



Financial Markets Report
— *Developments during the Second Half of 2006* —

Bank of Japan
Financial Markets Department

March 2007

- This is a translation of the Japanese version published on January 31, 2007.
- This report covers the market developments during the second half of 2006, unless otherwise stated.
- In the charts, the shadowed portion represents the period from July to December 2006.

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Executive Summary

The Bank of Japan decided at its July 2006 Monetary Policy Meeting to change the guideline for money market operations raising the uncollateralized overnight call rate target to around 0.25 percent from the previous level of effectively zero percent. In the money market, short-term rates rose reflecting this decision, and the functioning of interest rates in the market improved. Meanwhile, despite the moderate economic expansion, accommodative financial conditions from very low interest rates were maintained with long-term interest rates following a declining trend, partly influenced by the outlook on price increases, which were expected to be small.

As for global financial markets, price developments in equity and credit markets continued to be strong, amidst market participants in many countries widely sharing the view that the global economy, particularly that in the United States, will continue to expand albeit at a somewhat slower pace. The main contributing factor was market participants' growing expectations of sustained high corporate earnings, supported by active mergers and acquisitions activities.

In Japan, prices in equity and credit markets continued to be firm overall but the pace of increase in equity prices was not steady and prices tended to fluctuate when compared with the U.S. and European markets. This was because domestic investors, overseas investors, and firms remained cautious in their forecasts of the economy, prices, and corporate earnings. In the foreign exchange market, the yen followed a downward trend against other currencies as interest rates in Japan remained lower than in other countries, against the background of extremely low volatility in the foreign exchange market.

In the money market, rates on overnight loans remained stable on the whole, albeit with some temporary fluctuations around the policy interest rate rise in July and at the end of 2006. Movements of other short-term rates in the second half of 2006 generally reflected market participants' expectations about the Bank's policy interest rate. Meanwhile, after the Bank raised the policy interest rate, arbitrage activities across various markets became smoother as money market activities intensified.

In the JGB market, rates centering on medium to longer-term maturities generally followed a declining trend, leading to a flattening of the government bond yield curve. These movements reflected market participants' outlook on the economy and prices, expectations about the policy interest rate changes, and declines in U.S. long-term interest rates.

In the equity market, stock prices rose on the whole in the second half of 2006 from the year-to-date low recorded during the period of "global risk reduction" in May and June 2006. These price developments were supported by robust corporate performance, against the background of continued expansion of the global economy. The pace of price increases, however, was not steady and prices were more volatile as Japanese firms remained cautious in their forecasts for fiscal 2006 corporate earnings and as domestic and overseas

investors continued to be uncertain about the outlook on the Japanese economy and prices.

In the credit market, spreads over Japanese government bonds of corporate bonds and credit default swaps (CDS) premium, gradually tightened after entering summer 2006. The main contributors were the strong corporate fundamentals, and stable and low implied volatility of interest rates.

In the foreign exchange market, while the volatility remained low, market participants tended to focus on the interest rate differentials. The interest rate on the yen was relatively low and the yen weakened against other major currencies and Asian currencies, because investors showed particular interest in high-interest-rate currency investments. Meanwhile, the U.S. dollar also depreciated somewhat against major currencies despite the relatively high interest rates, partly reflecting the heightening of concerns over the slowing of the U.S. economy and concerns over further diversification in the currency composition of official foreign reserves in many countries.

1. Money Market

In the money market, rates for overnight loans remained fairly stable throughout the second half of 2006, although there was some volatility around the July Monetary Policy Meeting (MPM) when the policy interest rate was raised, and at the end of the year. Developments for other short-term rates, such as 1-month and 3-month, reflected market participants' expectations about the Bank's policy interest rate changes based on the developments in economic and price indicators.

After the policy interest rate rise in July, money market activities increased on the whole although occasional decline in market liquidity that led to upward pressure on rates for overnight loans was noted. Arbitrage activities across various markets became smoother as the money market activities intensified compared to before the rise in the policy interest rate.

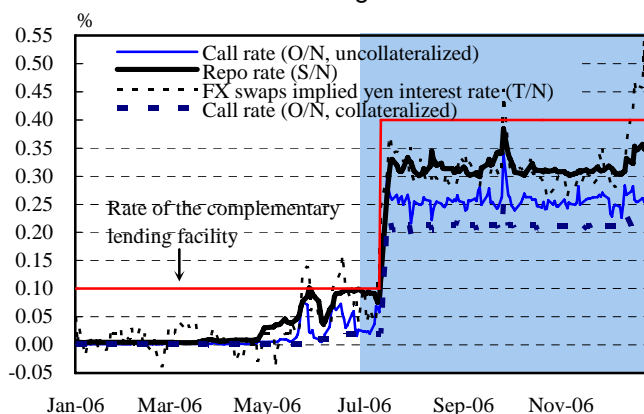
(1) Rates for Overnight Loans

Rates for Overnight Loans Stable after the Policy Change in July 2006

At the MPM held on July 13 and 14, 2006, the Bank decided to change the guideline for its money market operations, effective immediately from the announcement of the decision on July 14. With this decision, the uncollateralized overnight call rate target was raised to around 0.25 percent from effectively zero percent. The basic loan rate of the complementary lending facility was raised to 0.4 percent from 0.1 percent.

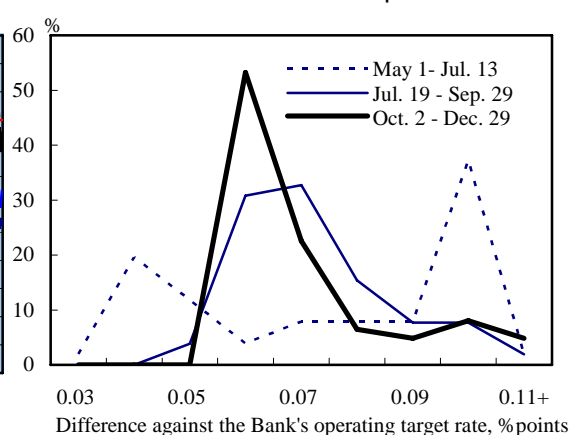
Before the policy interest rate rise in July, repo rates, which are spot/next day (S/N) transactions, and implied rates for yen funding through foreign exchange (FX) swaps, which are tomorrow/next day (T/N) transactions, were both volatile, as these rates temporarily exceeded the complementary lending facility loan rate. After the rise in policy interest rate, repo rates and FX swaps implied yen interest rates gradually began to stabilize (Chart 1-1). Repo rates rose in May and June 2006, increasing the upward pressure on rates in other markets, such as the call market. However, after July 2006, there were fewer large fluctuations and rates stabilized at around 0.30 to 0.32 percent, albeit with some temporary increases at end-September, which is the end of the first half of the fiscal year for many companies, and at end-December 2006 (Chart 1-2). Meanwhile, the loan amount of the complementary lending facility temporarily surged on the day of the policy change, but has decreased significantly since then.

Chart 1-1: Overnight rates



Note: Horizontal axis indicates the dates on which the transactions begin.
Sources: Meitan Tradition Co., Ltd; Association of Call Loan and Discount Companies; Bank of Japan.

Chart 1-2: Distributions of repo rates



Note: Vertical axis indicates the total percentage of days at which the stated % point difference was seen over each period.
Source: Bank of Japan.

Repo rates gradually stabilized in part due to the fact that market participants became more active in supplying funds to the market as difference in expected level of rates began to converge. This development should be viewed against the background of, among other factors, the Bank increasing the frequency of its future-date-start funds-supplying operations partly with the intent of undermining the upward pressures on repo rates from around the policy interest rate rise in July to September 2006. Another more fundamental factor probably contributing to repo rate stability has been the increased confidence in securing funds through overnight loans ensuing wider credit line availability to a certain degree in the uncollateralized call market reflecting the rise in rates.¹

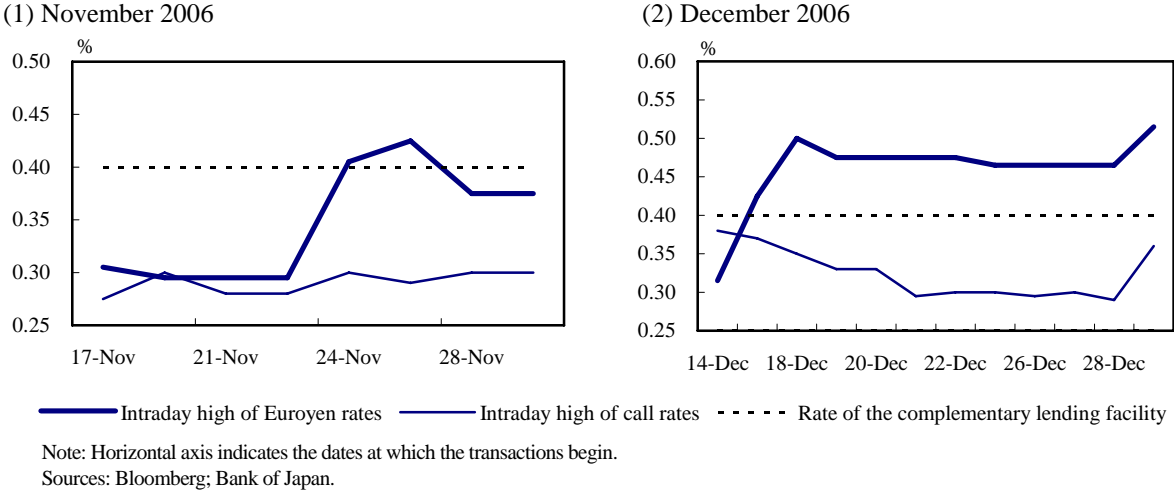
Arbitrage Transactions with the Offshore Yen Markets

Amidst improvements in the funding environment in call markets, arbitrage transactions between call markets and the offshore yen markets, such as the Euroyen and FX swap markets, gradually increased. As such, T/N rates, such as Euroyen and FX swaps implied yen interest rates, moved stably overall.

Meanwhile, at several points, such as at the end of the first half of the fiscal year, at end-November, and in the second half of December, FX swaps implied yen interest and Euroyen T/N rates rose steeply to levels exceeding the complementary lending facility loan rate. This was because the supply of short-term funds temporarily decreased in these markets, resulting in market participants' shifting their funding activities to the overnight loan market at these periods. The decrease in supply of short-term funds was attributable to seasonal factors and the expectation about policy interest rate changes among market participants. During these periods, market participants actively arbitrated between overseas and Tokyo markets. Such transactions involved supplying yen funds to overseas T/N markets and financing yen funds in the Tokyo overnight (O/N) call market on the following day. These transactions, however, had limited impact in terms of exerting upward pressure on call market rates, partly because the Bank flexibly supplied funds to

the call market through its funds-supplying operations where upward pressures on call rates increased (Chart 1-3).

