Financial Markets Report

— Developments during the First Half of 2005 —

Bank of Japan
Financial Markets Department

July 2005

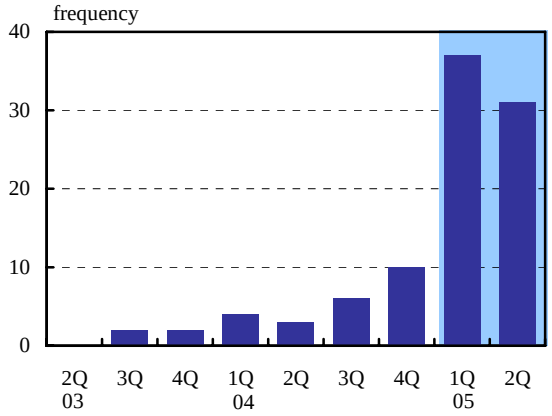
1. Short-term money markets

During the first half of 2005, the Bank of Japan continued to provide large amounts of liquidity far beyond minimum reserve requirements, and as a result, extremely accommodative conditions continued in the short-term money markets.

The target for the current account balance at the Bank has been retained at around 30 to 35 trillion yen since January 2004. Within this environment, the need for surplus funds in the market has been dramatically reduced, as banks reduced their non-performing loans and concerns regarding the stability of the financial system receded. Since the beginning of this year, in the Bank's funds-supplying operations, financial institutions have become more cautious in bidding for central bank funds, and frequent "under-biddings" (i.e. cases where bids for central bank funds fall short of the offered amount) have occurred (Chart 1).

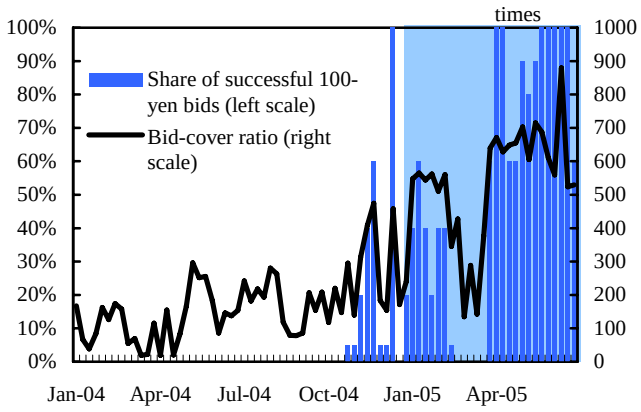
In an environment of ample liquidity, demand for Short-term Government Securities (Financing Bills <FBs> and Treasury Bills <TBs>) has increased and the over-heated demand is reflected in the auctions for three-month FBs, where bids at "100 yen (par)" have frequently been observed (Chart 2). Under these conditions, ranging from overnight to one-year rates, short-term interest rates have closed in on zero percent level (Chart 3, Box1).

(Chart 1) Frequency of under-biddings



Source: Bank of Japan

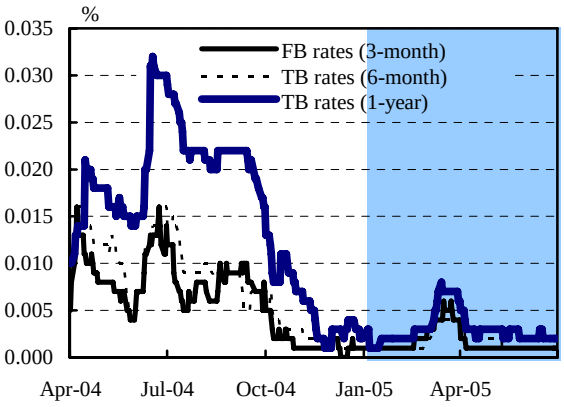
(Chart 2) Auction results for three-month FBs



Note: "Share of successful 100-yen bids" is calculated from the average successful bid price when it is between 99.9995-yen and 100-yen. It is assumed that in such cases all successful bids were either at 99.9995-yen or 100-yen (par). Thus the presented share may differ from the actual share of "successful 100-yen bids".

