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This report covers the market developments during the second half of 2010, unless otherwise stated.

Financial Markets Department, Bank of Japan

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Executive Summary

Developments in the International Financial Markets

From spring 2010, in response to the Greek shock, global investors who had been sensitive to risks gradually turned their attention to the downward trend of the U.S. economy and grew more pessimistic about the economic situation. Under this trend, stock prices remained weak, and the declining trend in long-term interest rates became evident. From the second half of 2010, given the heightened expectation of enhancement of monetary easing in the United States, long-term interest rates declined further. On the other hand, the prices of risky assets such as stocks headed for recovery. Toward the end of 2010, partly because pessimistic views about the U.S. economy subsided reflecting stronger-than-expected economic indicators, long-term interest rates -- which had declined to unprecedented levels -- rebounded and rose significantly. As these developments indicate, changes in views about the economy and monetary policy in the United States were the major factors behind fluctuations in the international financial markets.

Amid the resurgence of the fiscal problem in Europe, concerns over the problem increased again in the international financial markets. In view of the continued rise in emerging stock prices and commodity prices against the background of active capital inflows, some market participants grew wary of the overheating.

Developments in Domestic Financial Markets

Large fluctuations in long-term interest rates in the United States affected developments in Japan's financial markets, as they spilled over to Japanese long-term interest rates and indirectly contributed to the developments in Japanese stock prices by influencing foreign exchange (FX) markets.

Looking at the developments in each market, toward early October 2010 Japanese government bond (JGB) yields declined rapidly reflecting heightened expectations for additional monetary easing at home and abroad, but they rose toward the end of 2010 due to such factors as investors' position adjustments triggered by rises in U.S. long-term interest rates. Stock prices remained somewhat weaker than in the United States and Europe, as their rise was contained by the yen's appreciation against the U.S. dollar reflecting

heightened expectations for monetary easing in the United States. Nevertheless, stock prices trended upward as foreign investors took another look at the Japanese market from November 2010, when the dollar appreciated somewhat. Meanwhile, the Bank of Japan decided to implement a comprehensive monetary easing policy at a Monetary Policy Meeting held in October 2010. Under these circumstances, financial conditions as a whole showed signs of easing, as evident in firmer conditions in credit markets and the Japan real estate investment trust market. Money market interest rates came under downward pressure toward early October 2010, reflecting heightened expectations for monetary easing in Japan. They then fluctuated somewhat but remained more or less unchanged at low levels as the Bank continued to provide ample funds.

Points to Be Noted in the Financial Markets for the Foreseeable Future

Since the end of 2010, financial markets at home and abroad have regained stability compared to some time ago. Among market participants, however, both relief resulting from the subsiding pessimistic views about an economic slowdown in major developed economies and concerns over risk factors for the outlook remain. Financial markets are likely to remain somewhat nervous for the time being, as market participants are sensitive to indicators of the real economy and macroeconomic policies in countries around the world.

One of the factors that may have significant effects on the international financial markets in the future is accumulation of potential risks of a reversal resulting from an increase in capital inflows to emerging economies and commodity markets. Given the increased comovement of the international financial markets and the financialization of commodities, the risk of a reversal of capital flows requires attention. The second risk factor is developments in sovereign risk. Market participants are still concerned about events such as large-scale redemptions of government securities that will take place in peripheral European countries from spring 2011. The fiscal problem in Europe may influence market participants' views on fiscal conditions in developed economies, depending on how the problem evolves. Finally, the outlook for the U.S. economy, which faces the balance-sheet problem, may swing widely between optimistic and pessimistic views, and fluctuations in financial markets caused by such swings may be considered one of the potential risk factors.

Such risk factors for the international financial markets are important in examining future

developments in Japanese financial markets, where the comovement with overseas financial markets is increasing.

Measures to Enhance the Market Infrastructure in 2010

With a view to supporting improvement in the functioning and efficiency of financial markets in Japan, the Bank is committed to enhancing the market infrastructure in cooperation with market participants. Regarding the JGB markets and repo markets, revisions in the fails practice took effect on November 1, 2010. And in December 2010, market participants reached an agreement on shortening the JGB settlement cycle by one business day starting from the first half of 2012. Additionally, measures to enhance financial market functioning have been examined in corporate bond markets, securitization markets, and over-the-counter derivatives markets. Furthermore, in regard to the business continuity plan in financial markets that had been formulated to ensure financial market stability in the event of a disaster, the joint exercises among money markets, FX markets, and securities markets were conducted in February and November 2010, and great progress was made toward the strengthening of cooperation across markets.

I. Developments in the International Financial Markets

From spring 2010, in response to the growing fiscal problem in Europe stemming from the Greek shock, global investors became deeply aware of future uncertainty.[1] Global investors who had been sensitive to risks gradually turned their attention to the downward trend of the U.S. economy and grew more pessimistic about the economic situation. Under this trend, stock prices remained weak particularly in the United States, and the declining trend in long-term interest rates became evident.

From the second half of 2010, given the heightened expectation of enhancement of monetary easing in the United States, long-term interest rates declined further. On the other hand, the prices of risky assets such as stocks headed for recovery. Toward the end of 2010, partly because pessimistic views about the U.S. economy subsided, long-term interest rates -- which had declined to unprecedented levels -- rebounded and rose significantly. As these developments indicate, changes in views about the economy and monetary policy in the United States were the major factors behind fluctuations in the international financial markets.

Amid the resurgence of the fiscal problem in Europe, concerns over the problem increased again in the international financial markets. Against the background of strong growth in emerging economies and capital inflows from developed economies, emerging stock prices and commodity prices rose considerably. In emerging and commodity markets, market participants grew wary of the overheating and conscious of the risk of a reversal of capital inflows.

In what follows, such developments in the international financial markets are reviewed and analyzed from the viewpoints of (1) changes in the market's views on the U.S. economy and policy expectations, (2) the fiscal problem in Europe, and (3) active trading in emerging and commodity markets.

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[1] For details on financial market developments surrounding the European fiscal crisis that worsened in the first half of 2010, see the Bank of Japan's August 2010 issue of the *Financial Markets Report*. For information on developments in the financial system, see the Bank's September 2010 issue of the *Financial System Report*.

A. Changes in the Market's Views on the U.S. Economy and Policy Expectations

Large fluctuations in long-term interest rates and their background

From May 2010, when the Greek problem intensified, global investors who had tended to pay attention to negative factors reacted sensitively to the indicators that suggested a slowdown in the U.S. economy, and the prices of risky assets remained somewhat weak. Meanwhile, the Federal Reserve's communications emphasized the uncertainty about the economic outlook.[2] In addition, Federal Reserve officials made remarks on additional monetary easing measures, and expectations for further monetary easing mounted gradually in the financial markets. In these circumstances, at the Federal Open Market Committee (FOMC) meeting held on August 10, 2010, the Federal Reserve revised its economic outlook downward and decided to keep constant its holdings of securities at their current level by reinvesting principal payments from agency debt and agency mortgage-backed securities (MBSs) in longer-term Treasury securities.[3] Furthermore, at a symposium held in the United States on August 27, 2010, Chairman Ben S. Bernanke discussed some policy options, including additional purchases of U.S. Treasury securities. In response, market participants grew more convinced of the Federal Reserve's purchases of Treasury securities, and their views were more specifically incorporated into the financial market developments.

The most prominent among these developments was a significant decline in long-term interest rates. Due to the flight to quality in response to the worsening of the Greek problem, U.S. long-term interest rates had already been on a declining trend since spring 2010 (Chart 1-1). Moreover, given concerns over the U.S. economic slowdown and expectation of enhancement of monetary easing by the Federal Reserve, long-term interest rates declined to historically unprecedented levels. Nonetheless, they started to rise after purchases of 600 billion U.S. dollars of Treasury securities were decided at the FOMC meeting held on November 3, 2010, as stronger-than-expected economic indicators became noticeable and

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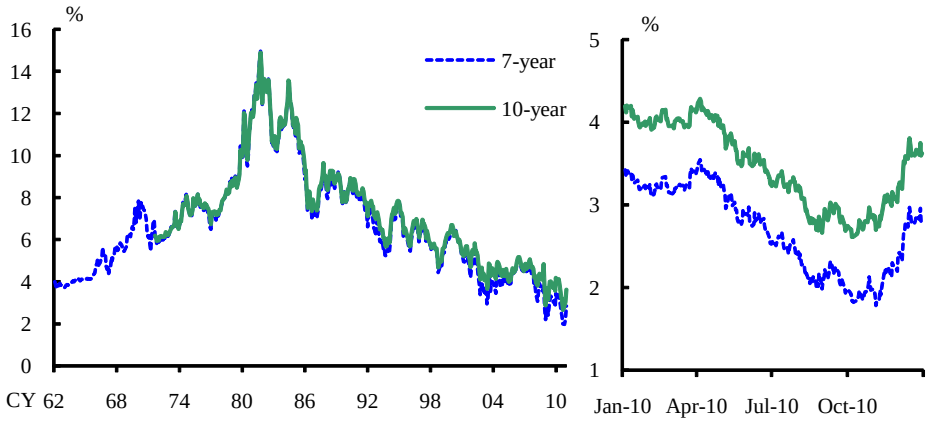
[2] For example, in the semiannual *Monetary Policy Report to the Congress* presented on July 21, 2010, Chairman Bernanke said that "the economic outlook remains unusually uncertain."

[3] The Federal Reserve announced the initiation of a program to purchase agency MBSs and agency debt on November 25, 2008 and longer-term Treasury securities on March 18, 2009. The Federal Reserve purchased about 1.25 trillion U.S. dollars of agency MBSs and about 175 billion U.S. dollars of agency debt by the end of March 2010, and 300 billion U.S. dollars of longer-term Treasury securities by the end of October 2009.