Chart 1-3: Euroyen rates and call rates



(2) Short-Term Rates

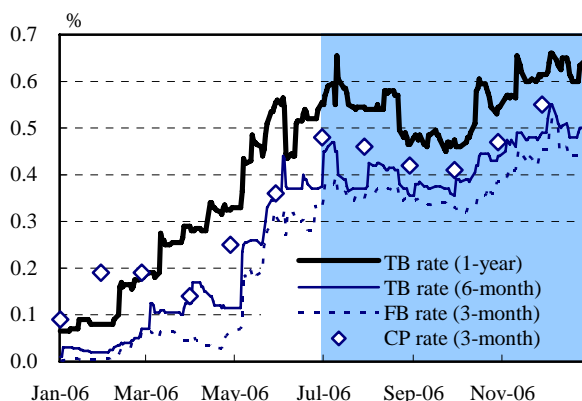
Developments in Short-Term Rates Reflected Changes in Market Expectations about the Bank’s Monetary Policy

Short-term rates followed a declining trend after the policy interest rate rise in July 2006 to early October 2006 (Chart 1-4). The main factors behind this development were the fact that the strong outlook for the Japanese economy and prices had receded somewhat, and that market participants’ expectations about policy interest rate developments changed accordingly. The base revision of the Consumer Price Index (CPI) on August 25, 2006 led to larger-than-expected downward changes in the CPI figures, and this was also a contributing factor to the decline in short-term rates. From October to December 2006, however, short-term rates gradually increased, supported by releases of stronger-than-expected economic indicators.

Market Expectations about the Timing of Changes in the Bank’s Policy Interest Rates Reflected in Short-Term Rates

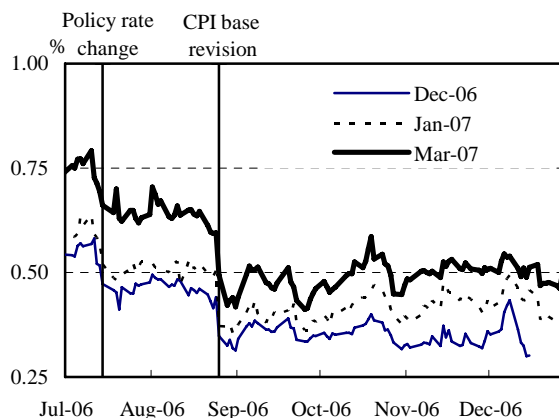
As described above, the developments in the short-term rates in the second half of 2006 generally reflected market participants’ expectations about the policy interest rate.² The expected uncollateralized O/N call rates, as reflected in rates for overnight index swaps (OIS) transactions, declined by a large margin just around the policy interest rate rise in July and at the end of August when the CPI base revision was made. After the beginning of September 2006, OIS rate movements remained generally flat for some time, but wider fluctuations were observed after the beginning of December 2006 (Chart 1-5).

Chart 1-4: Short-term rates



Note: CP rates are the rates of newly issued CPs.
Sources: Japan Bond Trading Co., Ltd; Bank of Japan.

Chart 1-5: OIS rates

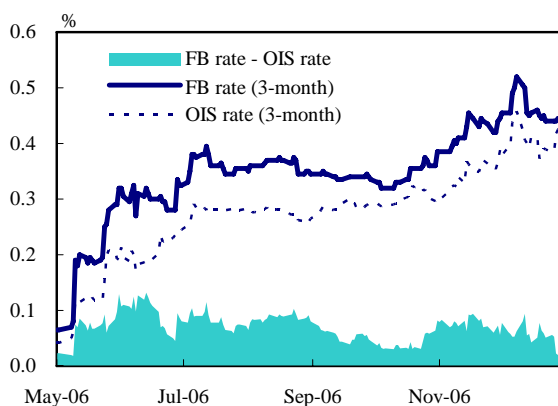


Note: 1-month forward rates from the 15th of each month.
Sources: Meitan Tradition Co., Ltd; Bank of Japan.

The expectations about the timing of monetary policy changes as implied in OIS rates are generally in line with expectations implied in other market rates, such as FB and TB rates, and the average rates on loans to the Government's Special Account for the Allotment of Local Allocation Tax and Local Transfer Tax (hereinafter, the special account). Because the overnight rates used for funding in each of these markets differ, factors such as the future-date-settlement premium between the repo rate and the uncollateralized call rate, lead to differences in rates for these instruments. Taking this difference into consideration, the rates for FB, TB, and loans to the special account which tend to fluctuate significantly with changes in supply-demand conditions, showed somewhat larger increases compared to OIS rates after October 2006, but the differences between these rates are smaller than before the policy interest rate rise in July 2006 (Chart 1-6). This was probably supported by the receding of concerns over the repo rate soaring as well as increase in arbitrage activities in the money market, as will be explained in more detail later.

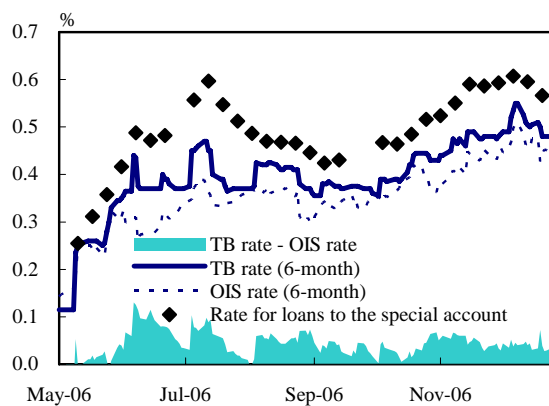
Chart 1-6: OIS rates and FB rates

(1) 3-month



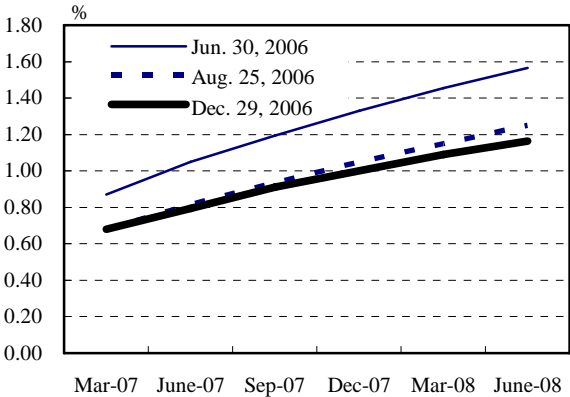
Sources: Japan Bond Trading Co., Ltd; Meitan Tradition Co., Ltd.

(2) 6-month



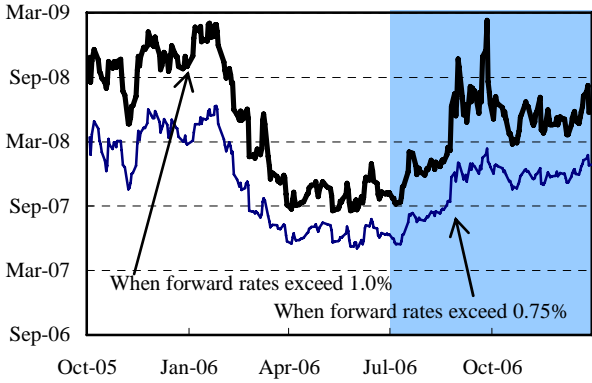
Euroyen futures rates for contracts in near delivery months, such as December 2006 and March 2007 contracts, moved in a way that reflected expectations about policy interest rate among market participants. Meanwhile, rates for distant contracts declined at the end of August 2006, influenced by the base revision of the CPI, and have remained more or less flat thereafter as market participants gradually began to expect that the rate of increase in the CPI would stay low against the background of weaker-than-expected CPI figures (Chart 1-7). The yield curve of the Euroyen futures flattened after October 2006, reflecting market participants' expectations about the policy interest rate. Looking at the 3-month forward rates on the government bond yield, the estimated dates at which the rates will exceed 0.75 percent and 1.0 percent remained fairly unchanged after being delayed by about three months at the end of August 2006 (Chart 1-8).

Chart 1-7: Euroyen futures yield curve



Source: Tokyo Financial Exchange.

Chart 1-8: Estimated dates at which the JGB forward rates will exceed 0.75% or 1.00%



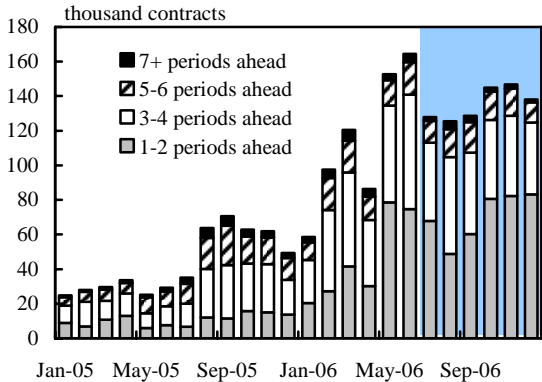
Sources: Japan Securities Dealers Association; Bank of Japan.

Increase in Derivatives Market Activity

Looking at short-term derivatives transactions after the policy interest rate rise in July, the transaction volume for Euroyen futures remained high. The volume of short-term derivatives transactions for which trading became active after the end of the Quantitative Easing Policy (QEP), such as OIS and other interest-rate swap transactions with maturities up to 1 year, i.e., short swaps, continued to follow an increasing trend (Chart 1-9).

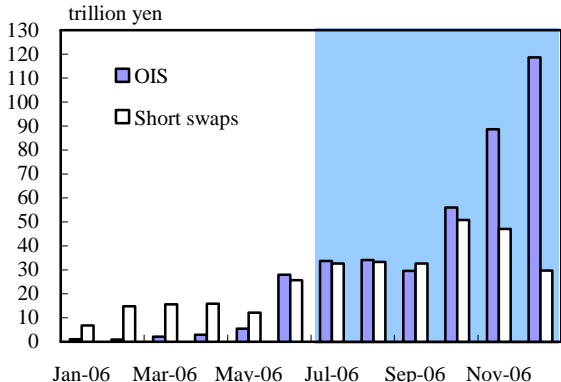
Chart 1-9: Transaction volumes

(1) Euroyen futures

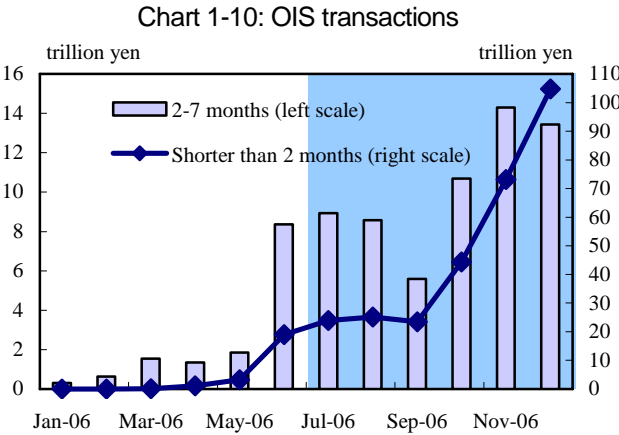


Sources: Money Brokers Association; Tokyo Financial Exchange.