Sources: Ministry of Finance, Bank of Japan estimates

(Chart 3) Short-term interest rates

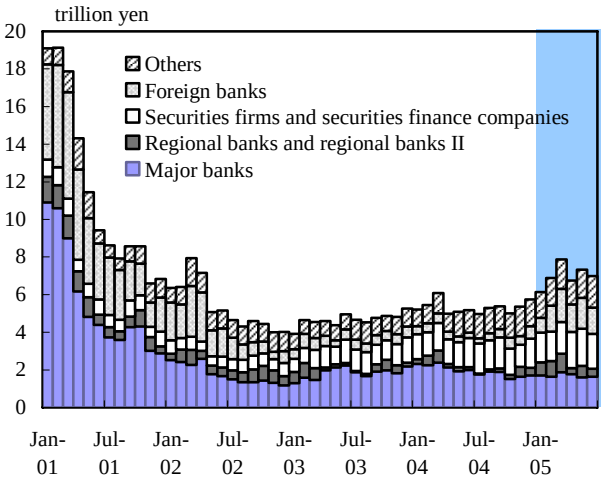


Source: Bank of Japan

In the charts, the shadowed portion represents the period (the first half of 2005) covered in this Report.

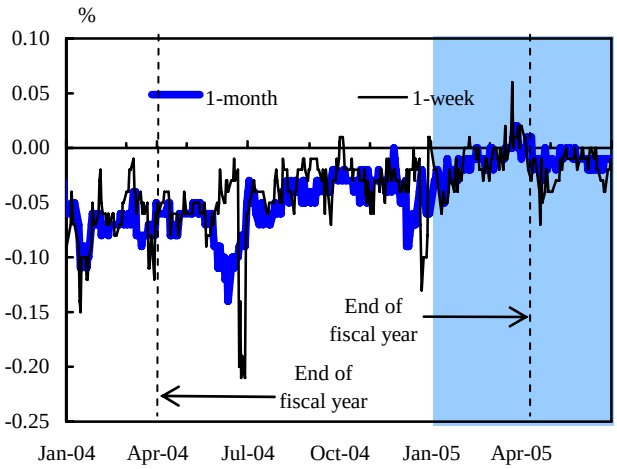
Meanwhile, activity in the uncollateralized call market remained at very low levels. However, during the first half of 2005, the market expanded slightly, as foreign banks and securities firms increased their funding in the market (Chart 4). For foreign banks, improved credit status of Japanese banks meant higher "yen funding cost" in the FX swap market (i.e. the rate foreign institutions must pay when obtaining yen funds through USD/JPY swaps from Japanese banks). It has risen close to zero (Chart 5), and foreign banks have returned to the call market because it has become difficult to obtain funds at a negative interest rate. For securities firms, with the increase in stock trading activity, their funding requirements have increased.

(Chart 4) Amounts outstanding in the uncollateralized call market



Notes: 1. Transactions through *Tanshi* (money market brokers), borrower side.
2. "Major banks" include City banks, Shinsei Bank and Aozora Bank.
Source: Bank of Japan

(Chart 5) Yen funding costs through foreign exchange swaps



Sources: Meitan Tradition Co., Bank of Japan

[Reference]
Bank of Japan, Financial Markets Department, "Negative Interest Rate Transactions in Short-term Money Markets", *Bank of Japan Research Bulletin* (Japanese), 2005

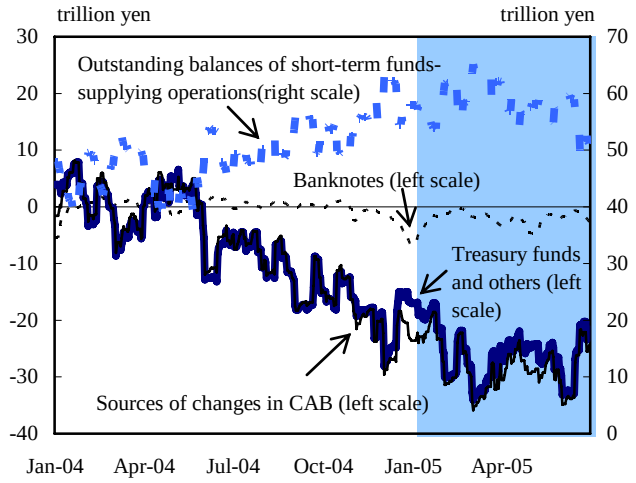
[BOX 1] Bank of Japan's open market operations and the short-term money markets