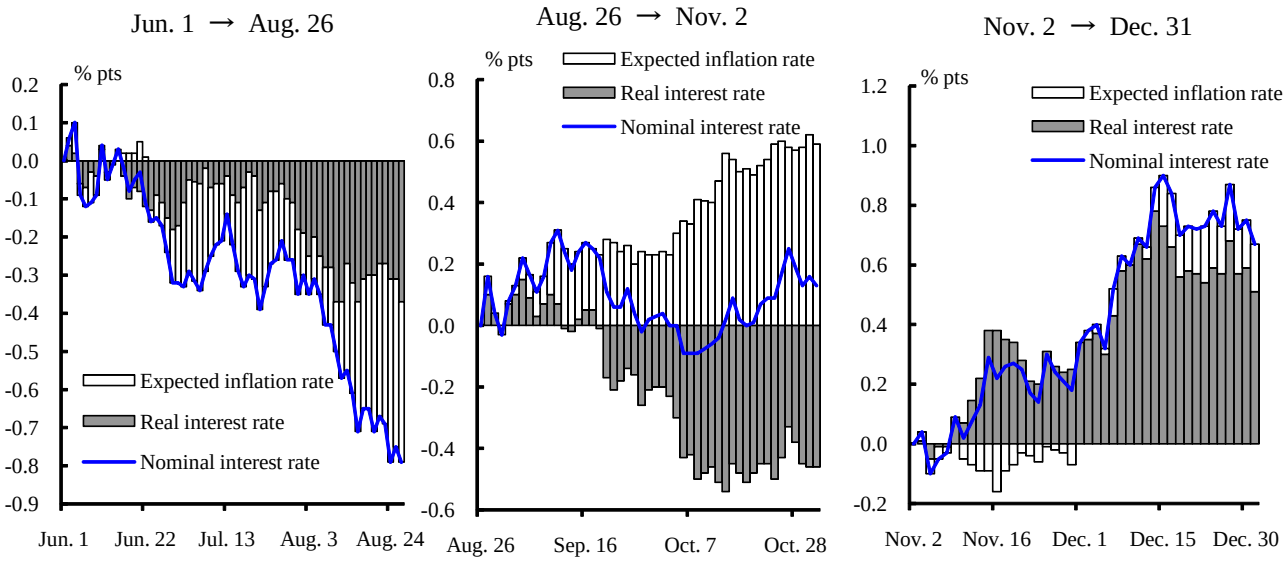
expectations of additional purchases of Treasury securities consequently subsided. Moreover, in the United States the two-year extension of lower income tax rates for individuals that had been scheduled to expire at the end of 2010 was announced, and market participants became aware of the effects of economic stimulus measures and deterioration in the supply-demand balance of Treasury securities. In response to these developments, long positions in Treasury securities accumulated earlier were reversed, and long-term interest rates surged.

Chart 1-1: U.S. long-term interest rates



Source: Federal Reserve.

Chart 1-2: U.S. Treasury yields and expected inflation rates



Note: 10-year. Cumulative changes from the beginning of each period. The expected inflation rate is the break-even inflation rate.
Source: Federal Reserve.

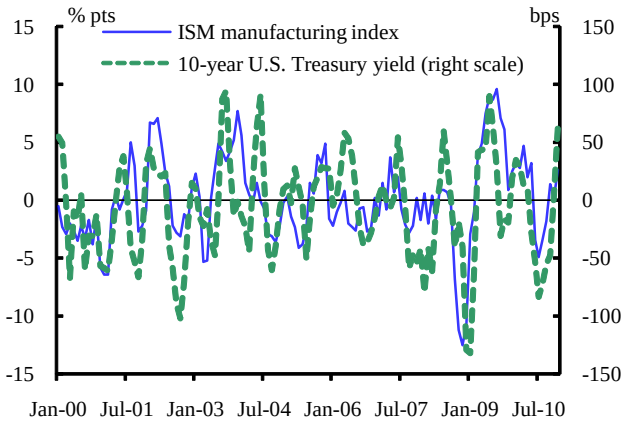
In order to analyze the background of large fluctuations in the U.S. long-term interest rates, we divide changes in long-term nominal interest rates into expected inflation rates and real interest rates by using yields on Treasury inflation-protected securities (TIPS) (Chart 1-2). First, from June to August 27, 2010, when Chairman Bernanke delivered a speech (heightening expectations for purchases of Treasury securities), both real interest rates and expected inflation rates contributed to a significant decline in long-term interest rates. As expectations for additional monetary easing did not grow very much around this time, it could be interpreted that a decline in long-term interest rates directly reflected concerns over an economic slowdown and deflation. From late August to November 3, 2010, when purchases of Treasury securities were decided at the FOMC meeting, expected inflation rates rebounded and increased while real interest rates declined further. As a result, long-term interest rates were more or less unchanged at low levels. Such movements indicated that as market participants grew more certain about the Federal Reserve's further easing, their focuses shifted from deflationary risk to the heightened expectation of continued low interest rates and a decline in term premiums (risk premiums on changes in government bond prices) due to purchases of Treasury securities.[4] Finally, looking at changes after the FOMC meeting held in November 2010, a rise in real interest rates generally exerted upward pressure on interest rates as a whole. The earlier decline was nearly reversed by reduced concerns over the U.S. economy, lowered expectations for additional purchases of Treasury securities, and concern about deterioration in the supply-demand balance of Treasury securities due to the extension of lower income tax rates for individuals. Meanwhile, expected inflation rates remained relatively stable, and it could be judged that market participants' inflation expectations were generally anchored.

Let us now examine in more detail the background of the significant decline and subsequent surge in U.S. long-term interest rates from the viewpoints of (1) changes in business sentiment, (2) drastic changes in the expectation of continued low interest rates, and (3) changes in the supply-demand balance in the Treasury securities market. First, regarding changes in business sentiment in the United States, similar developments are seen when

[4] There is a view that expectations for additional monetary easing caused changes in risk premiums (especially the real term premiums related to changes in TIPS prices) through a portfolio-rebalancing effect. The portfolio-rebalancing effect was proposed many years ago. It was emphasized by Tobin (1969), for example, who said that an expansion of one asset's supply affected both the yield on that asset and the "risk premium" between returns on that asset and alternative assets.

comparing the three-month changes in an indicator of business sentiment in the manufacturing sector and long-term interest rates in the United States (Chart 1-3). A rapid recovery in the manufacturing sector was the driving force for the economic recovery following the Lehman shock, while the household sector facing balance-sheet adjustment pressure remained somewhat weak. Toward the middle of 2010, as a slowdown in the manufacturing sector was seen, concerns over heightened downside risk to the overall economy seemed to spread widely among market participants. However, business sentiment in the manufacturing sector later followed a recovery trend, given that demand from emerging economies remained steady. Following these developments, long-term interest rates also rose.

Chart 1-3: ISM manufacturing index and U.S. long-term interest rates



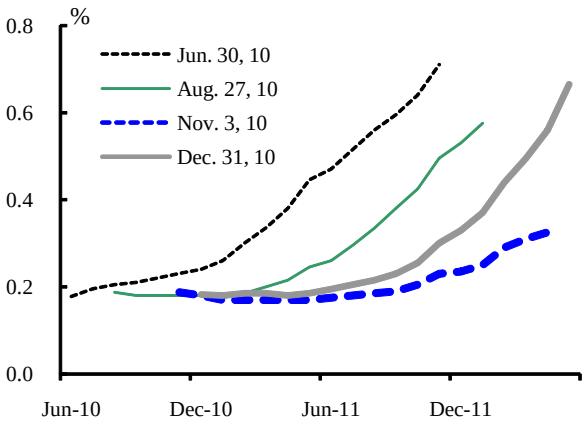
Note: 3-month change in the PMI.
Source: Bloomberg.

Second, drastic changes in the expectation of continued low interest rates in the United States can also be pointed out as the background of fluctuations in long-term interest rates. The federal funds (FF) futures curve, which reflects expectations about future monetary policy, flattened rapidly toward the FOMC meeting held in November 2010 (Chart 1-4). This suggested that market participants did not expect policy rate hikes for quite an extended period.[5] Examining the timing of market participants' anticipation of future interest rate changes in the United States by using longer time-series data, in autumn 2010 the market participants seemed to expect that the timing of an interest rate hike would be the unprecedentedly distant future (Chart 1-5). Reduced expectations of an interest rate hike

[5] Strictly speaking, the FF futures rate includes term premiums and does not solely reflect policy expectations.

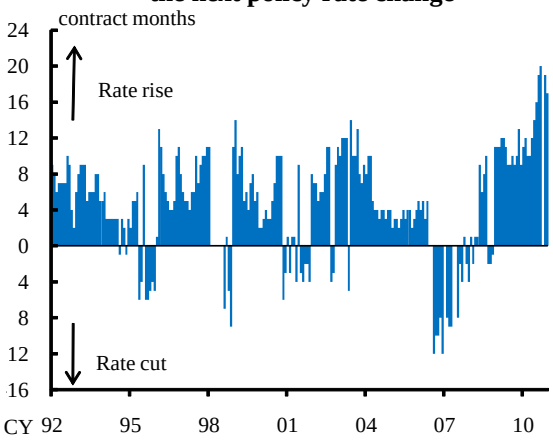
lowered the level of expected longer-term interest rates, exerting downward pressure on long-term interest rates. Moreover, in these circumstances, term premiums incurred by future uncertainty tended to decline, leading to a further decline in long-term interest rates.[6] After the FOMC meeting held in November 2010, however, the FF futures curve steepened as the FF futures rates -- particularly those with distant contract months -- increased, and this contributed to a reversal of the earlier decline in long-term interest rates (Chart 1-4). For reference, the probability of the continued low U.S. dollar London Interbank Offered Rate (LIBOR) calculated by using option prices (the probability of the six-month dollar LIBOR to be 1 percent or lower two years ahead) declined rapidly, after having temporarily soared[7] (Chart 1-6). This implied that market participants' views changed very significantly. As seen above, views on monetary policy in the United States changed considerably in degree and speed and contributed to a rapid decline in long-term interest rates and the subsequent reversal.

Chart 1-4: FF futures curve



Source: Bloomberg.