(2) Interest rate swaps



The following may have been background factors influencing the increase in activities in the derivatives markets. First, around the Bank’s policy change in July, trading activity based on expectations about monetary policy developments increased. Second, along with the first factor, arbitrage activity with FX swaps, FB, and loans to the special account increased. OIS trading, which increased significantly, reveals that trading was most active for instruments shorter than 2 months and for instruments with durations of 2 to 7 months (Chart 1-10). The increase in OIS trades shorter than 2 months has been mainly due to the first factor, namely the inter-meeting transactions which trade the average call rate between MPMs. The increase in OIS trades of 2 to 7 months duration has been mainly due to the second factor, an increase in arbitrage activities.



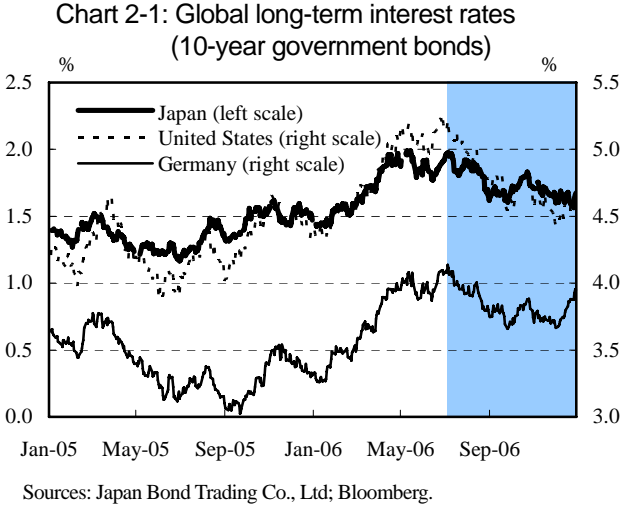
Source: Money Brokers Association.

¹ For more detail on this topic, please refer to “Changes Observed in Money Markets after the July 2006 Policy interest rate Increases,” Financial Markets Report – Supplement, forthcoming.

² Typical short-term yen interest rate instruments include FB rates, TB rates, and TIBOR. These short-term rates generally move in tandem, but may diverge from time to time owing to differences in features such as the main market participants. Therefore, to accurately assess market participants’ expectations as reflected in the rates in these markets, not only the movements of any particular rates, but also various other factors relating to the market, have to be comprehensively considered. In this report, the OIS rate is used to monitor changes in market participants’ expectations because, despite the constraint of having only limited and rather biased market participants, changes in market perceptions regarding policy interest rate movements under the Bank’s monetary policy are relatively easy to extract from the OIS rate.

2. JGB Market

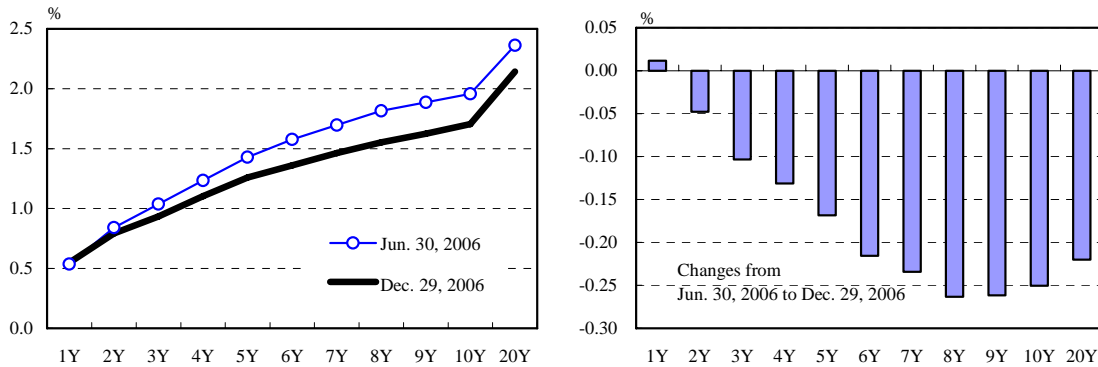
Interest rates in the JGB market, in particular for medium to longer-term maturities, generally followed a declining trend, leading to a flattening of the government bond yield curve after the policy interest rate was raised by the Bank in July (Chart 2-1). The contributing factors to these movements reflected market participants' outlook on the economy and prices, expectations about the policy interest rate changes, and declines in the U.S. long-term interest rates. More specifically, (1) market participants' views on the Japanese economy, which had been strong, weakened somewhat after the release of weaker-than-expected economic indicators, (2) market participants began to expect only small increases in prices following the base revision of the CPI and the weaker-than-expected CPI figures released after the base revision, and (3) market participants' concerns over the slowing of the U.S. economy increased while concerns over inflation waned. In addition, unwinding of trading positions by overseas investors reflecting mainly the first two factors, outlook on the economy and prices, may have induced declines in long-term rates. In December 2006, the yield on the newly issued 10-year JGBs declined temporarily to below 1.6 percent, the lowest level seen since the end of the QEP in March 2006, reflecting factors such as the stronger demand for bonds by domestic investors.



Rates for Medium to Long-Term Maturities Declined the Most

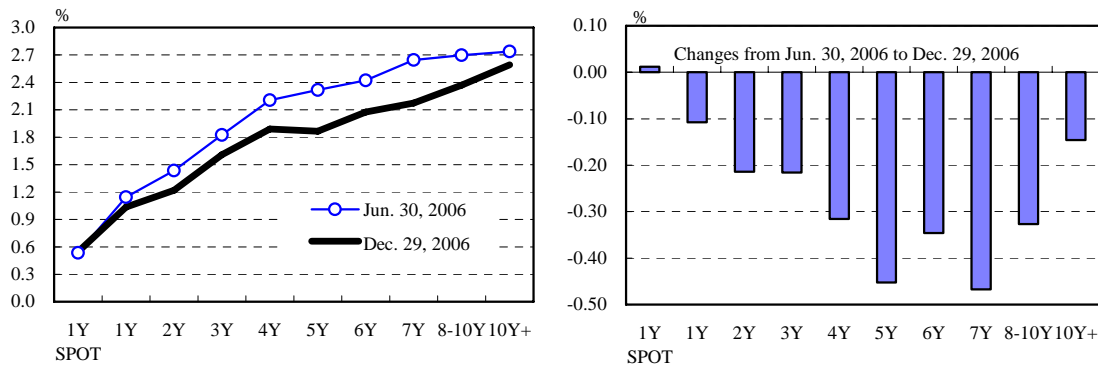
Looking at the government bond yield curve against time to maturity, while the short-term interest rates remained unchanged overall, medium to long-term interest rates declined, leading to a flattening of the yield curve (Chart 2-2). The developments for 1-year forward rates also reveal that the declines in government bond rates were most pronounced in the medium to long-term maturities (Chart 2-3). Rates for medium to long-term maturities generally followed a downward trend, reflecting market participants' longer-term outlook on policy interest rate changes and the decline in U.S. long-term interest rates.

Chart 2-2: Government bond yields (spot rates)



Sources: Japan Securities Dealers Association; Bank of Japan.

Chart 2-3: Government bond yields (1-year forward rates)

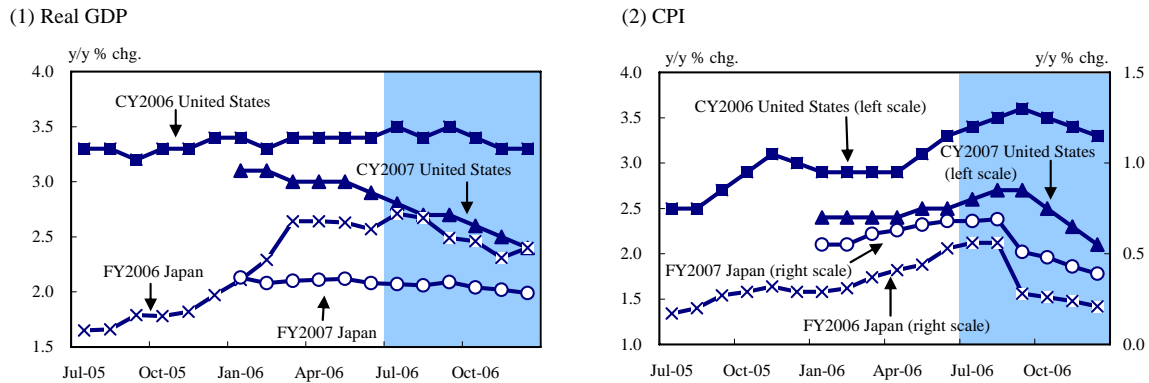


Note: "8-10Y" is the average of 1-year forward rates which start 8-10 years ahead. "10Y+" is the average of 1-year forward rates which start 11-19 years ahead.

Sources: Japan Securities Dealers Association; Bank of Japan.

The principal contributing factors include the fact that the previously strong outlook on the economy and prices receded somewhat (Chart 2-4). This tendency was most clearly reflected in movements after the base revision in the CPI on August 25, 2006, which led to larger-than-expected downward revisions. On this day alone, the newly issued 10-year JGB rates declined about 10bps. Other contributing factors to the government bond yield movements during the second half of 2006 include releases of weaker-than-expected economic indicators and heightening of concerns over the slowing of the U.S. economy.

Chart 2-4: Consensus Forecast for GDP and CPI



Note: Latest survey period is Dec. 2006. U.S. figures in chart (2) are the CPI for All Urban Consumers while those of Japan are the CPI excluding fresh food.

Sources: Blue Chip Economic Indicators; Economic Planning Association "ESP Forecast."

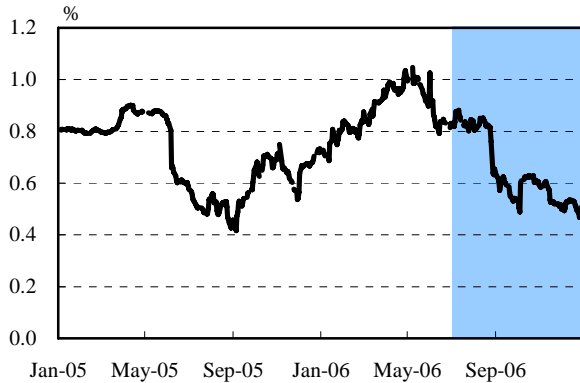
Overseas Investors Trading Actively

Many consider that overseas investors such as hedge funds were the market participants that largely influenced the decline in interest rates in the second half of 2006. Overseas investors, based on their projections on the economy, prices, and policy interest rate changes, took on positions reflecting their view that (1) medium-term maturities on the yield-curve will steepen, and/or (2) the spread between the JGB yield and inflation-indexed JGBs (break-even inflation; hereinafter, BEI) will widen due to the rise in the expected inflation rate. However, overseas investors seem to have unwound most of these positions since the policy interest rate rise in July, as long-term interest rates declined influenced by the CPI base revision, which in turn led to contractions in the BEI (Chart 2-5). Such developments may have contributed to a further decline in long-term interest rates.