The need for surplus funds continued to fall during the first six months of 2005. While the target for the Current Account Balance (CAB) at the Bank of Japan remained unchanged at "around 30 to 35 trillion yen", increases in tax receipts beyond estimates and front-loaded issuance of JGBs put downward pressure on the CAB, and as a result, the volume of short-term funds-supplying operations by the Bank increased (Box Chart 1).

As the funding appetite of financial institutions decreased, in order to increase funds in the market, the Bank has been gradually increasing the tenor of short-term funds-supplying operations and average tenor reached a new high of six-months during the second quarter (Box Chart 2). Consequently, financial institutions became more reliant on the Bank's open market operations as their funding source than on market sources. This must have contributed, at least to some extent, to the reduction in term premium in maturities such as six-months and one-year (Chart 3).

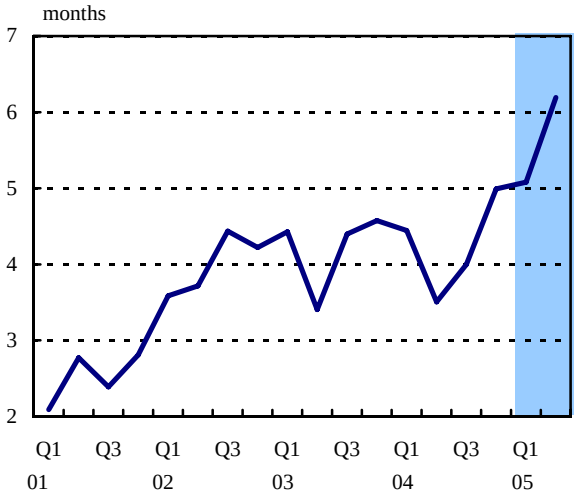
Under such conditions, the Bank, at the Policy Board meeting in May, modified the proviso of the guideline for monetary policy operations, allowing for cases where CAB can fall temporarily below the target when the demand for funds is considered to be exceptionally weak. Based on this guidance, on June 2nd and 3rd, when large amount of funds was transferred from the private to the public sector through corporate tax payments, the CAB fell slightly below 30 trillion yen.

(BOX Chart 1) Sources of changes in CAB and balances of short-term funds-supplying operations



Notes: 1. Cumulative changes
2. "Sources of changes in CAB" = "Banknotes" + "Treasury funds and others", end-March 2004=zero.
Source: Bank of Japan

(BOX Chart 2) Tenor of short–term funds-supplying operations



Note: "Tenor of short-term funds-supplying operations" is based on the quarterly offerings of the following operations and is derived as the weighted average amount (based on successful bids) of (1) the tenor of outright purchases of bills, Japanese government securities (JGS) repo transactions (i.e. purchases of JGS with repurchase agreements, JGB borrowings, and purchases of TBs/FBs with repurchase agreements) and purchases of CP with repurchase agreements, and (2) the remaining maturity of issues actually purchased through outright purchases of TBs/FBs.
Source: Bank of Japan

*The amendment to the proviso of the guideline for money market operations

The guideline decided on April 28, 2005:

The Bank of Japan will conduct money market operations, aiming at the outstanding balance of current accounts held at the Bank at around 30 to 35 trillion yen.

Should there be a risk of financial market instability, such as a surge in liquidity demand, the Bank will provide more liquidity irrespective of the above target.

The guideline decided on May 20, 2005:

The Bank of Japan will conduct money market operations, aiming at the outstanding balance of current accounts held at the Bank at around 30 to 35 trillion yen.

Should there be a risk of financial market instability, such as a surge in liquidity demand, the Bank will provide more liquidity irrespective of the above target. When it is judged that liquidity demand is exceptionally weak considering such factors as responses of financial institutions to the Bank's funds-supplying operations, there may be cases where the balance of current accounts falls short of the target.