Chart 1-5: Forecasts of the lengths of time to the next policy rate change



Note: The zero on the vertical axis indicates that the differences between the FF target rate and the futures rates of all contract months are smaller than 25 basis points.
Source: Bloomberg.

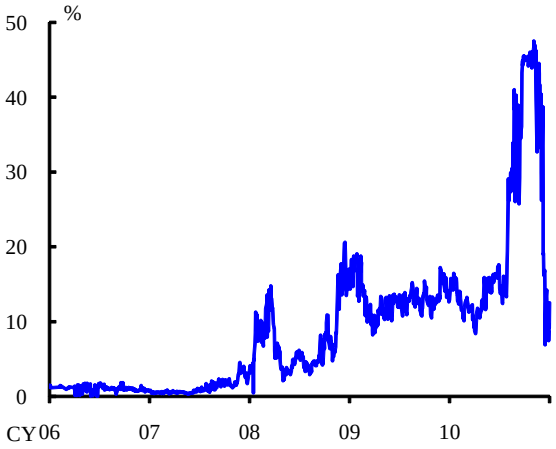
Finally, regarding the supply-demand balance in the Treasury securities market, the fact that most market participants' expectations about the decisions at the FOMC meeting held in November 2010 were limited to purchases of Treasury securities probably led to a decline

[6] On the relationship between uncertainty about monetary policy and term premiums, see, for example, Koeda and Kato (2010).

[7] For details, see Kikuchi (2010b).

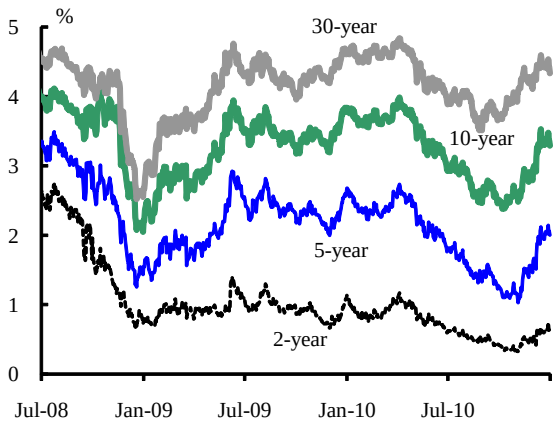
in long-term interest rates through the reduced uncertainties over the supply-demand conditions of Treasury securities. For example, looking at U.S. long-term interest rates by maturity, the pace of decline in super-long-term Treasury yields (30-year Treasury securities) was relatively limited during a declining trend (Chart 1-7). As background, market participants pointed out speculation that super-long-term Treasury securities would not be eligible for purchases by the Federal Reserve.

Chart 1-6: Probability of continued low interest rate



Note: Probability of 6-month LIBOR to be 1 percent or lower two years ahead.
Sources: Bloomberg; Bank of Japan.

Chart 1-7: U.S. Treasury yields



Source: Bloomberg.

Global comovement of long-term interest rates

Such large fluctuations in long-term interest rates were seen in not only the United States but also other developed economies[8] (Chart 1-8). Fundamentally, long-term interest rates across countries comove in the long run, given that capital flows exert pressure to globally equate the marginal productivity of capital; but they vary in the short run, due to the difference in economic cycle and risk factors surrounding economic and financial conditions in each country.[9] U.S. Treasury securities, however, are major investable assets for global investors including official institutions, and rapid fluctuations in these prices significantly affect these investors' portfolio choices. For investors engaged mainly in

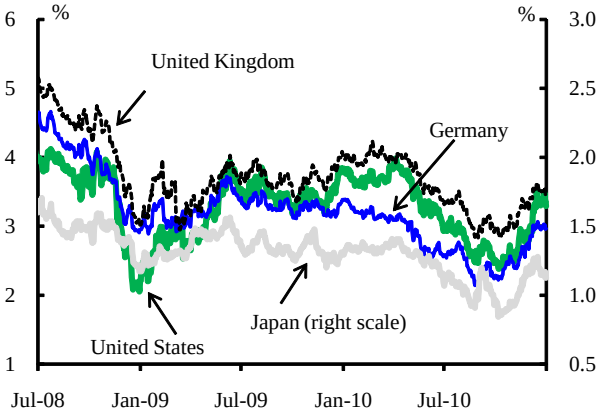
[8] Takahashi (2010) pointed out that international comovement of financial assets including government securities trended upward.

[9] International financial transactions have various constraints such as tax system and capital control measures. Thus, arbitrage does not always take place. For a theoretical explanation of the failure of arbitrage, see, for example, Shleifer and Vishny (1997).

markets other than the United States, expectations concerning U.S. economic developments and monetary policy are important factors that influence their views on the future course of interest rates. Therefore in the current phase, long-term interest rates of developed economies -- just as with U.S. Treasury yields -- declined significantly and started to rise from November 2010, led by an increase in U.S. long-term interest rates.

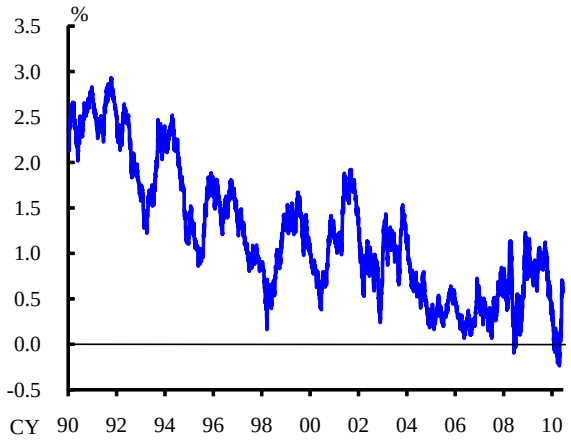
Before the FOMC meeting held in November 2010, term premiums calculated by using a term structure model of U.S. Treasury securities turned negative, recording historically low levels (Chart 1-9).[10] As mentioned earlier, this implied that there was an environment in which a large reversal could easily occur. While global government bond trading grew more active, the large size of the reversal probably contributed significantly to a simultaneous rise in long-term interest rates in developed economies toward the end of 2010.[11] (For information on the possibility of a rapid unwinding of term premiums and government bond prices, see Box 1.)

Chart 1-8: 10-year government bond yields in developed economies



Source: Bloomberg.

Chart 1-9: Term premiums of U.S. Treasury securities



Note: 10-year.
Source: Federal Reserve.

Box 1: Unwinding Risks in Term Premium and Bond Prices

It is well known that the return distributions are asymmetric in stock prices and foreign exchange (FX) rates. For example, the distribution of stock returns is usually negatively

[10] Term premiums estimated by Kim and Wright (2005) were used. These term premiums are updated on http://www.federalreserve.gov/econresdata/researchdata.htm.

[11] For information on comovement of term premiums between Japan and the United States, see Box 5.

skewed (negatively fat-tailed). This implies that the probability of a huge drop is higher than that of a huge increase. Reflecting such a risk of huge price downturns and also high volatilities, the returns on stocks (risky assets) tend to be higher than the risk-free rate, at least in the long run.

Few studies cover the distributions of government bond returns. We first compute the moments in the differences of the term premium obtained from the term structure model of U.S. Treasury yields by economists at the Federal Reserve. The results show that the distributions of changes in the term premium are positively skewed for all maturities[12] (Chart 1 for Box 1). This implies that the term premium contains the risks of an abrupt increase, albeit with small probability.

In addition, we compute the distributions of weekly excess returns from government bond holdings for Canada, Germany, Japan, the United Kingdom, and the United States. In all countries, the modes place to the right of the means. Furthermore, the distributions are negatively skewed with fat tails toward the left side[13] (Chart 2 for Box 1). This implies that the excess returns from government bond holdings can become very negative -- namely, government bond yields can increase massively, albeit with a small probability. It can be interpreted that the excess returns from funding with short-term interest rates and holding long-term bonds contain the premium against the huge unwinding risks of a drop in government bond prices with a small probability of occurrence.

According to the above two analyses, the past average suggests that for some reason changes in the term premium can be larger when the premium increases than when it decreases. This is considered to be the tail risk: a risk of huge losses, albeit with a small probability of occurrence.

[12] Interestingly, for shorter maturities, distributions are negatively skewed in returns but positively skewed in the term premium. The asymmetry in distribution implies that the term premium may not be correctly estimated with the standard affine term structure models. However, complex numerical analysis is required to consider the asymmetry in distributions, hence no firm methodology has yet been established. The term premium in this paper is based on the standard affine term structure models.