Domestic Investors Remained Cautious

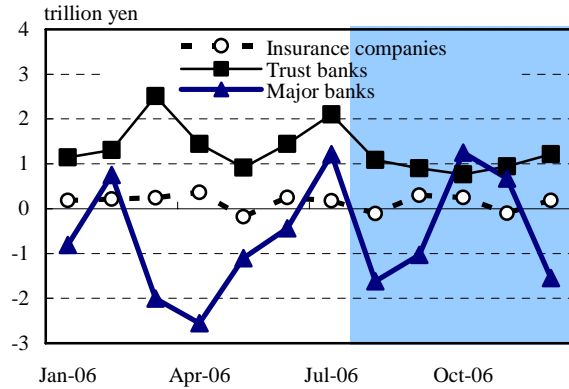
Meanwhile, as for the JGB trading activities by domestic investors, banks maintained a cautious stance in bond investments overall while pension funds and life insurance companies continued to buy JGBs, albeit in small amounts (Chart 2-6). More specifically, as for pension funds, public pension funds seem to be increasing their investment in JGBs as part of their effort to shift to the "basic portfolio,"¹ while corporate pension funds seem to be making somewhat fewer purchases of domestic bonds when compared against their fiscal investment plans, taking the view that interest rates will rise. Life insurance companies seem to have bought JGBs with maturities centering in the long to super-long-term, particularly when interest rates were relatively high in the second half of 2006, in order to make the mismatches in the durations of assets and liabilities smaller. During this period, banks continued to aim to maintain interest rate risks low, after selling JGBs in the first half of 2006 in view of future increases in interest rates.

Chart 2-5: Break-even inflation (10-year)



Source: Bloomberg.

Chart 2-6: Bond transactions by investor segment



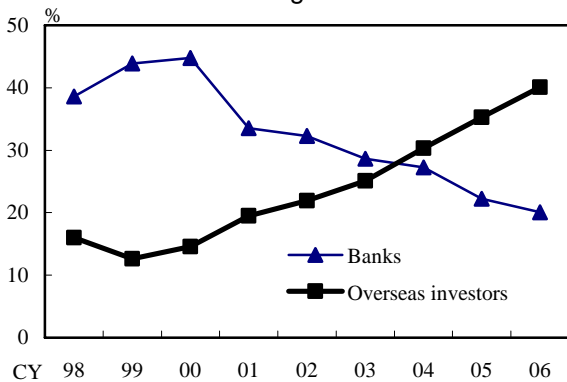
Note: Excluding FB and TB transactions. Major banks include city banks, Shinsei Bank, and Aozora Bank.

Source: Japan Securities Dealers Association.

Correlation between Long-Term Interest Rates

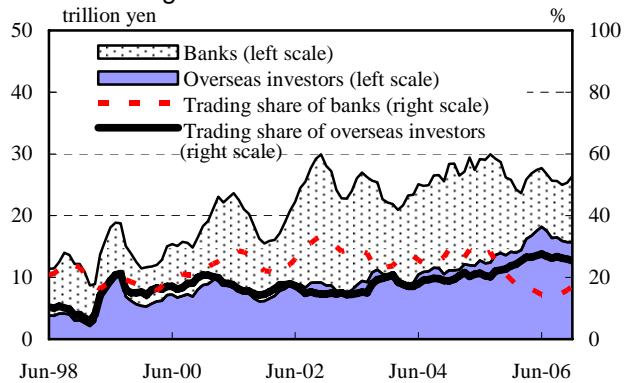
As described above, the influence exerted on market prices by the activities of overseas investors eyeing economic, price, and interest rate developments in Japan and abroad has become larger over the past few years. Overseas investors have been active traders of derivatives instruments such as futures and options, but their presence in terms of turnover has, in recent years, been increasing in the cash JGB market as well (Charts 2-7 and 2-8). Accordingly, the increased influence of overseas investors' activities on price formation in the JGB market may be contributing to the increased correlation between interest rates in Japan and abroad. Results from a principal component analysis using long-term interest rate data for Japan, the United States, and Germany reveal that from mid-2005 when market participants began to factor-in the end of QEP and when more overseas investors began to enter the JGB market in Japan, the sensitivity of interest rates in Japan to global factors that influence movements of the interest rates of all three countries in the same direction increased (Box 1).

Chart 2-7: Trading shares of JGB futures by investor segment



Source: Tokyo Stock Exchange.

Chart 2-8: Trends in bond transactions by investor segment



Note: Excluding FB and TB transactions. Trading volume of bond dealers are excluded from the total trading volume. 5-month backward moving average.

Source: Japan Securities Dealers Association.

¹ The Government Pension Investment Fund (GPIF) Law stipulates that public pension funds be managed according to the “basic portfolio,” which sets the asset class allocations for public pension funds with a view to achieve returns higher than target levels with the minimum risk. A portion of the pension funds are deposited with the Fiscal Loan Fund and are amortized at each maturity date through to fiscal 2008. The basic portfolio is due to take effect when amortization is completed in fiscal 2008. Much of the funds that are now deposited with the Fiscal Loan Fund that will be amortized by fiscal 2008 are to be invested in domestic bonds.

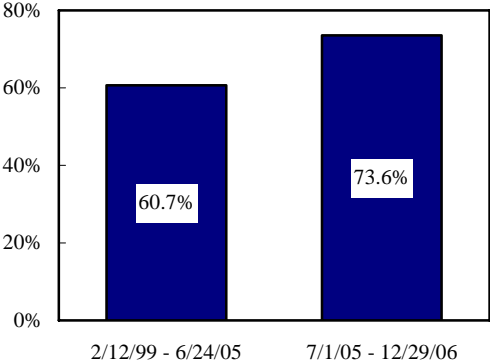
The basic portfolio asset class allocation is set as follows: domestic bonds, 67 percent; domestic stocks, 11 percent; foreign bonds, 8 percent; foreign stocks, 9 percent; short-term assets, 5 percent.

Box 1: Principal Component Analysis on Long-Term Interest Rates in Japan, the United States, and Germany

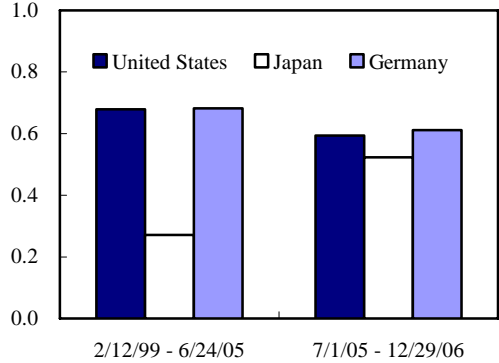
Principal component analysis (PCA) is an analytical technique where several correlated variables are condensed into one or a small number of factors, or principal components, to extract movements that are shared among variables. Using data on the extent of weekly changes in the 10-year interest rates in Japan, the United States, and Germany, PCA was conducted to analyze the co-movements in long-term interest rates in Japan and abroad. The sample period was divided into two sub-periods, from early 1999 to mid-2005 and from mid-2005 to end-2006.

Estimation indicates that for both of these sub-periods, more than 60 percent of the long-term interest rate movements in Japan, the United States, and Germany can be explained by one factor (Box 1 Chart 1). The sensitivity of rate movements to this variable in Japan, the United States, and Germany shows the same sign, which may signify that this factor is a global factor that influences rate movements in the three countries in the same direction. As for changes in sensitivity, the increase in the sensitivity of rates in Japan is most pronounced (Box 1 Chart 2), which is consistent with the observation in the market that the movements of rates in Japan are becoming more correlated with those overseas.

Box 1 Chart 1: Explanatory power of the first principal component



Box 1 Chart 2: Sensitivities of interest rates in the U.S., Japan, and Germany to the first component



Note: Sensitivities are adjusted by the volatilities of interest rates in the United States, Japan, and Germany.
Sources: Bloomberg; Bank of Japan.

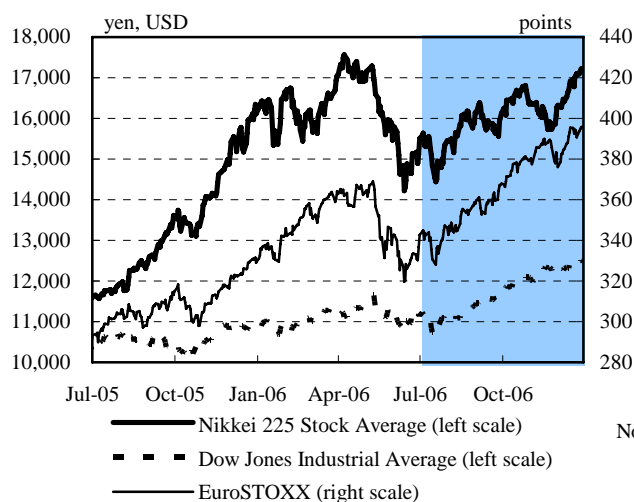
3. Equity Market

Stock prices rose in the second half of 2006 supported by the favorable acceptance of robust corporate performance resulting from the continued expansion of the global economy. After declining in May and June 2006 to record year-to-date low of 14,218 yen (Nikkei 225 Stock Average, hereinafter, Nikkei Index) on June 13, due to the “global risk reduction”¹ noted during this period, stock prices followed an upward trend in the second half of 2006. The Nikkei Index showed an increase of about 20 percent from the low of June 13 to reach 17,225 yen at the end of December 2006, exceeding the level seen at the beginning of the year (16,361 yen as of January 4). In comparison to the U.S. and European markets, which stayed strong throughout the second half of 2006, the pace of increase in the Nikkei Index was not steady and was more volatile as Japanese firms remained cautious in their forecasts for fiscal 2006 corporate earnings and as domestic and overseas investors continued to be uncertain about the strength of the Japanese economy (Chart 3-1).

The Nikkei Index Increased in the Second Half of 2006 albeit with Fluctuations

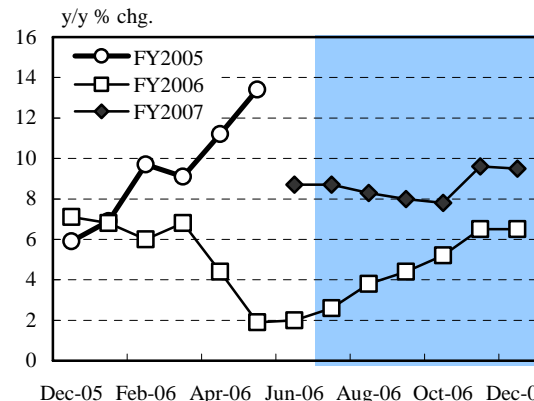
The Nikkei Index followed an increasing trend overall in the second half of 2006. The factors that contributed to these developments include the following. First, the expectation of a strong corporate performance was confirmed by releases of actual earning results, as companies listed on the Tokyo Stock Exchange (TSE) First Section recorded earning increases of about 15 percent year-on-year in the first half of fiscal 2006 (Chart 3-2, footnote). Second, market participants’ expectations for upward revisions in export sector’s corporate earnings for the whole fiscal 2006 increased, because the Japanese yen stayed weaker against the U.S. dollar (USD) compared to the exchange rates estimated by Japanese corporations. The average exchange rate estimation by large manufacturing firms was 113.40 yen against the USD for the second half of fiscal 2006 according to the December 2006 results of the Short-term Economic Survey of Enterprises in Japan (Tankan). However, the Nikkei Index sidestepped from the upward trend in July, September, and November 2006 respectively. Such temporary declines were instigated by the facts such as (1) firms, in releasing earning results for the first half of fiscal 2006, maintained cautious earning projections for the whole fiscal 2006 (6.5 percent growth in fiscal 2006 expected as of December 2006), despite strong expectations by market participants for upward revisions for fiscal 2006 corporate earnings (Chart 3-2), and that (2) market participants’ strong outlook on the economy and prices in Japan dampened in response to releases of weaker-than-expected economic indicators.