[Reference]

Bank of Japan, Financial Markets Department, "Money Market Operations in FY 2004", *Bank of Japan Research Bulletin* (Japanese), 2005

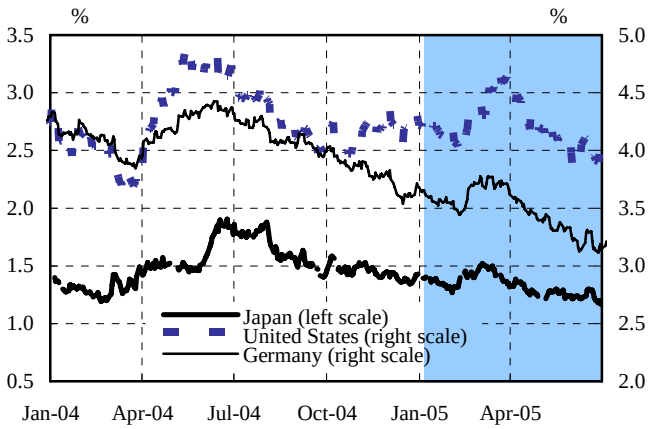
2. JGB Markets (long-term interest rates)

Long-term interest rates stayed within a relatively narrow range, as rates for newly issued 10-year JGB moved generally between 1.2% and 1.5%. But overall, continuing the trend experienced since last fall, long-term rates moved gradually downward, although the drop was limited compared with the declines experienced in the US and European markets (Chart 6).

From the beginning of the year to mid-March, stock prices rose to reach highs for the year while economic indicators often exceeded market expectations. As a result, in early March, interest rates rose to the 1.5% level. However, a number of weak economic data followed and concerns about the pace of overseas economic growth reemerged. Consequently, interest rates fell below 1.2% toward the end of June, the lowest levels since February last year (1.190%). Entering July, economic indicators released in major economies tended to beat market expectations and long-term rates have moved up to the 1.25% - 1.30% range.

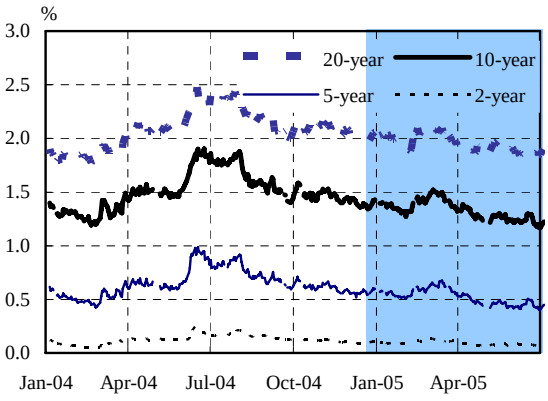
Interest rates for all maturities fell during this period (Chart 7), but when looking at separate parts of the yield curve, the 2-5 year spread dropped noticeably. In comparison, the drop in the 5-10 year spread was limited, and the 10-20 year spread widened out slightly (Chart 8).

(Chart 6) Global long-term interest rates
(10-year government bonds)



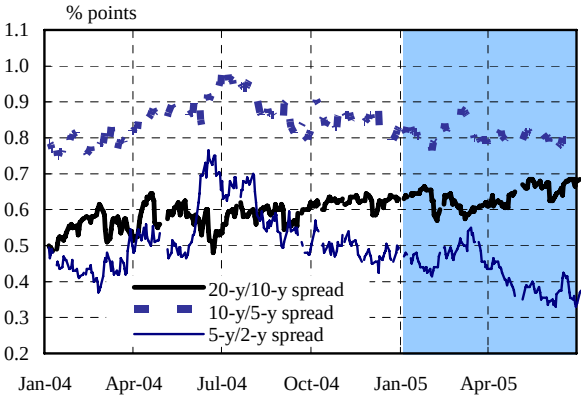
Sources: Japan Bond Trading Co., Bloomberg

(Chart 7) Interest rate movements (by maturity)



Source: Japan Bond Trading Co.

