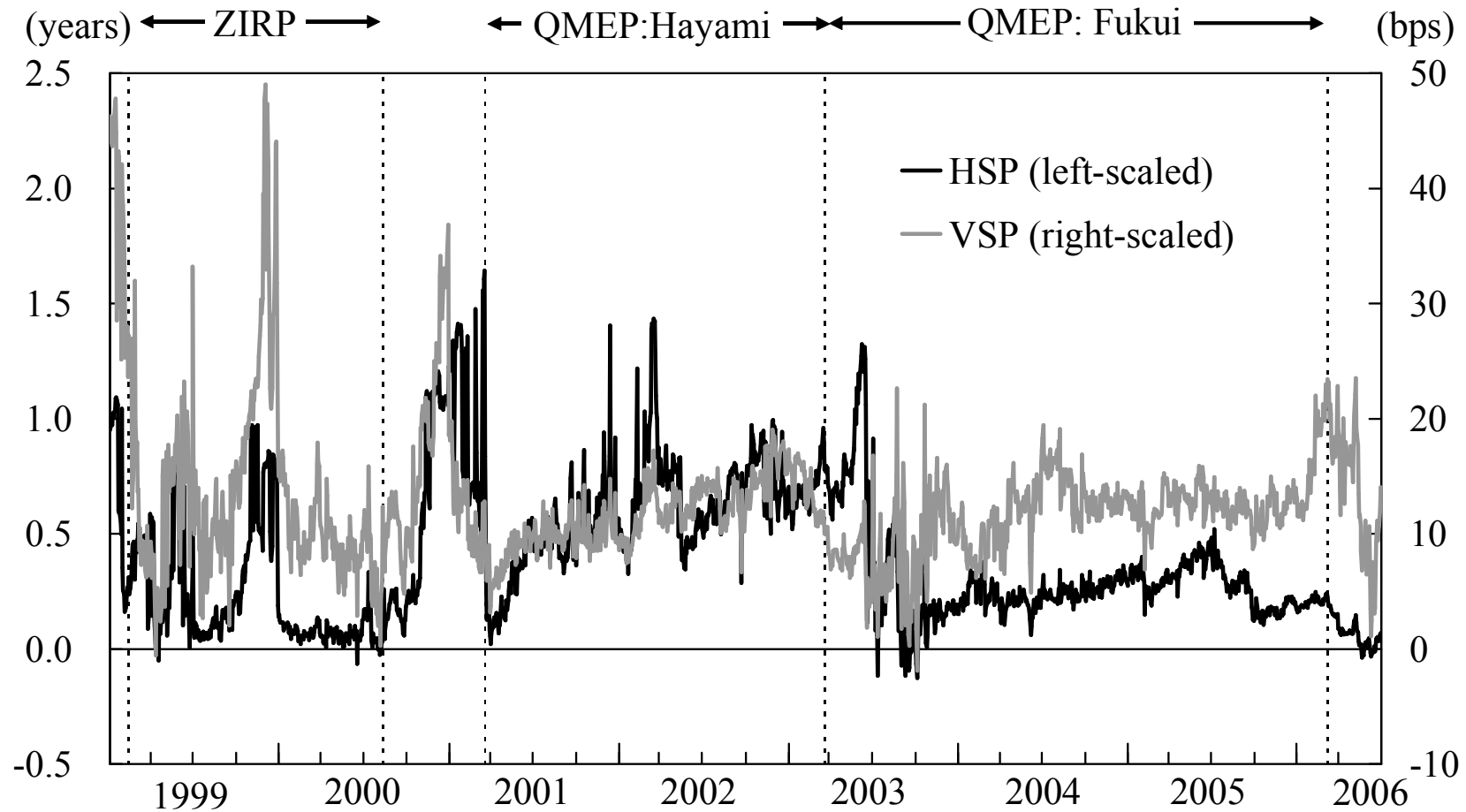
Shadow rate and CPI



Source: Ichiue and Ueno (2006)