Chart 3-1: Global equity prices



Source: Bloomberg.

Chart 3-2: Outlook for corporate earnings



Notes: Weighted average of forecasts in consolidated recurring profit growth of companies
 i) listed on the TSE, First Section;
 ii) not categorized in the financial services sector;
 iii) that ends fiscal year in March;
 iv) have not changed accounting practices materially in the past fiscal year;
 v) not involved in mergers in the past fiscal year;
 vi) not subsidiaries of listed companies.

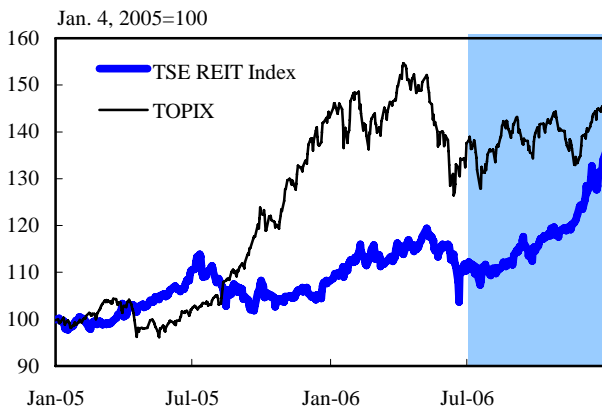
Source: Daiwa Institute of Research based on data from Toyo Keizai Inc.

Meanwhile, U.S. stock prices kept an upward trend overall, as expectations for a soft landing of the U.S. economy heightened after releases of robust economic indicators such as those on private consumption and labor while corporate earnings stayed strong, although signs of slowing economy were observed, especially in the housing sector. Stock prices of firms that have global businesses, such as the 30 firms included in the Dow Jones Industrial Average Index (NY Dow), remained strong, and the NY Dow renewed highs several times since October 2006, marking historical highs of 12,510 USD on December 27, 2006. European stocks also followed an upward trend, boosted by releases of robust corporate earnings and increases in mergers and acquisitions (M&A) activities across a wide range of industries in Europe, against the background of continued growth in exports and industrial production.

Activity in the J-REIT Market Remained Firm

Prices for Japanese real estate investment trusts (J-REITs) rose, supported by healthy earning results, against the background of robust real estate market especially in the urban area (Chart 3-3). Investment inflows from overseas and domestic investment trusts also contributed to the J-REIT price rise. Administrative actions against several J-REITs encouraged investors to become more selective in their investments, but the influence on the overall market was limited. In addition, the impact of the rise in the policy interest rate by the Bank in July was also minimal, as many J-REITs had kept their loan to value (LTV) ratios low and had progressed the conversions of the maturities of their debts to be longer and the interest rates to be fixed. Meanwhile, the market size grew with the listing of four new REITs in the second half of 2006, and market capitalization stood at 4.9 trillion yen at end-December 2006 (Chart 3-4).

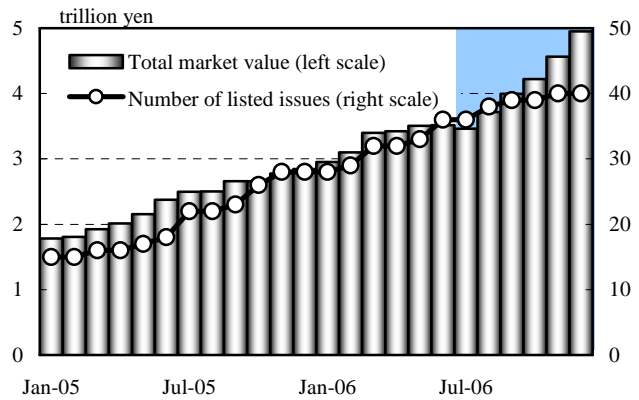
Chart 3-3: J-REITs



Note: TSE REIT Index is a capitalization-weighted index based on all REITs listed on the TSE.

Source: Bloomberg.

Chart 3-4: Total market value and number of listed issues of J-REITs



Note: Data are as of the end of each month.

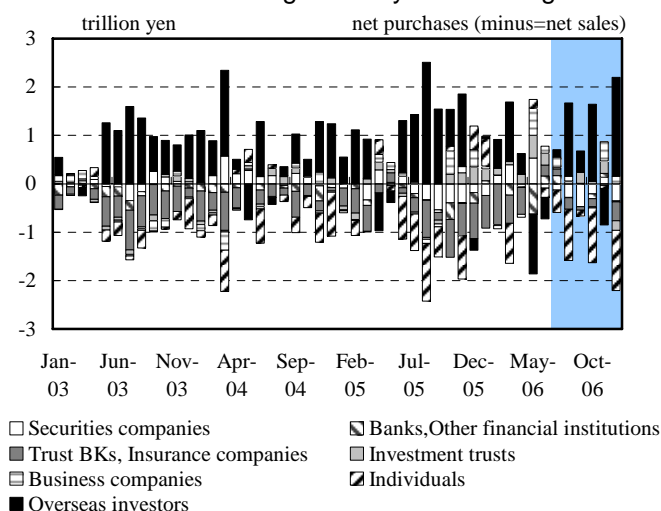
Source: QUICK.

Domestic and Overseas Investors Becoming Somewhat Cautious

From the second half of 2005 into the first half of 2006, the investment activities of overseas investors and individual investors played significant roles in the equity markets. This was also true in the second half of 2006. Compared to the U.S. and European markets, Japanese equity market showed a rather uneven pace of increase in prices and more volatility reflecting the release of strong and weak economic indicators as domestic and overseas investors became more cautious in investing in Japanese equities.

From the second half of 2005 to April 2006, when the stock prices in Japan rose significantly, large inflows from overseas investors were observed against the background of strong fundamentals in Japan, such as recovery in the economy and improvements in corporate profits. However, the appetite of individual and overseas investors for equities in Japan was dampened owing to declines in stock prices for small and new corporations in Japan in early 2006 and due to the global risk reduction where investors increasingly modified their risk evaluations (Chart 3-5). As for stock market movements in terms of price earnings ratio (PER), PER movements remained generally unchanged in the second half of 2006 compared to the second half of 2005 when PER rose notably, indicating that investors did not chase the market with expectations of further rises in stock prices (Chart 3-6).

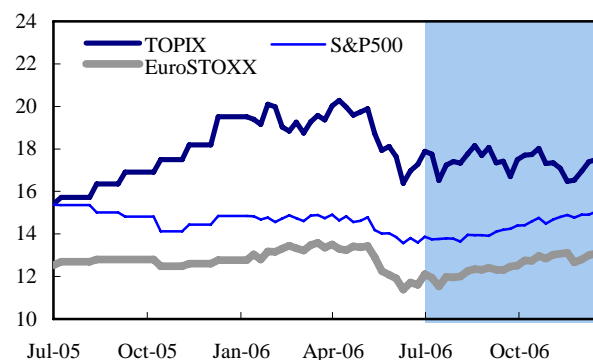
Chart 3-5: Net trading value by investor segment



Note: Net trading value is the sum of traded amounts of cash stocks on the First and Second Sections of the Tokyo, Osaka, and Nagoya Stock Exchanges, and traded amounts of Japanese stock price index futures on the Tokyo and Osaka Stock Exchanges.

Sources: Tokyo Stock Exchange; Osaka Stock Exchange.

Chart 3-6: PER ratio of major markets

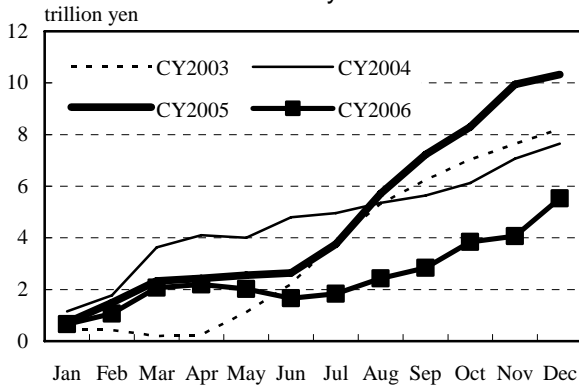


Notes: 1. 12-months forward EPS is used to calculate PER.
2. Monthly data to Jan. 12, 2006 and weekly data after Jan. 19, 2006.
Source: Thomson Financial.

Overseas investors seem to have taken a more cautious view in their investments in 2006 compared to 2005, as indicated by the low level of cumulative net stock purchases in Japan (Chart 3-7). Another characteristic of stock market activities by overseas investors in the second half of 2006 was that they tended to shift their trading positions using futures. As such, developments in the futures market led to fluctuations in the cash equity markets. For example, when stock prices declined in the cash markets, further downward pressures were exerted through futures market developments, and the outstanding arbitrage position of long cash against short futures recorded a historical high. Overseas investors seem to have adjusted their exposures to equities in Japan through futures as their short-term views on the economy and prices were not stable in the second half of 2006, reflecting releases of patchy economic indicators, although their medium to long-term positive outlook on investing in the Japanese stock markets seems to be unchanged.

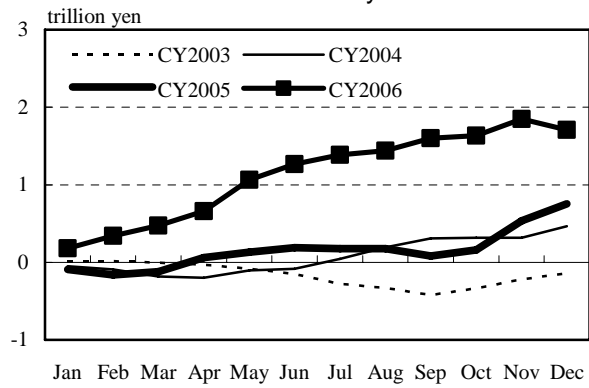
In the second half of 2006, the total value of trades by individual investors remained lower than that seen in the second half of 2005. Meanwhile, money inflows into equity investment trusts increased steadily, which may indicate that individual investors have continued relatively long-term investments in equity markets through investment trusts (Chart 3-8).

Chart 3-7: Cumulative net purchases by overseas investors



Note: Net purchased amounts of the First and Second Sections of the Tokyo, Osaka, and Nagoya Stock Exchanges.
Source: Tokyo Stock Exchange.