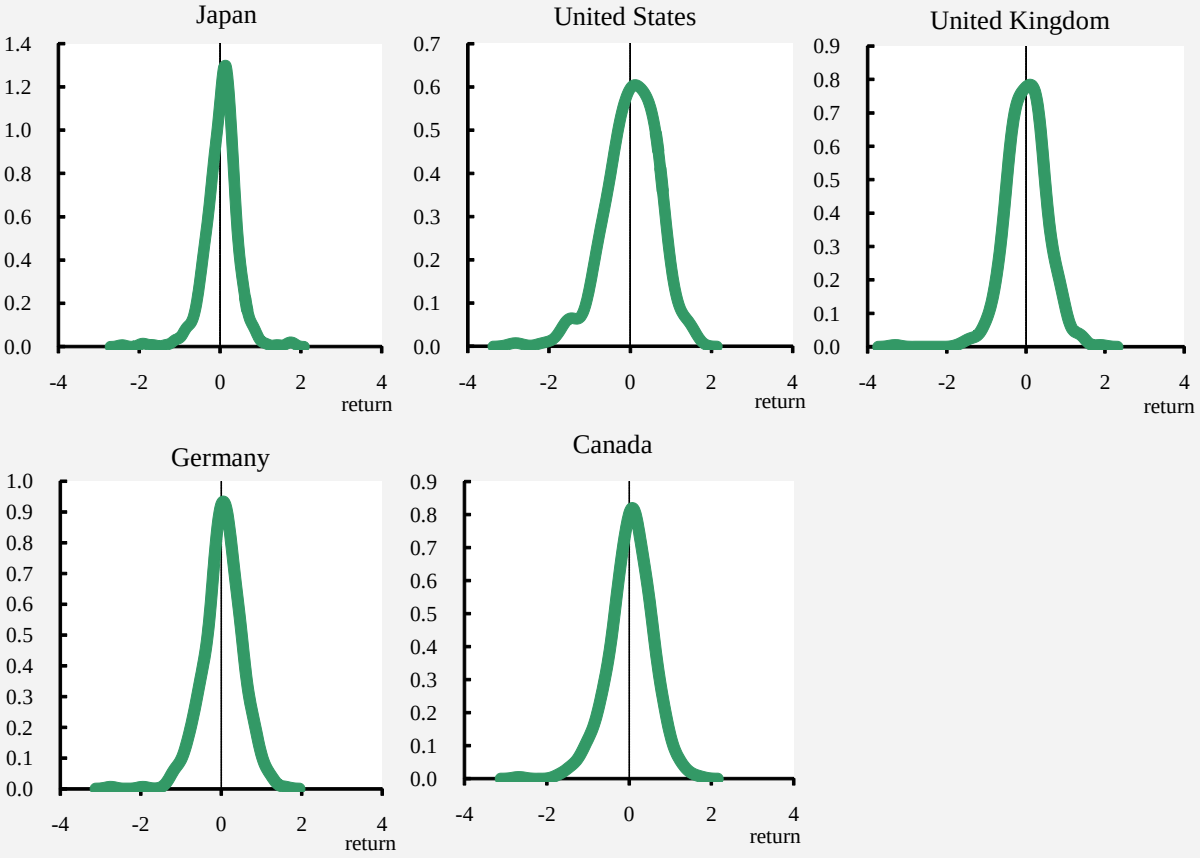
[13] The results shown here are obtained in Fujiwara, Koerber, and Nagakura (2010).

Chart 1 for Box 1: Skewness in U.S. Treasury yields and term premiums

	1-year		3-year		5-year		7-year		10-year	
	Treasury yield	Term premium	Treasury yield	Term premium	Treasury yield	Term premium	Treasury yield	Term premium	Treasury yield	Term premium
Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Standard deviation	0.05	0.02	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04
Skew	-0.32	0.21	0.05	0.21	0.13	0.21	0.15	0.19	0.14	0.18

Note: Calculated using the daily changes (percentage points) from July 18, 1990 to December 28, 2010.
Source: Federal Reserve.

Chart 2 for Box 1: Distributions of excess returns



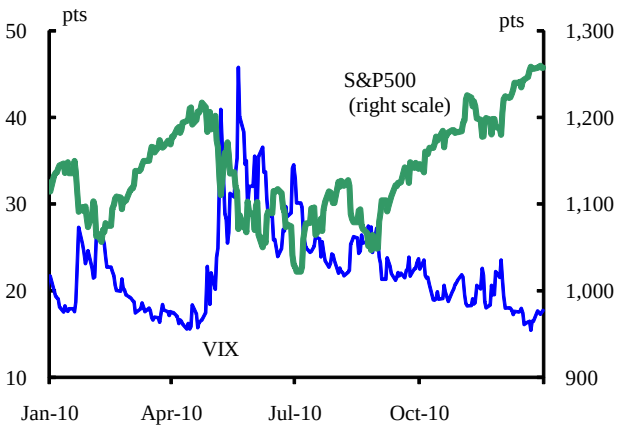
Note: Calculated using the weekly returns of 10-year bonds from 1997 to 2007.
Sources: Central banks of each country, Japan Bond Trading.

Pick-up in risky asset prices

From the summer to the FOMC meeting held in November 2010, a view prevailed that interest rates were highly likely to be maintained at low levels in the United States, and investors gradually became less risk averse. The VIX (an index of implied volatility of U.S.

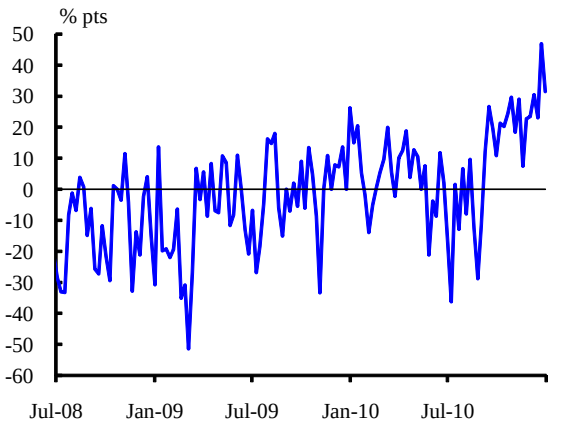
stock prices) -- which indicates future uncertainty perceived by investors -- declined from early autumn 2010, when market participants became more confident that the Federal Reserve would purchase Treasury securities (Chart 1-10). In addition, bullish sentiment of individual investors in the United States became clearly dominant from around September 2010 (Chart 1-11).

Chart 1-10: VIX and U.S. stock prices



Source: Bloomberg.

Chart 1-11: Sentiment of U.S. individual investors

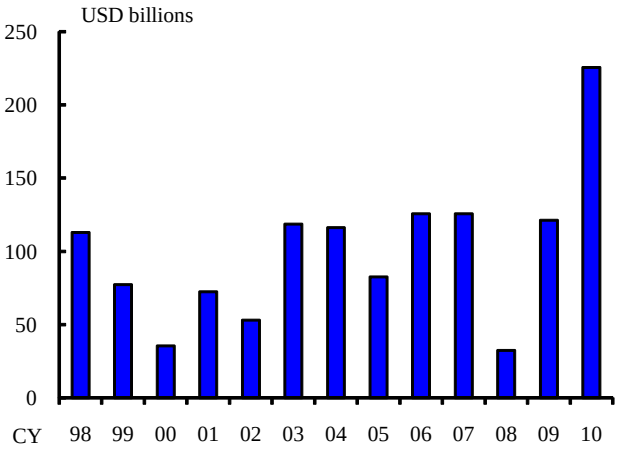


Note: Measured by subtracting the percentage of individual investors who are bearish from that who are bullish.
Source: American Association of Individual Investors.

Chart 1-12: Yield spreads between U.S. high-yield bonds and Treasury securities

Source: Bank of America Merrill Lynch.

Chart 1-13: U.S. high-yield bond issuance



Source: Thomson Reuters.

Reflecting the recovery in investors' risk-taking stance, U.S. stock prices started to follow an uptrend ahead of the actual decision on purchases of Treasury securities at the FOMC meeting held in November 2010. Later, U.S. stock prices continued to show steady

developments, supported by positive economic factors such as the extension of lower income tax rates for individuals and firm indicators of consumption, although the expectation of continued low interest rates was reduced somewhat (Chart 1-10).

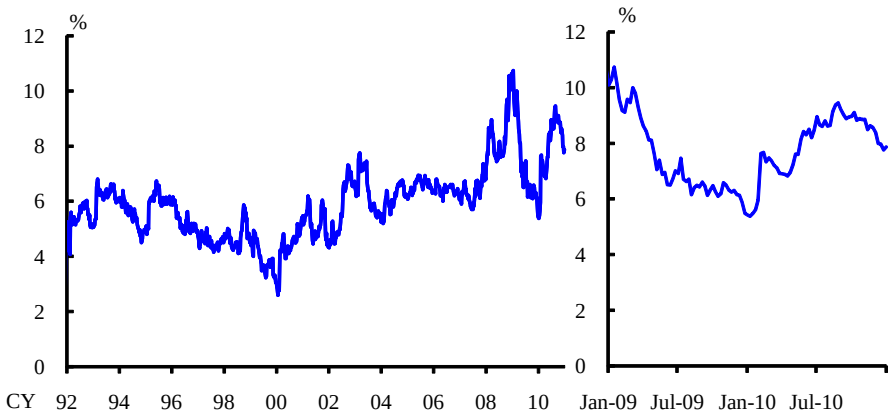
Recovery in investors' risk-taking stance also affected risky assets other than stocks. For example, yield spreads between U.S. high-yield bonds and Treasury securities were also on a tightening trend from early September 2010 (Chart 1-12). Although they were adversely affected temporarily by the intensification of the problem in Ireland, the yield spreads tightened significantly again thereafter. Under these circumstances, the annual issuance of U.S. high-yield bonds marked a record high, suggesting an active risk-taking stance by investors (Chart 1-13). While global investors were accelerating their search for yield, in the face of limited investment opportunities, a greater amount of capital flowed into emerging and commodity markets (this topic will be discussed in Chapter I.C). The signs of overheating began to be cited by a wide range of market participants.

As mentioned earlier, U.S. stock prices started to follow an uptrend from summer 2010, ahead of the decision on purchases of Treasury securities at the FOMC meeting held in November 2010. This indicated that stock prices remained steady despite the emergence of pessimistic views about the U.S. economy. Thus, there was a view that investors' attitude toward investment had become excessively bullish against the background of the expectation of a continuation of the low interest rate policy. On the contrary, a view was still widely held that such steady developments in stock prices did not necessarily indicate a rise diverging from economic fundamentals and that in fact, from a long-term perspective, stock prices remained weak compared with the past. In order to evaluate these views, let us examine the difference in expected returns between stock holdings and bond holdings (the risk-free rate) -- the equity premiums (additional compensation requested by investors when holding stocks, that is, risky assets). U.S. equity premiums surged following the BNP Paribas shock and the Lehman shock, but returned to historical average levels when stock prices recovered quickly[14] (Chart 1-14). Although they were on a declining trend after having risen again, they stayed at quite high levels compared to the historical average. This

[14] Equity premiums were calculated using the three-stage dividend discount model employed in Panigirtzoglou and Scammell (2002) that takes long-term changes in corporate profits into account. It should be noted, however, that even if equity premiums are constant, stock prices may change following changes in interest rates.