(Chart 8) Term spreads



Source: Japan Bond Trading Co.

The drop in 2-5 year rates likely reflected a more cautious view regarding the pace of economic recovery and the corresponding extension in the markets' expectations regarding the duration of quantitative easing. It probably was also influenced by the drop in FB rates reflecting the abundance of funds in the short-term money markets.

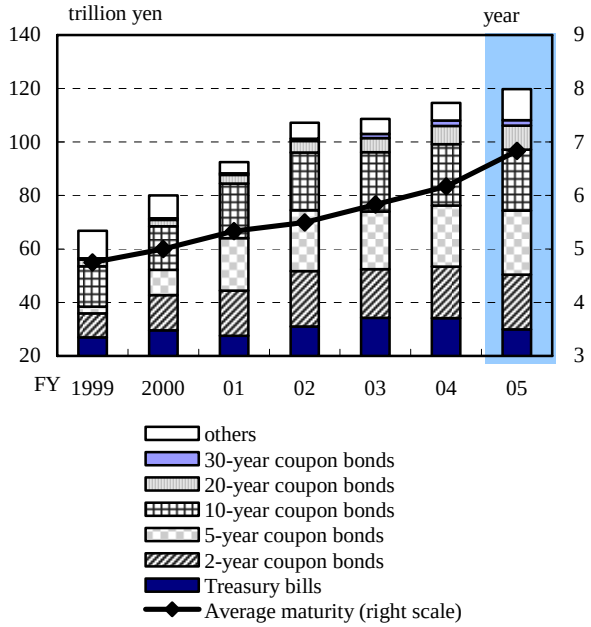
On the other hand, the drop in rates beyond 10-years was relatively small compared with shorter zones and the 10-20-year spread widened. This part of the yield curve may have been influenced more by supply-demand factors, as new issuance was concentrated in the 20-year bonds (Chart 9).

The drop in domestic long-term rates during the first half of this year occurred while (1) market views toward the pace of domestic economic recovery became slightly more cautious, and (2) long-term rates in the US and Europe continued to fall. The following sections examine these points more closely.

(A more cautious view toward economic recovery)

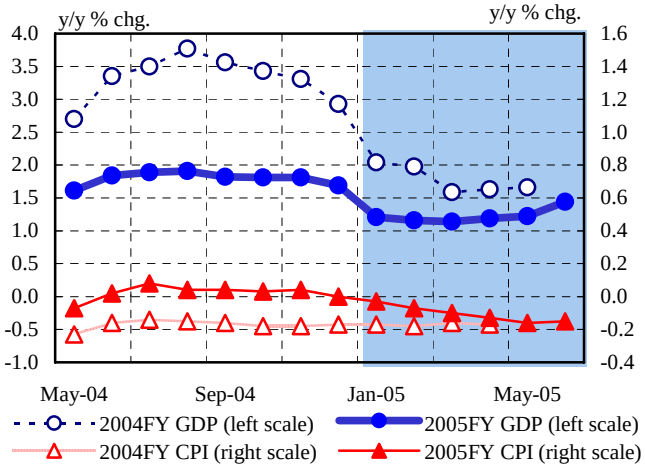
Looking at the market participants' expectations regarding economic recovery (real GDP growth rate), the forecast for fiscal year (FY) 2004 and 2005 peaked in August 2004 and has fallen since. Forecasts released this year have remained at low levels (Chart 10). The outlook for consumer prices was slightly positive during 2004, but has dropped into negative range this year and has trended downward. The increased caution of market participants toward the economy and price trends likely reflect higher crude oil prices, concerns regarding a possible slowdown in the pace of growth in the US and China, and protracted inventory adjustments in the IT sector.