Chart 3-8: Cumulative net purchases by investment trusts

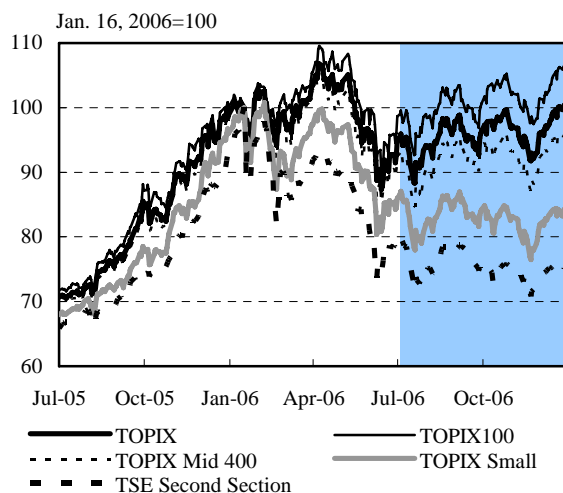


Note: Net purchased amounts of the First and Second Sections of the Tokyo, Osaka, and Nagoya Stock Exchanges.
Source: Tokyo Stock Exchange.

Rise in Stock Prices in Large Capital Sector while Stock Prices in Small Capitals Were Lackluster

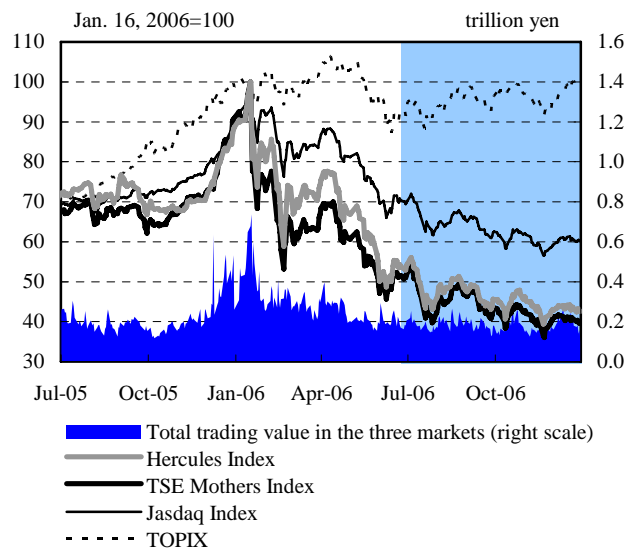
A global trend in the second half of 2006 was that stocks of large capital firms were favored, and the prices of these stocks rose compared to the stocks of smaller companies (Chart 3-9). After being negatively affected by the domiciliary search of an IT-related company (January 16, 2006), stock prices of smaller firms remained weak throughout 2006. The fact that they were unable to erase concerns about their accounting practices, as financial statements were continuously revised, also weighed on the stock prices. Price developments of stocks listed on stock exchanges listing small and emerging firms were lackluster in the second half of 2006, moving constantly below the level as of end-June 2006 (Chart 3-10). For this reason, the year-to-date stock market performance deteriorated significantly compared to 2005 for individual investors who had aggressively invested in smaller companies in the second half of 2005, and for some overseas investors who had bought stocks of smaller firms while selling large-firm stocks or stock index futures.

Chart 3-9: Size based TOPIX sub-indices



Sources: Tokyo Stock Exchange; QUICK.

Chart 3-10: Prices for emerging stock exchanges



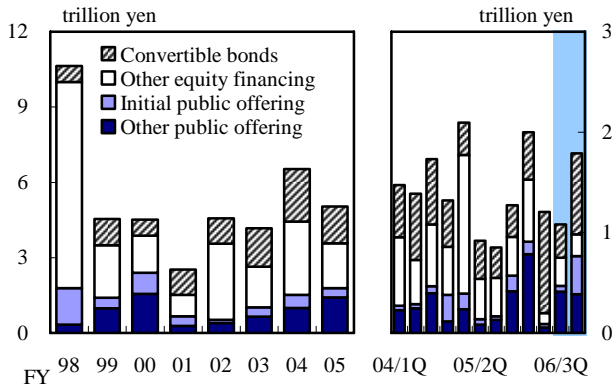
Sources: Tokyo Stock Exchange; Osaka Stock Exchange; Jadaq Securities Exchange; QUICK.

Meanwhile, stock prices of large firms rose, particularly those of exporters who had global businesses. The same trend was observed in the U.S. stock markets, with the NY Dow, a major large capital stock index, continuing to rise after renewing all-time highs. The main contributing factors to the large-firm-led rise in the major stock markets included the following two factors. First, assets considered to be relatively safe were preferred as global investors were still rather cautious in their risk evaluations. Second, large firms with global businesses were preferred as market participants expected that, for those firms in Japan, the weaker yen against the USD would boost their earnings, and for those firms in the United States, where market participants widely expected a slowdown, profits would be upheld by activities in countries outside of the United States where higher economic growth offsetting slowdown in the United States.

Robust Equity Financing

While the stock prices showed some fluctuations in the second half of 2006, there were a large number of sizable initial public offerings (IPO), other public offerings, secondary offerings, and convertible bond issuances, which led to temporary concerns about supply-demand imbalance (Chart 3-11). In 2006, there were more IPOs than in 2005 with initial prices being below the offering price, and of the offering price not reaching the upper price limit of the price range tentatively set during book building. Besides IPOs, notable developments in the equity market include the start of resale of stocks acquired by the public sector, such as by the Banks' Shareholdings Purchase Corporation, as well as the re-listing by secondary offerings of companies that had gone through business restructuring. Meanwhile, looking at net equity financing, supply-demand conditions remained fairly unchanged with active share buybacks offsetting the increase in equity market procurements (Chart 3-12). In addition, M&A activity increased where stocks were delisted as a result of tender offers. These developments indicate that more flexible entry and exit of the equity markets is now possible. This in turn blocked the deterioration in the supply-demand conditions, even as firms' equity financing and new issues of stocks increased.

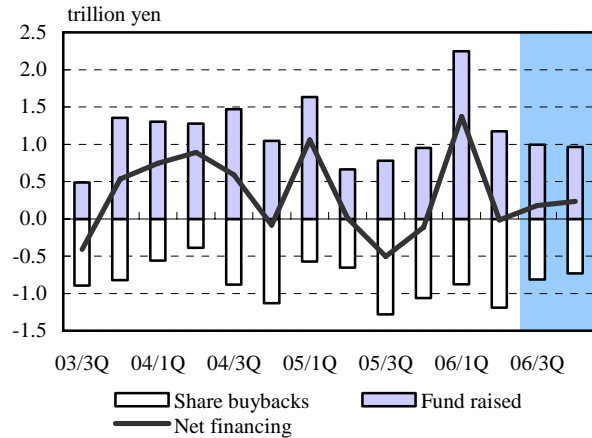
Chart 3-11: Equity financing



Note: "Other equity financing" includes allotment to shareholders and to third parties.

Source: Japan Securities Dealers Association.

Chart 3-12: Financing from equity markets



Notes: 1. Transactions of companies listed on the TSE.

"Fund raised" is the sum of equity financing (including preferred stock and distribution of treasury stock, but excluding IPOs), warrants exercised, and convertible bonds. "Share buybacks" excludes purchase from subsidiaries.

2. Transactions in Dec. 2006 are not included in data for 06/4Q.

Source: Tokyo Stock Exchange.

¹ For more on this topic, please refer to Financial Markets Report – Developments during the First Half of 2006, September 2006, Financial Markets Department, Bank of Japan.

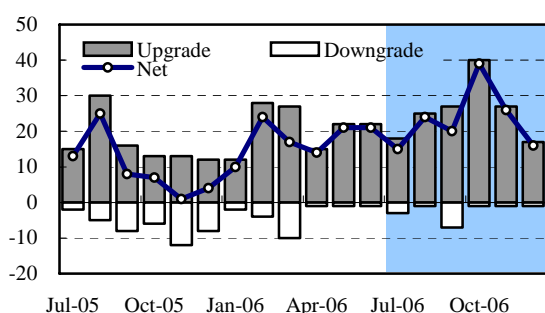
4. Credit Market

In the credit market, spreads over Japanese government bonds of corporate bonds and credit default swaps (CDS) premium gradually tightened after entering summer 2006. The main contributors were the strong corporate fundamentals (Chart 4-1), and stable and low implied volatility of interest rates. Mounting investor demand for credit also contributed to the contraction in the spreads/premium in the second half of 2006.

Corporate Bond Spreads Remained Stable for Single and Double A and Contracted for Triple B

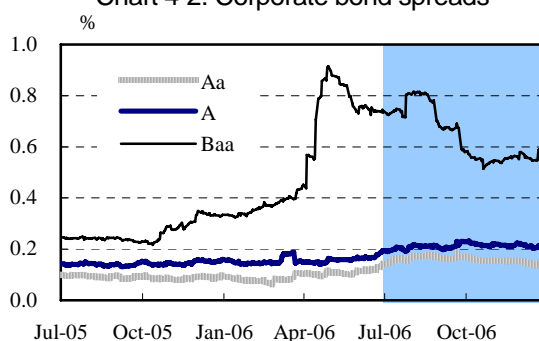
In respect to corporate bond spreads (Chart 4-2), spreads for firms with credit ratings of single A and double A remained stable at a low level on the whole after entering summer 2006. Meanwhile, credit spreads for bonds with triple B ratings narrowed gradually after summer 2006 under the favorable investment environment mentioned above. Spreads gradually tightened as the individual factors that had influenced the widening of spreads until then, such as the discussion to lower the regulatory cap rates on lending for consumer finance companies, subsided.

Chart 4-1: Number of changes in credit ratings



Note: Total number of ratings changes for long-term credits by R&I, JCR, Moody's, and S&P.
Source: Bloomberg.

Chart 4-2: Corporate bond spreads



Notes: 1. Spreads on bonds with 4 to 6-year maturities against 5-year JGBs.
2. The ratings indicated are those by Moody's.
Source: Japan Securities Dealers Association.

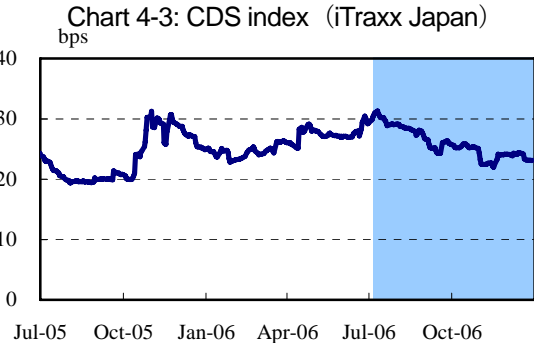
CDS Premium Narrowed Gradually since Summer

Spread/premium on the CDS index (Chart 4-3), which covers 50 major corporates, widened from spring 2006 to July 2006 but tightened gradually from August 2006 to near historical lows. The main factors behind these developments were the strong financial fundamentals of corporate sector. Another factor was the materialization of investor demand for products in the credit market, while structured products such as first-to-default (FTD) bonds¹ continued to be actively issued. As for individual firms' CDS spreads, spreads narrowed for most firms except for those in the conspicuously poor business conditions.