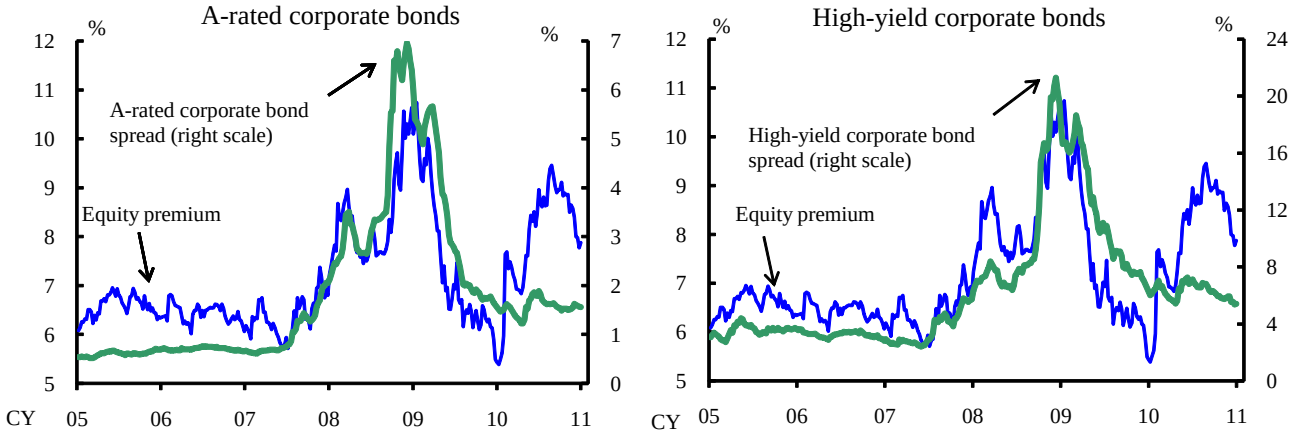
could be simply interpreted to mean that investors were more cautious about investment in stocks than in the past.[15]

Chart 1-14: U.S. equity premium



Sources: Bloomberg; Consensus Forecast; Datastream.

Chart 1-15: U.S. equity premium and corporate bond spreads



Sources: Bank of America Merrill Lynch; Bloomberg; Consensus Forecast; Datastream.

In this regard, it can be conjectured that structural changes such as a shift in the asset management stance toward relatively safer assets given the retirement of the baby-boomers underlay such developments. At the same time, it could be interpreted that investors did not necessarily evaluate high corporate profits at face value and were wary of future developments to some extent. For reference, yield spreads between corporate bonds (A-rated bonds and high-yield bonds) and government bonds, which showed similar

[15] As the low interest rate policy continued, equity premiums declined somewhat, and the risk of a drop-back of stock prices might have increased slightly.

developments with equity risk premiums in the past, remained at low levels recently, and there was a clear contrast between them (Chart 1-15). This might reflect a situation in which -- as developed economies tended to maintain or further enhance the accommodative financial environment -- it was considered that downside risks to corporate finance were limited while upside risks to business growth were extremely small because of the lack of the momentum of economic recovery. (For information on the contrast between corporate bonds and stocks, see Box 2.)

Box 2: Comparison of Risk Premiums on Equities and Corporate Bonds

The equity premium in the United States remains at a somewhat higher level than the historical average. It is a matter of great interest whether the equity premium will return to its historical average with the gradual recovery in the U.S. economy or remain high due to some kind of structural problems.

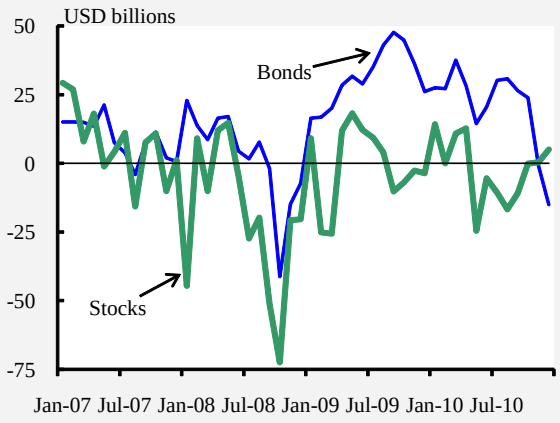
Until around 2009, the equity premium and the spread between government bonds and corporate bonds -- which, like stocks, are financial assets evaluated in terms of corporate profits -- showed quite similar movements (Chart 1-15). However, we can see significant differences between them from 2010. It can be said that in the second half of 2010, although U.S. stock prices followed an increasing trend, the equity premium remained high compared to that incorporated in the corporate bonds. In addition, thanks to the lower riskiness stemming from fixed income, the corporate bonds were relatively preferred compared to stocks.

This trend can also be recognized with capital flows. Capital flows to U.S. mutual funds show that inflows in bond investment continued, while occasional outflows occurred in equity investment in the period from the Lehman shock until November 2010, when U.S. bond yields started to increase (Chart 1 for Box 2). This implies that investors remained cautious about risky investments. In addition, comparison between the equity turnover and premium shows that the equity turnover tended to be higher when the trend in the equity premium changed. Since 2010, however, this relationship has become weaker than before, and the equity turnover has continued to decrease (Chart 2 for Box 2).

We can point out two possible reasons why the equity premium remains high. First, the cautious view on the U.S. economy has raised the risk premium on equity, whose price is

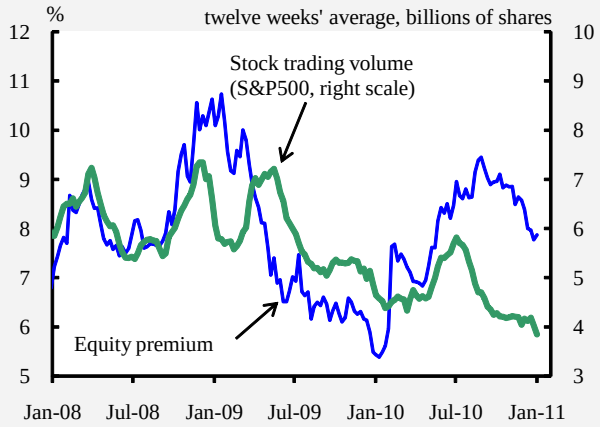
considered to be highly volatile. On this basis, if the recovery trend of the U.S. economy becomes evident and uncertainty over the future prospects dissipates, the equity premium should return to the historical average. Second, increasing attention is being paid to such structural problems as the aging of baby-boomers and the prolonged balance-sheet adjustment.[16] The former problem means that safe assets will be preferred in portfolio investments by individuals, while the latter problem implies that the prospects for the U.S. economy will become more uncertain. On this basis, the equity premium should remain at a somewhat high level compared to the past.[17]

Chart 1 for Box 2: Capital flows to U.S. mutual funds



Note: Data for December 2010 are estimates.
Source: Investment Company Institute.

Chart 2 for Box 2: U.S. equity premium and equity turnover



Sources: Bloomberg; Consensus Forecast; Datastream.

B. Fiscal Problem in Europe

Resurgence of the fiscal problem in Europe and policy responses

The growing fiscal problem in Europe stemming from the Greek shock since spring 2010 was at a temporary pause after summer 2010, reflecting the fact that the European Union (EU) and the European Central Bank (ECB) undertook various policy responses and market

[16] Geanakoplos, Magill, and Quinzii (2004) report that demography affects the trend in stock prices and this tendency is more significant in Japan than in the United States.

[17] A search for yield based on the low interest rate environment induces capital flows to the corporate bond market. As a result, the spread between government bonds and corporate bonds may narrow excessively. In such a case, the room for the contraction in the equity premium lessens.

participants reacted positively to the results of the stress test exercise conducted on European financial institutions in July 2010. The structural problem of the euro area economy had yet to be completely resolved, however, and concerns remained over the feasibility of a reduction in fiscal deficits in each country. Under these circumstances, market participants paid growing attention to developments in Ireland, where questions were raised about the government's additional financial support to major banks. In late October 2010, in response to news that Germany and France had agreed to force private bondholders to share the fair burden of any future financial rescues for euro area countries, bondholders' concerns intensified.[18] As a result, yield spreads between sovereign bonds in most peripheral European countries -- particularly Ireland -- and German bonds widened, and credit default swap (CDS) premiums increased rapidly (charts 1-16 and 1-17). In many countries, they surpassed the levels recorded at the time of the Greek shock in May 2010.

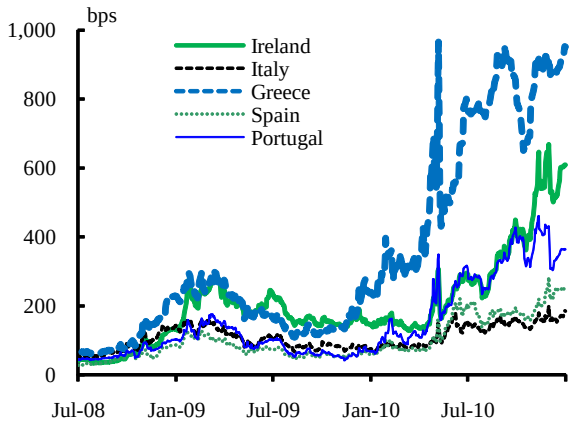
The rise in the yield spread between Irish and German government bonds brought about a massive increase in funding costs through repo transactions backed by Irish government bonds, and concerns over the financial soundness of Irish banks heightened further. Reflecting this, CDS premiums for banks in other peripheral European countries increased significantly, and market participants once again became aware of the correlation of risks between the banking and government sectors (Chart 1-18). In view of these conditions, somewhat weak movements were temporarily seen in the stock markets mainly in Europe.

As the Irish government's capacity to respond to the situation came under market scrutiny, the EU and the International Monetary Fund (IMF) decided to grant financial assistance to Ireland of 85 billion euros on November 28, 2010. Nevertheless, reflecting the downgrading of Ireland's sovereign debt rating by a rating agency (from AA- to A), Irish government bond yields continued to rise. From December 2010, however, market participants became conscious of the ECB's Irish bond purchases through the Securities Markets Programme, and government bond yields and CDS premiums of peripheral European countries regained a degree of stability, although they remained at high levels. Meanwhile, on December 2, 2010, the ECB decided to continue conducting its main refinancing operations (MROs) and special-term refinancing operations (STROs) as fixed rate tender procedures with full

[18] Later, on November 12, 2010, finance ministers of European countries announced that any such burden sharing would apply to new government securities issued in and after 2013.