Chart 4

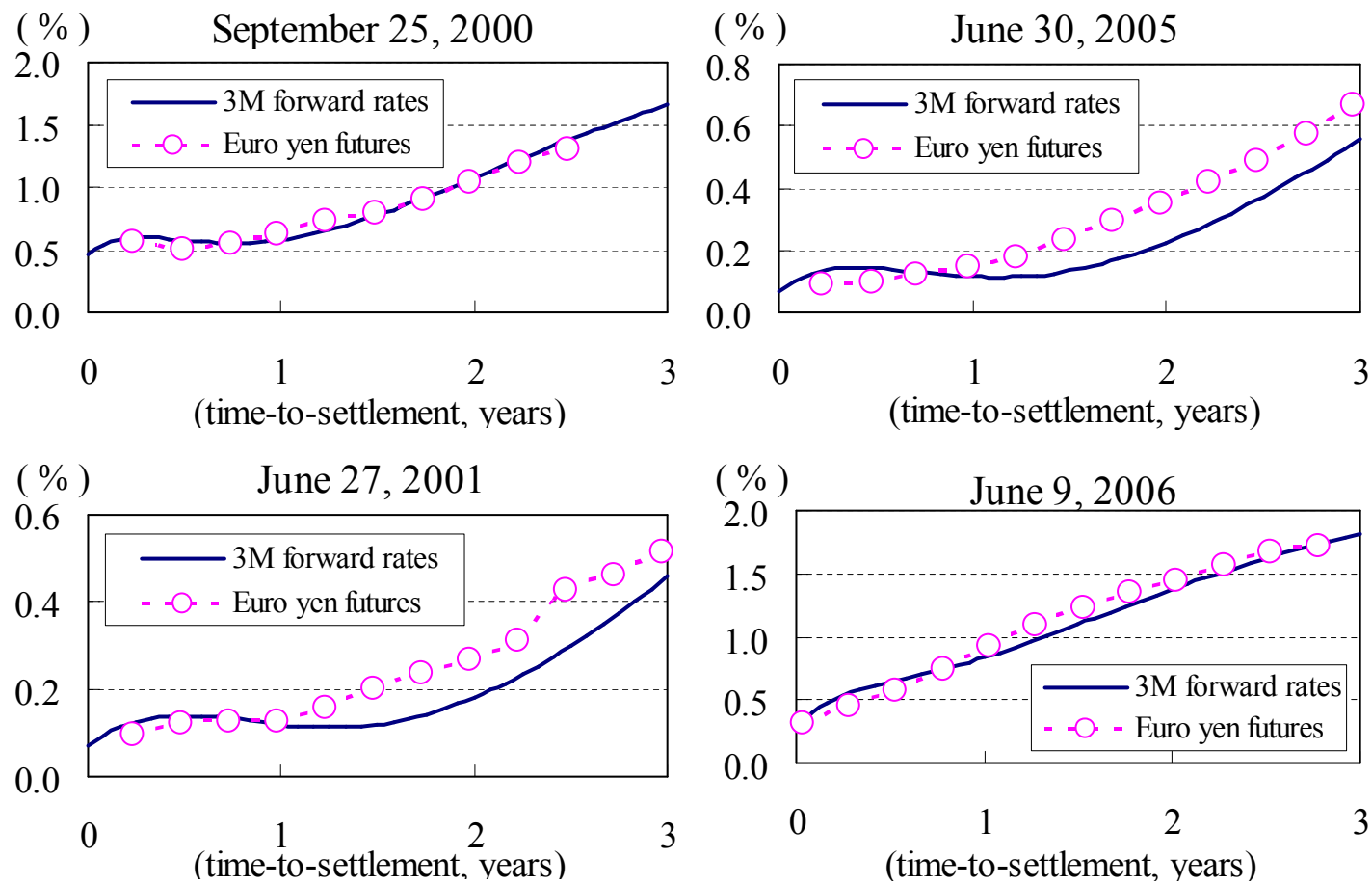
Vertical and Horizontal Spreads between Futures and Forward Rates



Source: Iwamura, Shiratsuka, and Watanabe (2006)

Chart 5

Futures vs. Forward Rates



Source: Iwamura, Shiratsuka, and Watanabe (2006)