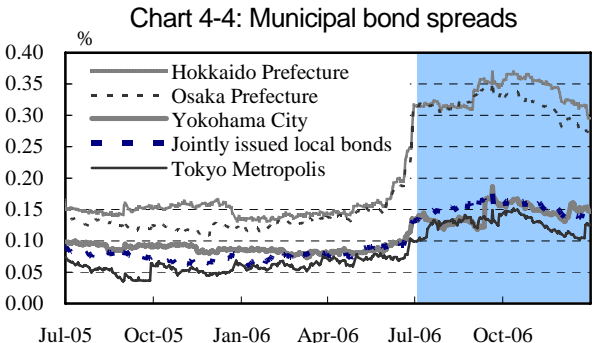
Credit Spreads for Municipal Bonds Gradually Narrowed after Widening Temporarily, while Those for FILP Agency Bonds Remained Stable

From spring to mid-September 2006, credit spreads for municipal bonds widened and began to vary by issue. Many factors contributed to this development; the discussions on the legal framework of municipal bond repayments,² financial deterioration of some municipalities, and the changes in the issue process of the publicly-offered municipal bonds effective on the September issuance³ (Chart 4-4). In the following period, while the implied volatility of interest rates stayed at low levels, the spreads for municipal bonds narrowed gradually as concerns over the issues surrounding municipal bonds became somewhat subdued.

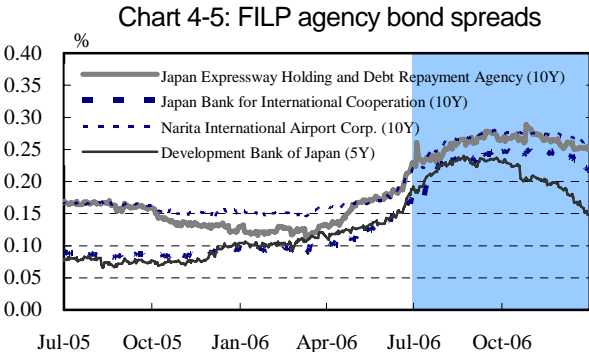
Fiscal Investment and Loan Program (FILP) agency bond spreads widened in summer 2006 as market participants showed concerns over the effects of reforms of government finance measures. They narrowed somewhat since then as the framework of the reforms were revealed, and has remained unchanged thereafter (Chart 4-5).



Source: Markit Group.



Note: Spreads on 10-year bonds against JGBs.
Source: Japan Securities Dealers Association.



Note: Spreads against JGBs.
Source: Japan Securities Dealers Association.

Continued Developments of Various Credit Channels

The amount of syndicated loan issues decreased during the third quarter of 2006 compared to the same period of 2005 when there were large-scale issues. As a result, the amount of syndicated loans outstanding showed an increasing trend but the pace of increase slowed somewhat in the second half of 2006 (Chart 4-6).

The issuance of securitized products has grown, particularly for products backed by real-estate mortgage loans, such as RMBSs and CMBSs. As a result, the issuance amount in 2006, although final figures have yet to be released, is believed to have renewed historical highs (Chart 4-7).

In the yen-denominated foreign bonds (Samurai bonds) market, issuance decreased significantly year on year because of uncertainty over the tax treatment in the countries of issuers after the book-entry transfer system for corporate bonds was applied to these bonds in January 2006. In November 2006, however, U.S. firms began to issue Samurai bonds following a long lapse as the U.S. Internal Revenue Service clarified the conditions for exempting withholding tax on interest income.

Chart 4-6: Amount of syndicated loans outstanding

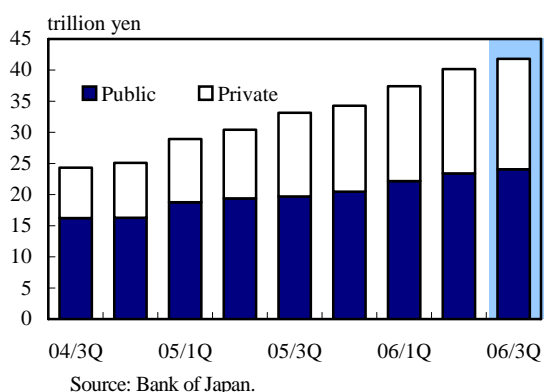
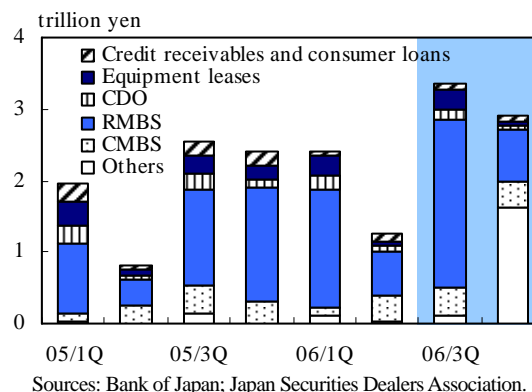


Chart 4-7: Issuance of securitized products



¹ First-to default (FTD) bond is a product that is structured with reference to multiple corporate and other credit risks. The first credit event with regard to the reference entities, such as a default or a failure to pay, leads to redemption (full payout and termination) of the bond. The payout amount is generally set based on the market value of the outstanding debt, such as a corporate bond or a bank loan, of the entity that caused the credit event. Because one credit event at any of the reference entities leads to the redemption, the return on such structured product is likely to be higher than those on bonds based on the credit events of a single reference entity.

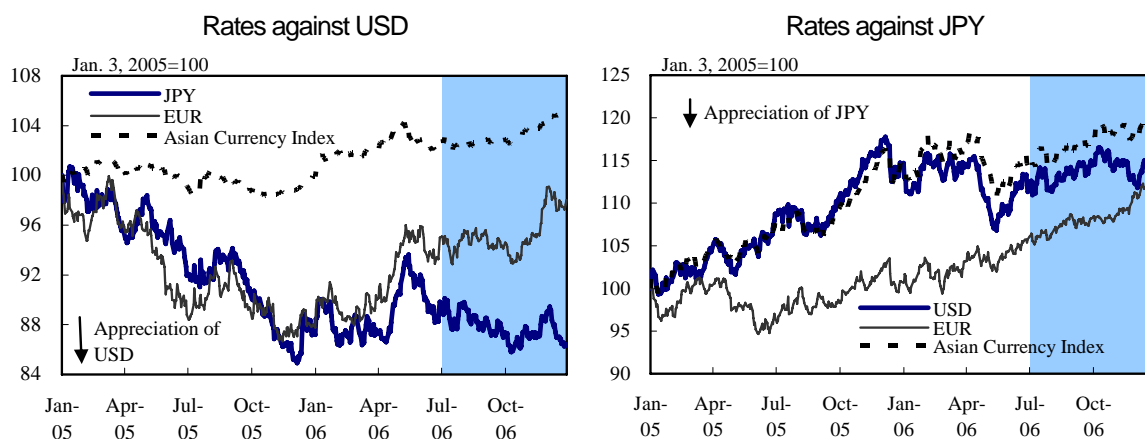
² Since January 2006, the Ministry of Internal Affairs and Communications (MIC) had intermittently organized study groups or councils discussing the legal framework of the municipal bond debt management.

³ “Standardized negotiation process” is one form of deciding terms and conditions for publicly placed municipal bonds. Through this method, each month, representatives of the issuing municipalities or the MIC negotiate the bond yield that will be applied to all municipal bonds issued for that month with the underwriting syndicate. On August 14, 2006, the MIC contacted issuers of municipal bonds to encourage changes in the procedure in relation to bond issuance from the “standardized negotiation process” to the “individual negotiation process,” where the issue terms and conditions are set individually by each issuer. In response, municipal governments have, since September 2006, moved to the individual negotiation process to set terms and conditions for their municipal bond issues.

5. Foreign Exchange Market

In the foreign exchange (FX) market, while the volatility remained low, market participants tended to focus on the interest rate differentials. Looking more specifically at market participants' activities, short-term investors and domestic individual investors showed particular interest in high-interest-rate currency investments. These investments contributed in part for the yen (JPY), which is a currency with relatively low interest rates to take a weakening trend in the second half of 2006 (Chart 5-1). Meanwhile, the U.S. dollar (USD) depreciated somewhat against major currencies despite its relatively high interest rates, partly reflecting the heightening of concerns over the slowing of the U.S. economy and concerns over further diversification in the currency composition of official foreign reserves in many countries.

Chart 5-1: Exchange rates



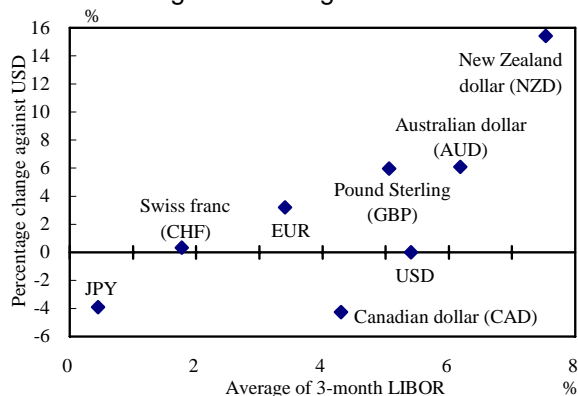
Note: Asian Currency Index (against JPY) is calculated from Asian Currency Index (against USD) and USD/JPY.

Sources: Bloomberg; Bank of Japan.

Volatility Continued to Be Low

Interest rate differentials continued to be the focus of attention, and thus the JPY with a relatively low interest rate depreciated against most other currencies (Chart 5-2). The increase in market participants' holdings of high-interest-rate currencies' position was induced against the background of relatively restrained risk in FX market investments as volatility remained low (Chart 5-3).

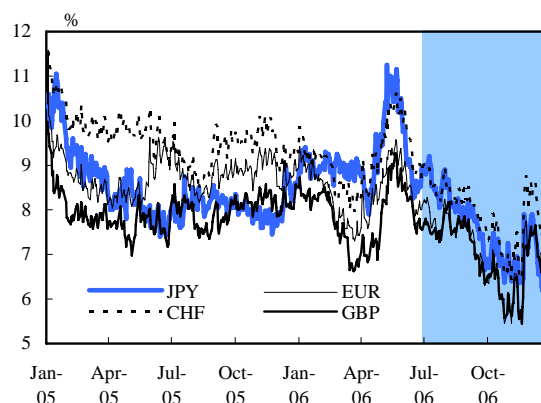
Chart 5-2: Short-term interest rates and percentage changes of exchange rates



Note: Percentage change and the average of LIBOR are calculated for the period from Jun. 30 to Dec. 29.

Source: Bloomberg.

Chart 5-3: Exchange rate volatilities against USD



Note: 1-month implied volatility.

Source: Bloomberg.