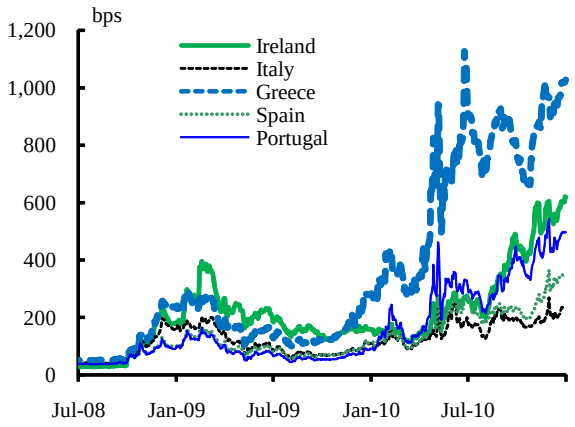
allotment for as long as necessary, and at least until April 12, 2011. It also decided to conduct the three-month longer-term refinancing operations (LTROs) to be allotted on January 26, February 23, and March 30, 2011 with full allotment.

Chart 1-16: Peripheral European countries' yield spreads relative to Germany



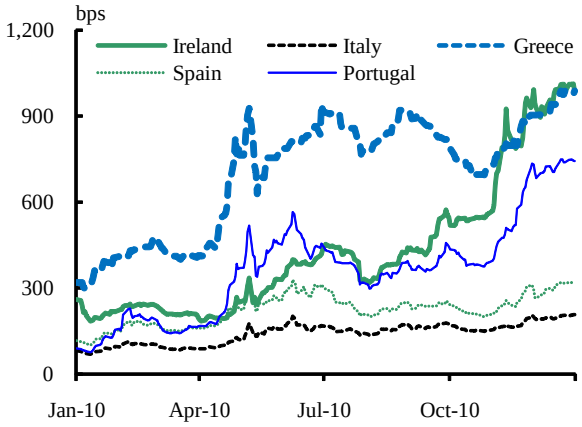
Source: Bloomberg.

Chart 1-17: Peripheral European countries' sovereign CDS premiums



Note: 5-year.
Source: Bloomberg.

Chart 1-18: Bank CDS premiums in peripheral European countries



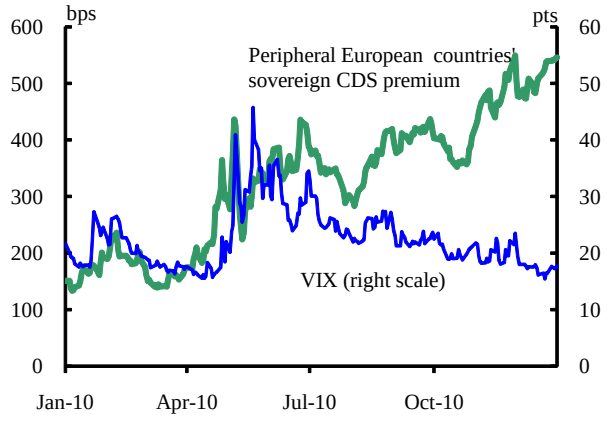
Note: Equally weighted average of 5-year CDS premiums for major banks in each country.
Sources: Bloomberg; Datastream.

Comparison with the Greek shock

So far, the resurgence of the fiscal problem in Europe after autumn 2010 has differed from the Greek shock in May 2010 in that the impact on the international financial markets has been limited. For instance, looking at the relationship between CDS premiums of peripheral European countries and the VIX, at the time of the Greek shock investors became

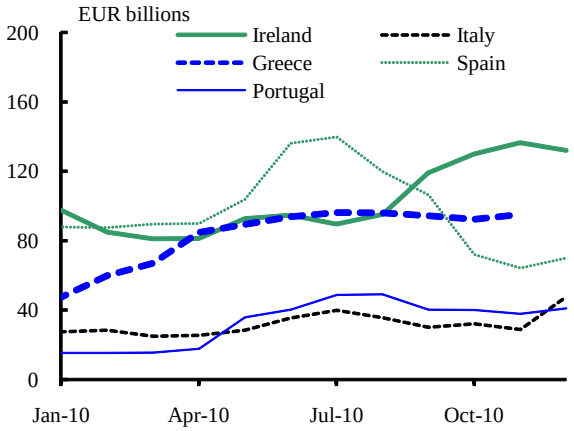
increasingly risk averse when CDS premiums surged (Chart 1-19). This time, however, similar developments have not been observed. The difference arises from the fact that safety nets, such as the European Financial Stability Facility and the ECB's Securities Markets Programme, have already been put in place. In May 2010, market participants cast doubt on the financial soundness of many European financial institutions due to the lack of information, but the fact that market participants' concerns eased somewhat following the stress test exercise in July 2010 seemed to prevent the contagion from spreading to the overall international financial markets. In interbank funding markets, when market participants become aware of heightened counterparty risk, it is possible that an increase in the precautionary demand for liquidity and increased activity to secure funds will lead to a spiraling decline in market functioning. In this regard, looking at the ECB's provision of funds to peripheral European countries, although the provision to Ireland increased clearly, that to other countries either decreased or remained more or less unchanged (Chart 1-20). This suggested that the functioning of euro funding markets was maintained as a whole. The LIBOR-Overnight Index Swap (OIS) spread, which widens significantly when faced with serious strains in financial markets, rose slightly during this period, but generally remained at a low level, reflecting a continuation of accommodative monetary policy in the United States (Chart 1-21).

Chart 1-19: VIX and peripheral European countries' sovereign CDS premium



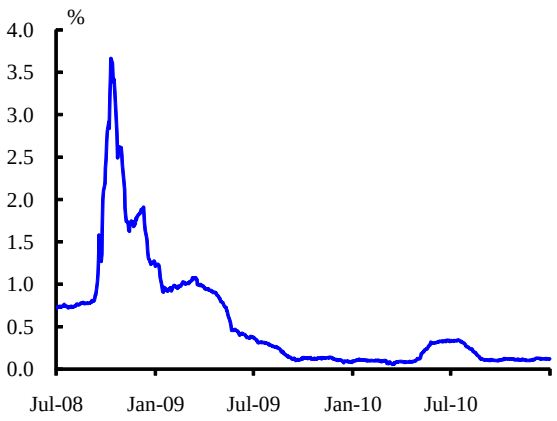
Note: The peripheral European countries' sovereign CDS premium is the equally weighted average of 5-year sovereign CDS premiums of Greece, Ireland, Italy, Portugal, and Spain.
Source: Bloomberg.

Chart 1-20: Financial institutions' borrowing from the ECB



Note: The latest figure for Greece is as of November 2010.
Source: Central banks of each country.

Chart 1-21: U.S. dollar LIBOR-OIS spread



Note: 3-month.
Source: Bloomberg.

The current fiscal problem that grew in Europe and mainly in Ireland had a limited impact compared with the Greek shock, in terms of the spread of contagion to the overall international financial markets. Nonetheless, the problem in Ireland has further heightened concerns over the worsening of the fiscal problem in Portugal and the banking problem in Spain, and the problems in peripheral European countries continue to weigh on market sentiment.

C. Active Trading in Emerging and Commodity Markets

Active capital inflows to emerging economies

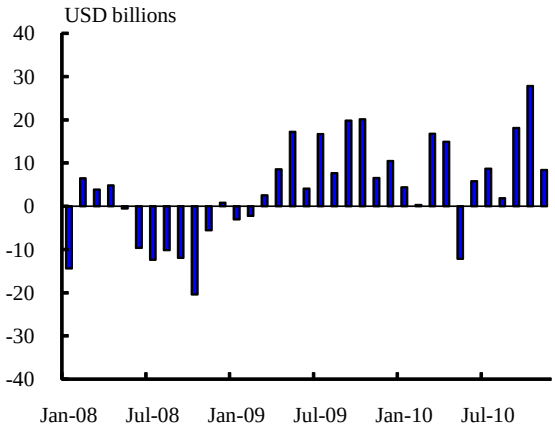
As investors' risk-taking capacity recovered, capital flowed more actively into emerging economies with favorable economic fundamentals and high expected returns compared to developed economies. For example, looking at the net purchases of major emerging market equities by foreign investors, we see that the trend of a net long position from the middle of 2009 became more evident in the second half of 2010 (Chart 1-22). A comparison of returns on investments in stocks and bonds in emerging and developed economies indicates that the performance of financial assets of emerging economies has exceeded those in developed economies for the past several years[19] (Chart 1-23). Global investors who were searching for yield placed a large amount of funds in financial assets of emerging economies that

[19] Looking at risk-adjusted returns, returns divided by uncertainty (the standard deviation), the performance of emerging economies is generally higher than that of developed economies.

showed high investment returns. As a result, in emerging economies currencies appreciated, and stock and bond prices rose further. This seemed to have further attracted the capital inflows.[20] Looking at the actual price movements, currencies and stock prices of emerging economies generally showed steady developments, although small adjustments were seen around late November 2010, when the problem in Ireland worsened (Chart 1-24).

In this regard, the correlation of stock price changes among emerging regions trended upward and, in particular, has been close to its record-high level for the last two years or so[21] (Chart 1-25). This appears to have occurred against the background of a growing tendency in which investors in developed economies track not idiosyncratic factors but an index for the entire emerging market with high expected returns, in a situation where they continue to search for yield under the low interest rate environment. It can be observed that the increased correlation of stock price changes between developed and emerging economies reduces the benefits of internationally diversified investment. This implies that there is a risk that some kind of shock will trigger drastic global changes in risky asset prices.