(Chart 9) JGS Issuance



Note: Public offering only. Figures up to FY03 are actual results. Figures for FY04 and 05 are based on budget plans.
Source: Ministry of Finance

(Chart 10) Economic outlook: Survey of economists

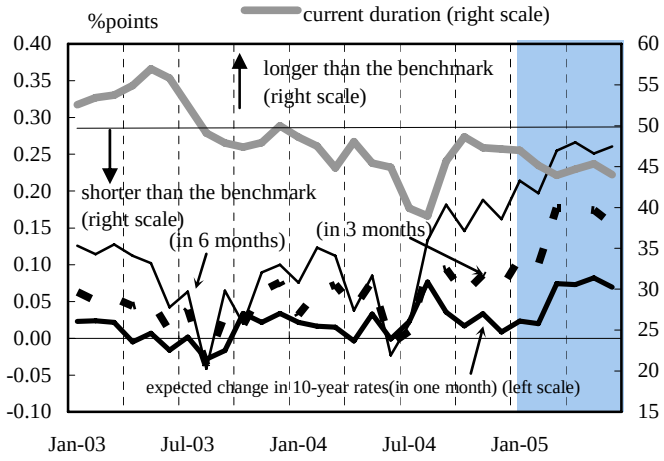


Notes: 1. Most recent survey period: May 30 -June 6.
2. Beginning from the January 2005 survey, real GDPs are based on chain-linking method. Those before the January 2005 survey are based on the fixed-base year method.
Source : Economic Planning Association "ESP Forecast"

With regard to change in the market's view on the outlook for interest rates and in the duration of their bond portfolio, market participants continued to expect a small rise in interest rates and are keeping their duration at slightly shorter levels compared with their benchmark (Chart 11). This contrasts with the situation in June 2003 when long-term interest rates reached record lows in an environment where expectations for a further drop in interest rates were strong, and market participants built up extensive long positions. The current environment, where interest rates have drifted downward while market participants have a persistent uneasiness about a future increase in interest rates, suggests that (1) the mid-term scenario for an economic recovery remains intact, but, (2) at the same time, market participants have grown more cautious with regard to the timing at which the economy will regain upward momentum.

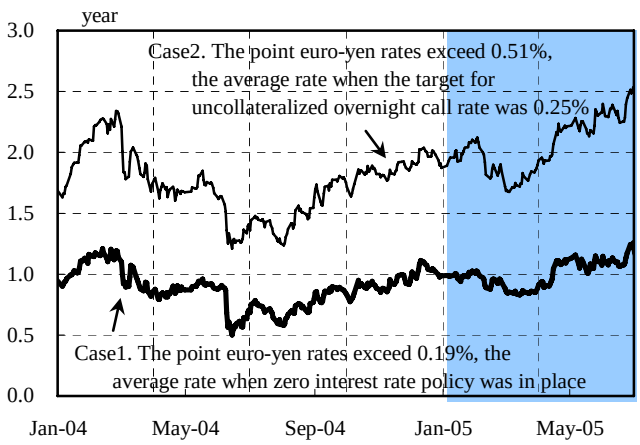
Market participants' views on the duration of quantitative easing also extended outward. Chart 12 shows "the timing when euroyen interest rates exceed levels before quantitative easing was introduced (Case 1: average level when zero interest rate policy was in place <0.19%>, and Case 2: average level when the target for the uncollateralized overnight call rate was 0.25% <0.51%>)", derived from euroyen futures rates. Perceptions on the duration of quantitative easing fluctuated depending on economic indicators. However, overall, during the first half of this year, perceptions have been extended reflecting a more cautious view on the economic and price outlook (Box 2).

(Chart 11) Expected changes in long-term rates (10-year) and duration of JGB portfolios



Notes: 1. Survey of securities firms and institutional investors.
2. Most recent survey period: June 28-30.
3. Average JGB yield (10-year):
Jul-03: 0.945%, Aug-03: 1.420%
Source : QUICK "QSS Report", Bank of Japan

(Chart 12) Market participants' expectations on the duration of quantitative easing



Notes: 1. The time to the point on the yield curve of current euroyen futures (3-month) where it exceeds the average of the euro-yen rates during the periods below is assumed to be the market's expectation of the duration of monetary easing.
Case 1. Bank of Japan maintained a "zero interest rate policy" (Feb/99-Aug/00)
Case 2. The target for the uncollateralized overnight call rate was 0.25% (Aug/00-Feb/01)
Sources: Tokyo Financial Exchange, Bank of Japan