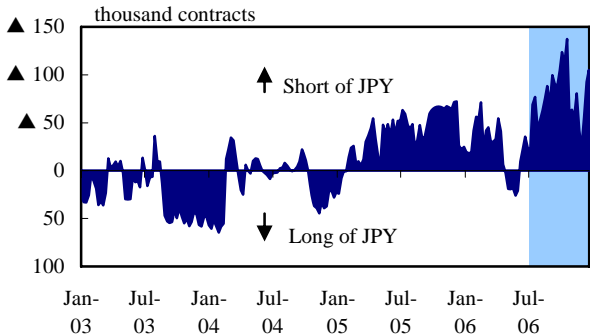
Looking at JPY/USD volatility over the last three decades, the level of volatility in the second half of 2006 was comparable to the low volatility seen in 1983 and 2003, and was one of the lowest seen in 30 years. The same result, that volatility was low in the second half of 2006, was also confirmed using a statistical model to separate the low and high volatility phases or regimes over this term (Box 2).

Focus on Interest Rate Differentials

FX market transactions by type of market participant also confirm that many market participants focused on the interest rate differentials. For instance, the futures positions in JPY against USD of non-commercial traders on the IMM Commitments of Traders Report, which broadly reflects the activities of speculative investors, show that net short-positions of the JPY remained high for the second half of 2006, recording historical highs of 130 thousand contracts or about 1.7 trillion JPY in late October (Chart 5-4).

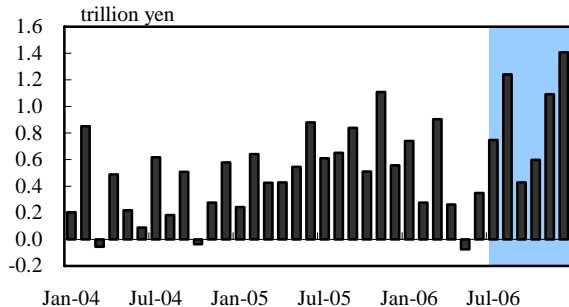
Domestic individual investors also actively combined short-positions in low-interest-rate currencies and long-positions in high-interest-rate currencies in the second half of 2006. This is also reflected in the continued growth in the outstanding amount of foreign currency-denominated investment trusts (Chart 5-5). FX margin trading was also active, with increases in short-positions in JPY particularly strong from mid-October to the end of November 2006 (Chart 5-6).

Chart 5-4: Net non-commercial JPY position against USD on IMM



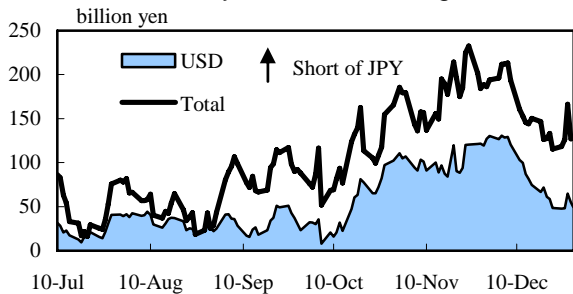
Note: The contract size is 12.5 million yen.
Source: CFTC.

Chart 5-5: Monthly changes of total net assets of publicly offered investment trusts in foreign currencies



Source: Investment Trusts Association, Japan.

Chart 5-6: Foreign exchange margin contracts on Tokyo Financial Exchange



Notes: 1. Net short position of JPY against other currencies.
2. "Total" is the sum of positions in USD, EUR, GBP, AUD, CHF, CAD, and NZD.

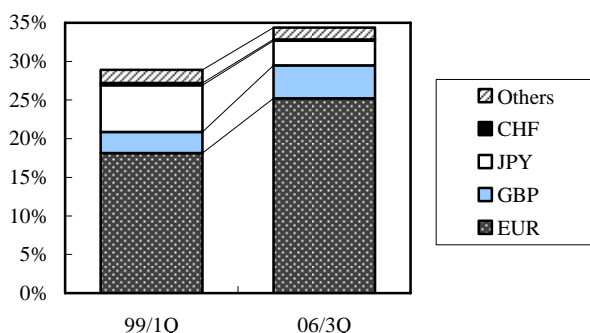
Source: Tokyo Financial Exchange.

Diversification of Currency Composition in Foreign Reserves

Despite the strong market appetite for high-interest-rate currencies, the USD was relatively weak in the second half of 2006 (Chart 5-2). This can partly be explained by the increasing concern over the deceleration of the U.S. economy and the concerns over further diversification in the currency composition of official foreign reserves in many countries. Based on the available IMF data,¹ the composition of currencies in the official foreign reserves has changed in recent years when looking from a long-term perspective, with the USD share declining while the U.K. pounds sterling (GBP) and euro (EUR) shares increasing (Chart 5-7). Against this background, at several points in the second half of 2006, the USD depreciated against other currencies after comments by high-level officials on the issue of official foreign reserve diversification.

Meanwhile, the share of JPY in the official foreign reserves declined. A positive correlation was observed between the amount by which each currency was increased in the official foreign reserves and the interest rate level of the country employing that currency. This indicates that JPY, as it is a currency with relatively low interest rates, may have been a less favored choice as the central banks and monetary authorities diversified the currency composition of their foreign reserves (Chart 5-8).

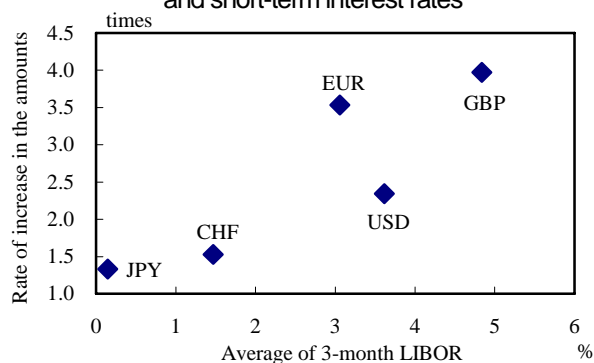
Chart 5-7: Currency composition of official foreign exchange reserves



Note: Excluding USD.

Source: IMF.

Chart 5-8: Rates of increase in the amount of official foreign exchange reserves and short-term interest rates



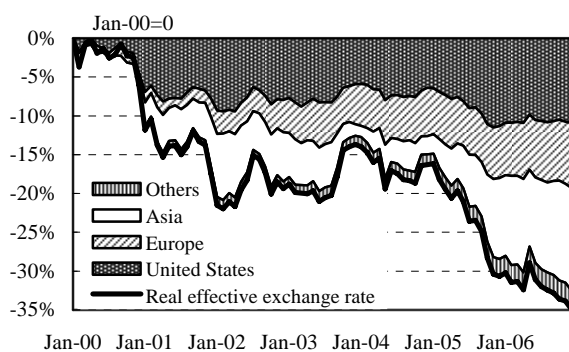
Note: Rate of increase and the average LIBOR are calculated for the period from 99/1Q to 06/3Q.

Sources: IMF; Bloomberg.

JPY Depreciated against Various Other Currencies

The real effective exchange rate of the JPY also followed a downward trend, with the level in December 2006 reaching the lowest since 1985. When decomposing the contribution of this recent decline by country and region of currency, Asian currencies have increased its influence (Chart 5-9). This development can be partly explained by the fact that Asian currencies remained strong supported by continued inflows of investments by overseas investors into Asia in view of its solid economic fundamentals (Chart 5-1). Also, increase in share of Asian countries in Japanese exports has enlarged the effect of appreciation of Asian currencies on the downward pressures on the JPY real effective exchange rate as measured using export-value-weighted-averages.

Chart 5-9: Logarithmic change of real effective exchange rate of yen



Notes: 1. Real effective exchange rate of Dec-06 is calculated from price data of Nov-06.

2. The weights used in constructing the above rate are based on the previous year's export trade.

Sources: Bloomberg; Bank of Japan.

¹ The Currency Composition of Official Foreign Exchange Reserves (COFER), compiled quarterly by the IMF. All industrial countries and a moving sample of developing countries, ranging from 80 to 90 reporters out of 160 countries, report the currency composition of official foreign exchange reserves to the IMF.

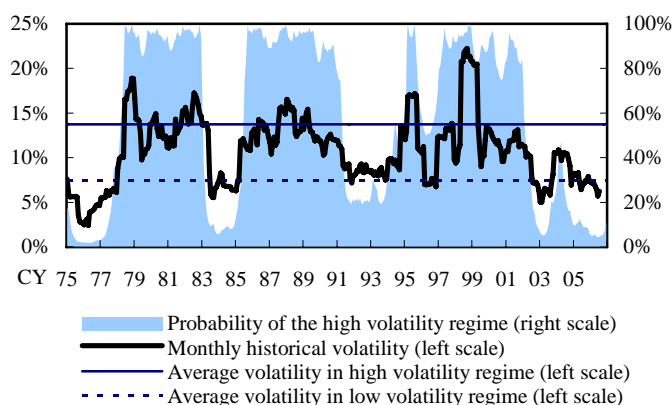
[BOX 2] Analyzing Volatility of Foreign Exchange Rates Using a Regime Switching Model

The volatility of FX rates is known to have a tendency to stay high once rising and stay low once declining. This property of the volatility is known as “volatility clustering,” and is widely observed in financial markets. In analyzing such properties, the regime switching model for estimating the statistical probabilities of transitions from one regime or phase to another occurring among several regimes or phases is often used.

In this analysis, a normal distribution is assumed to apply to the monthly change in FX rates. Phases where the standard deviations are large represent a high volatility regime and phases where the standard deviations are small represent a low volatility regime. Movements in the volatility of JPY/USD rates are analyzed using the regime switching model where transitions from and to high or low volatility regimes follow patterns determined by some probabilities.

According to the estimation, the probability that rates for each month have belonged to the high volatility regime has remained low since 2003, which confirms that it is highly likely that the rate developments in the second half of 2006 belong to a low volatility regime (Box 2 Chart). In the past 30 years, low levels of volatility comparable to the recent rate developments were noted in periods between 1975 and 1977 as well as between 1983 and 1985, but for each of these periods, transitions to the high volatility regime were triggered by the 1978 “Carter Shock”¹ and the 1985 Plaza Accord,² respectively.

Box 2 Chart: Probability of the high volatility regime



Note: Probabilities and other parameters are estimated with two-state markov switching model of monthly historical volatility of JPY/USD.
Sources: Bloomberg; Bank of Japan.

¹ FX rates against the USD showed large fluctuations after U.S. President Carter announced measures to support the USD on October 31, 1978. The JPY weakened by about 7 JPY, or 4 percent, in a single day.

² On September 22, 1985, the Finance Ministers and Central Governors of France, Germany, Japan, the United Kingdom, and United States or G5 countries, announced measures to reduce the value of the USD against other major currencies. This agreement is called the Plaza Accord taken from the then Plaza Hotel in New York where the meetings were held. In response, the JPY/USD rose by about 20 JPY or more than 8 percent over the following 5 days.

Reference:

Kim, Chang-Jin, Charles R. Nelson, and Richard Startz, 1998. "Testing for Mean Reversion in Heteroskedastic Data Based on Gibbs-Sampling-Augmented Randomization," *Journal of Empirical Finance*, vol. 5(2), pages 131-154, June.