Chart 1-22: Net purchases of major emerging market equities by foreign investors

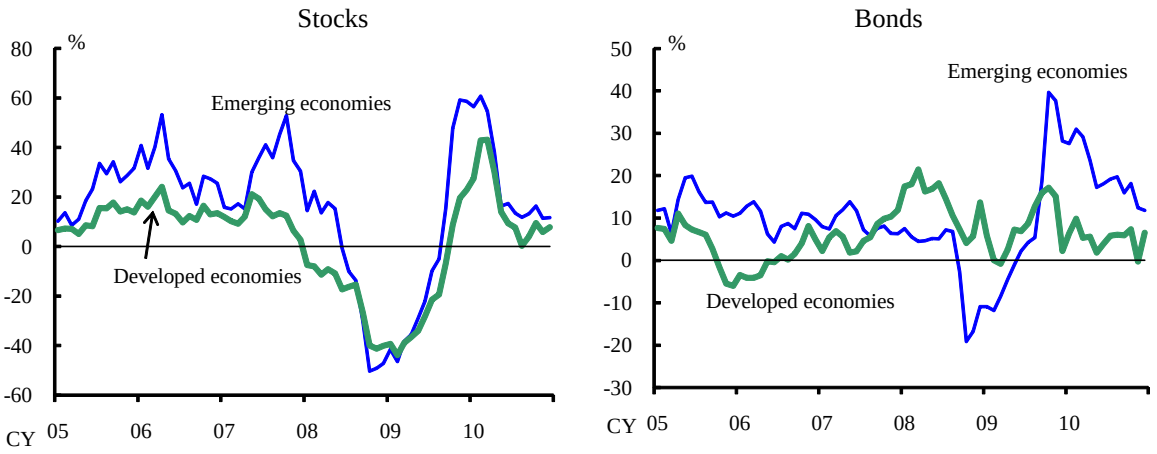


Note: Net purchase of equities by foreign investors is the sum of Brazil, India, Indonesia, the Philippines, South Korea, Taiwan, and Thailand. The latest figure is as of November 2010.
Sources: Bloomberg; CEIC.

[20] Meanwhile, on October 5, 2010 Mexico issued one billion U.S. dollars worth of 100-year bonds. Although the bonds are financial instruments with 100-year default risk, it was reported that they were oversubscribed by about 2.5 times.

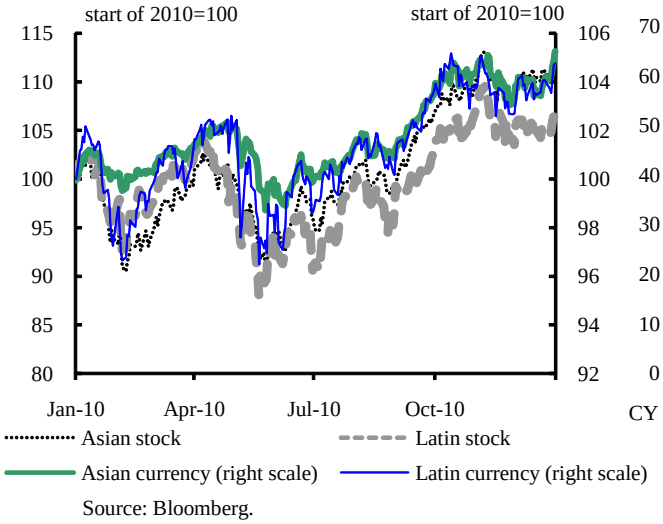
[21] For the information on the calculation method, see Takahashi (2010).

Chart 1-23: Investment returns on stocks and bonds in emerging and developed economies



Sources: Bloomberg; JPMorgan.

Chart 1-24: Stock prices and currencies in emerging markets

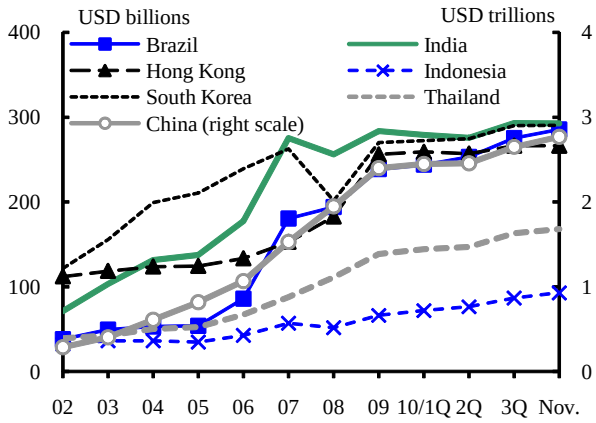


Source: Bloomberg.

Chart 1-25: Comovement of stock prices among emerging regions

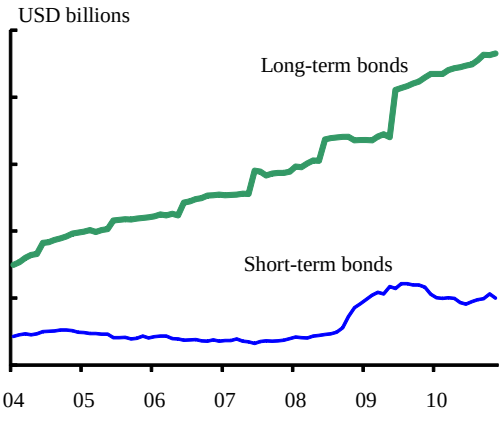
Note: Past three years' comovement of monthly returns of stock indices among Asia, East Europe and the Middle East, and Latin America.
Sources: Bloomberg; Bank of Japan.

Chart 1-26: Foreign reserves of emerging economies



Sources: Bloomberg; CEIC; central banks of each country.

Chart 1-27: U.S. Treasury holdings of foreign official institutions by maturity



Note: Short-term bonds include T-bills with maturity of less than 1 year, and long-term bonds include T-bonds and notes. The latest figure is as of November 2010.
Source: U.S. Department of the Treasury.

Feedback loop between developed and emerging economies

Many of the emerging economies that are faced with strong pressures on capital inflows have been strengthening capital control measures one after another, in order to prevent rapid changes in external balances and their reversals. In addition, several emerging economies appear to be intervening in the FX market to keep their currencies from appreciating sharply. Foreign reserves are increasing significantly in emerging economies because foreign currency purchases resulting from FX interventions are accumulated as foreign reserves[22] (Chart 1-26). In many cases, the foreign reserves appear to be invested in U.S. Treasury securities. In fact, U.S. Treasury holdings -- mainly long-term Treasury holdings -- of foreign official institutions including those in emerging economies have recently increased remarkably (Chart 1-27). Consequently, such actions may have exerted additional downward pressure on U.S. long-term interest rates.[23] The expectation of continued low interest rates in the United States is basically backed by a view on monetary policy there. On the other hand, a "feedback loop" seems to be operating in which capital inflows to emerging economies under the low interest rate environment in developed economies like the United States further intensify the low interest rate environment in the United States.[24] This can be viewed as an example of increased activity in global capital flows having a complex impact on the financial environment in countries around the world.

Financialization of commodities

Various international commodity prices rose against the background of rapid expansion of demand from emerging economies and continued low interest rates in developed economies (Chart 1-28). In commodity markets, it was pointed out that the rise in prices was caused by

---

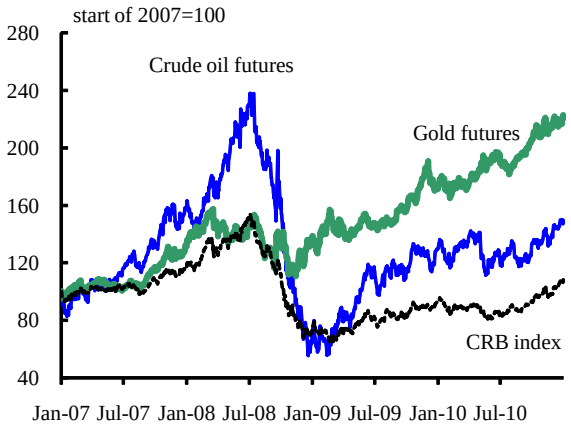
[22] While a high level of foreign reserves is basically caused by an expansion of external imbalances, it is considered as a kind of insurance against a sudden stop, such as a simultaneous decline in financial asset prices and exchange rates, in emerging economies. Obstfeld, Shambaugh, and Taylor (2010) empirically showed that under the global financial crisis following the Lehman shock, currencies of countries with a large amount of foreign reserves are unlikely to depreciate.

[23] Although the United States is a borrower of foreign funds on a net basis, investment returns on foreign investment exceed borrowing costs from foreign countries. As a background factor, for example, Caballero, Farhi, and Gourinchas (2008) pointed out the significance of financial infrastructure in the United States, and Gourinchas and Rey (2007) pointed out the exorbitant privilege of the U.S. dollar as a key currency.

[24] For details on this topic, see Kobayashi and Yoshino (2011).

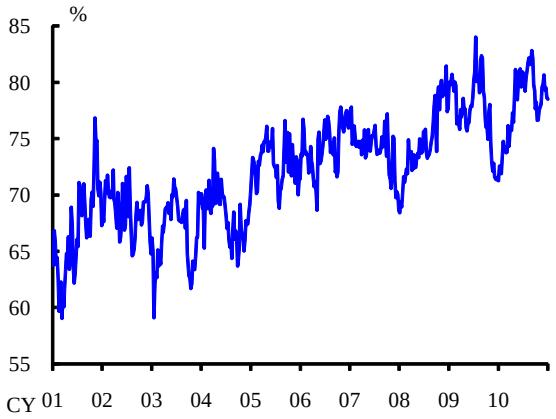
observations of the tightening of supply-demand conditions of crops due to adverse weather conditions and steady demand for precious metals due to increased demand for industrial purposes. Just as with emerging stock prices, however, comovements of prices among commodities approached their highest level to date[25] (Chart 1-29). Fundamentally, the demand structures differ among commodities, and price changes should reflect the idiosyncratic factors of each one. Nevertheless, global investors who were accelerating their search for yield grew more eager to invest, and capital inflows to the commodity markets continued to increase. It could be said that as a result the commodities started to exhibit the characteristics of financial assets more strongly, and their prices rose simultaneously regardless of individual market characteristics.[26] Net positions of noncommercial investors, which are considered to reflect speculators' investment stance regarding each commodity, were accumulated significantly in the second half of 2010 and reached considerably higher levels compared with the past (Chart 1-30). The relationship between the price rise and market size during this period indicated that the smaller the market size, the larger the price rise (Chart 1-31). This implied that irrespective of the supply-demand conditions for commodities, the effects of an inflow of large-scale speculative funds tended to appear in a relatively small market with low liquidity.