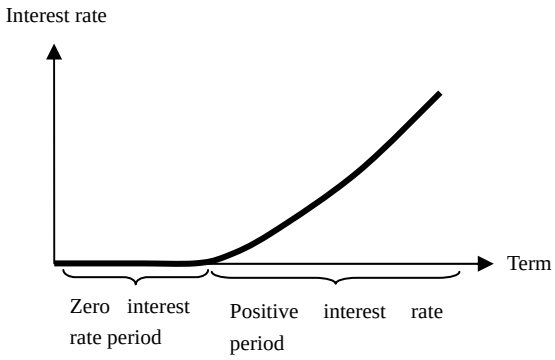
[BOX 2] Measurement of market participants' expectations on the duration of quantitative easing

In the main text, market expectations on the duration of quantitative easing were expressed in a simplified form as "the point in time when euroyen future rates (three-month) exceed average levels during the period when (Case 1) zero interest rate policy was in place and when (Case 2) the target for the uncollateralized overnight rate was at 0.25%". The results are based on a simple assumption that the spread between the 3-month euroyen interest rate and the monetary policy target rate (uncollateralized O/N rate) would remain basically constant even after the exit from quantitative easing. Thus the calculated duration itself cannot be interpreted with much significance. However, with regard to the direction of the change in expectations, it can be argued that it broadly reflects the market views.

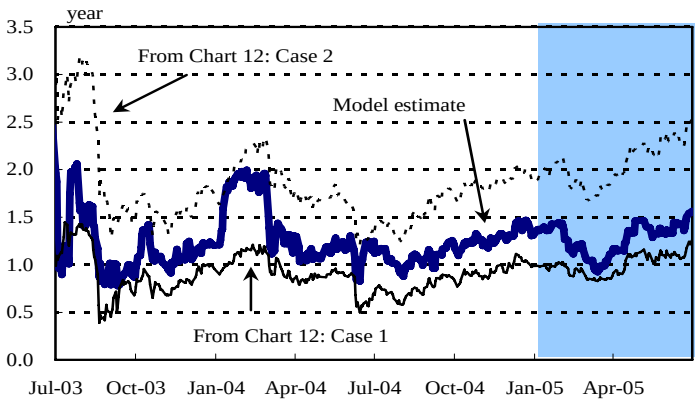
Another way of analyzing market expectations on the interest rate outlook is to employ a term structure model for interest rates. Under Japan's current interest rate term structure, short-term rates are bounded at zero and deflect upward at a certain point (Box Chart 3). Therefore, it is pointed out that it is difficult to apply traditional interest rate term structure models. For example, it is noted that when such models are applied, interest rates may become negative, or for models where volatility is influenced by the level of interest rates, volatility may become extremely small.

Gorovoi and Linetsky (2004) developed a model that resolves the limitations of such models, avoiding cases where volatility becomes extremely low and making adjustments so that interest rates are assumed to be zero when in negative territory. They reported that this model enabled them to describe the current Japanese interest rate term structure. Using this model enables us to extract out market expectations of the future path of interest rates and calculate the duration of the zero interest rate period (Box Chart 4). The results are generally consistent with the results simply obtained from the euroyen interest rate futures market (Chart 12).

(BOX Chart 3) Interest rate term structure in Japan



(BOX Chart 4) Expected duration of zero interest rate period calculated from a model



Sources: Tokyo Financial Exchange, Japan Securities Dealers Association, Bank of Japan

[References]

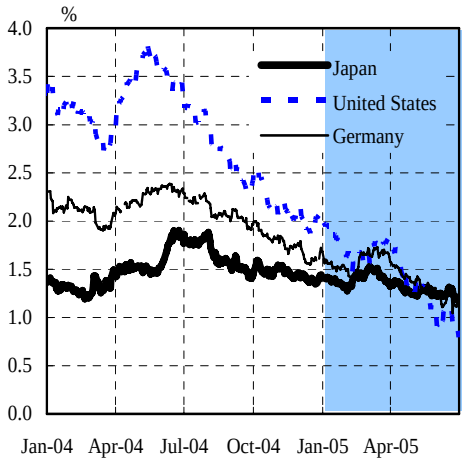
Gorovoi, V., and V. Linetsky [2004], "Black's Model of Interest Rates as Options, Eigenfunction Expansions and Japanese Interest Rates," *Mathematical Finance*, Vol.14, pp.49-78

Linetsky, V. [2004], "Computing Hitting Time Densities for CIR and OU Diffusions: Applications to Mean-reverting Models," *Journal of Computational Finance*, Vol.7, pp.1-22.

(Effects of the drop in long-term interest rates in US and Europe)

The downward trend of long-term rates in Japan has likely been influenced by the drop in long-term rates in the US and Europe. In these markets, long-term rates have continued to drop since the latter half of 2004 (Chart 6). In the US, although the Federal Reserve continued to raise the target for the federal funds rate against a backdrop of relatively strong economic growth, long-term interest rates continued to soften. Long-term rates trended downward in Europe as well, reflecting concerns regarding the pace of economic growth and the increased demand for longer maturity bonds due to pension scheme reforms (i.e. increased investment in longer duration assets to match longer dated liabilities). As a result, term spreads have fallen substantially in the US and European markets since the latter half of 2004, and are now smaller than the levels in the Japanese market (Chart 13).

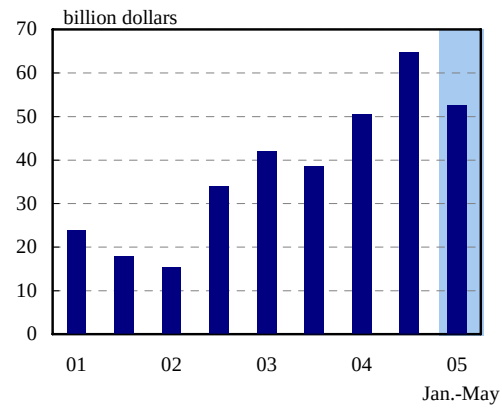
(Chart 13) Term Spreads
(10-year/3-month)



Sources: Japan Bond Trading Co., Bloomberg

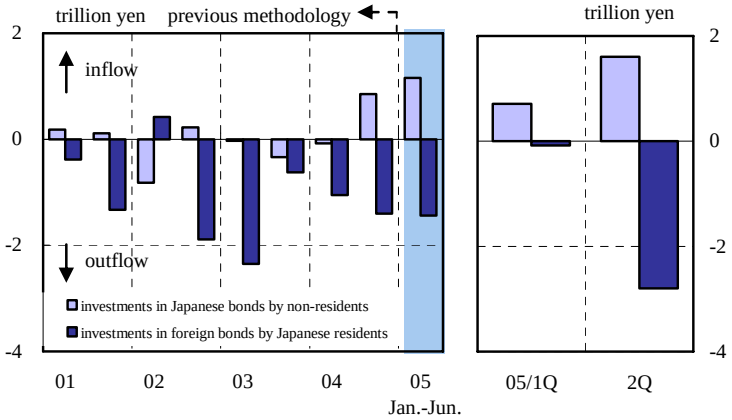
Cross-border bond investments between Japan, US and Europe have been growing for sometime (Chart 14), and since the second half of 2004, inward investments in Japanese bonds by overseas investors, which had been at relatively low levels, have also been increasing (Chart 15). The developments in cross-border capital flows may have influenced the decline in domestic long-term rates from a supply-demand perspective.

(Chart 14) Cross-border bond investments
between the US, Europe and Japan



Notes: 1. Six-month averages of monthly inflow into three regions (purchases of Japanese bonds by US and European investors; purchases of US bonds by Japanese and European investors; and purchases of European bonds by Japanese and US investors)
2. On a gross basis
Sources: Ministry of Finance, U.S. Department of the Treasury

(Chart 15) Cross-border bond investments
(in and out of Japan)



Note: There is a break in data due to a revision in methodology from January 2005. Quarterly or semi-annual average of monthly in and outflows. Data before 2005 are based on trades settled, data after 2005 are based on trades contracted. The figures for April-June 2005 are preliminary.
Source: Ministry of Finance