Chart 1-28: Commodity prices



Note: Crude oil and gold futures indicate the NYMEX prices of the nearest contract months.
Source: Bloomberg.

Chart 1-29: Comovement of prices among major commodities

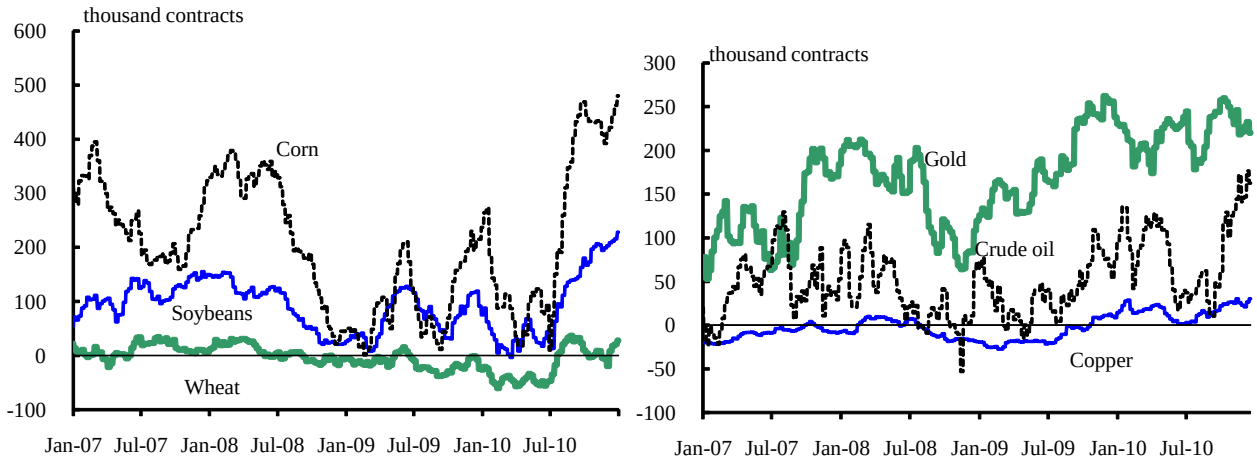


Note: Past 50 weeks' comovement of prices among 14 major commodities.
Sources: Bloomberg; Bank of Japan.

[25] For information on the calculation method, see Takahashi (2010).

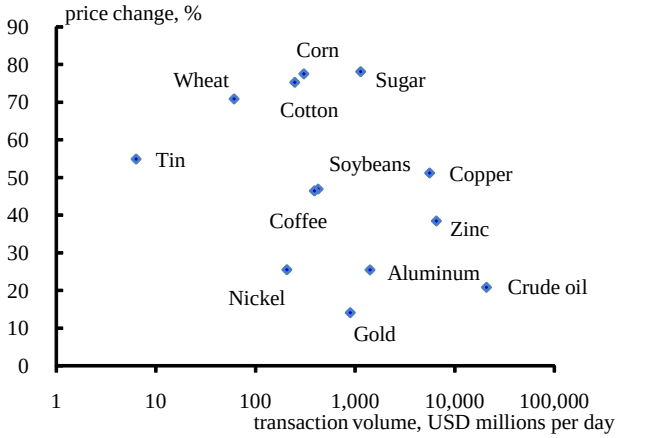
[26] In particular, the increased correlation among commodity indices was pointed out. For this point, see, for example, the Bank of Japan's February 2010 issue of the *Financial Markets Report*, and Tang and Xiong (2010).

Chart 1-30: Net positions of non-commercial investors



Source: Bloomberg.

Chart 1-31: Market sizes and commodity prices



Note: The transaction volume is the daily average from the start of 2009 to the end of 2010.
Source: Bloomberg.

As mentioned above, while receiving a massive amount of capital inflows, asset prices of emerging economies and commodity prices continue to be on an uptrend, with increased correlation between them. In some emerging economies, stock prices marked a new record high.[27] Under these circumstances, in order to appropriately contain the accumulation of

[27] Stock prices of countries such as Argentina, India, Indonesia, Malaysia, the Philippines, and Turkey marked new record highs in the second half of 2010.

financial imbalances and economic overheating, emerging economies began monetary tightening. Their monetary tightening can be considered a measure to ensure medium- to long-term stability in financial markets. Meanwhile, global investors who assumed that the accommodative investment environment would continue grew wary of monetary tightening in emerging economies, and the market reacted sensitively to news of policy interest rate hikes in individual countries. Reflecting these developments, some price fluctuations were observed.

II. Developments in Domestic Financial Markets

Large fluctuations in long-term interest rates in the United States affected developments in Japan's financial markets, as they spilled over to Japanese long-term interest rates and indirectly contributed to the developments in Japanese stock prices by influencing FX markets.

Looking at the developments in each market, toward early October 2010 Japanese government bond (JGB) yields declined rapidly reflecting heightened expectations for additional monetary easing at home and abroad, but they rose toward the end of 2010, due to such factors as investors' position adjustments triggered by rises in U.S. long-term interest rates. Stock prices remained somewhat weaker than in the United States and Europe, as their rise was contained by the yen's appreciation against the U.S. dollar reflecting heightened expectations for monetary easing in the United States. Nevertheless, stock prices trended upward as foreign investors took another look at the Japanese market from November 2010 when the dollar appreciated somewhat. Meanwhile, the Bank of Japan decided to implement a comprehensive monetary easing policy at the Monetary Policy Meeting (MPM) held on October 4 and 5, 2010. Under these circumstances, financial conditions as a whole showed signs of easing, as evident in firmer conditions in credit markets and the Japan real estate investment trust (J-REIT) market. Money market interest rates came under downward pressure toward early October 2010, reflecting heightened expectations for monetary easing in Japan. They then fluctuated somewhat but remained more or less unchanged at low levels as the Bank continued to provide ample funds.

A. Money Markets

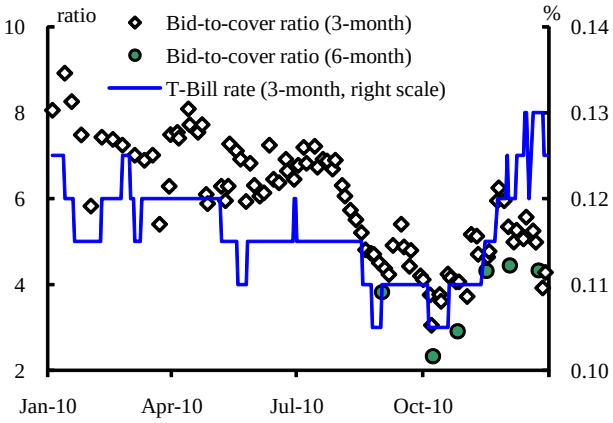
In Japan's money markets, interest rates remained at low levels within a certain range due to the Bank's provision of ample funds.

During the second half of 2010, the Bank enhanced easy monetary conditions. First, at an unscheduled MPM held on August 30, 2010, the Bank introduced a six-month term (the amount outstanding of approximately 10 trillion yen), in addition to the existing three-month term, in the fixed-rate funds-supplying operation against pooled collateral

(hereafter the fixed-rate operation).[28] The bid-to-cover ratios of the fixed-rate operation marked the level of 3.0-9.0 for the three-month term and 2.0-5.0 for the six-month term (Chart 2-1). (For a theoretical analysis of the bid-to-cover ratios of the fixed-rate operation, see Box 3.) In addition, at the MPM held on October 4 and 5, 2010, the Bank decided to implement the comprehensive monetary easing policy composed of three measures: (1) a change in the guideline for money market operations (clarification of the virtually zero interest rate policy); [29] (2) clarification of the policy time horizon based on the "understanding of medium- to long-term price stability"; and (3) establishment of the Asset Purchase Program.

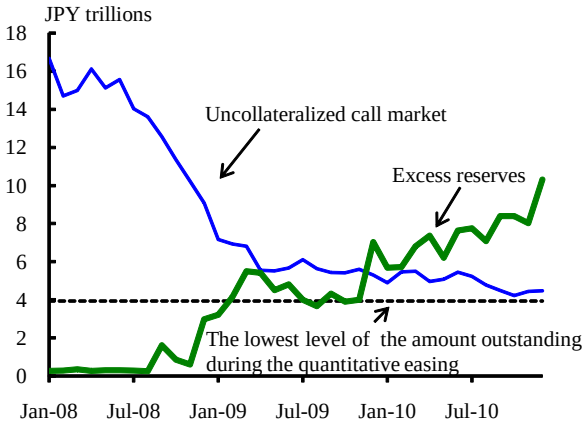
As a result of the Bank's provision of ample funds through, for example, the fixed-rate operation, excess reserves were on a gradual increasing trend (Chart 2-2). On the other hand, the amount outstanding in the call market remained more or less unchanged at a low level against the background of declining demand for overnight funds. (For information on the developments in money market transactions, see Box 4.)

Chart 2-1: Bid-to-cover ratios of the fixed-rate operation



Note: Bid-to-cover ratio is showed on the day of offer.
Sources: Japan Bond Trading; Bank of Japan.

Chart 2-2: Excess reserves and the amount outstanding in the call market



Note: Monthly average (excess reserves are the average during the reserve maintenance period).
Source: Bank of Japan.

[28] The total amount of loans to be provided through the three-month fixed-rate operation introduced in December 2009 was increased to approximately 20 trillion yen from approximately 10 trillion yen in March 2010.

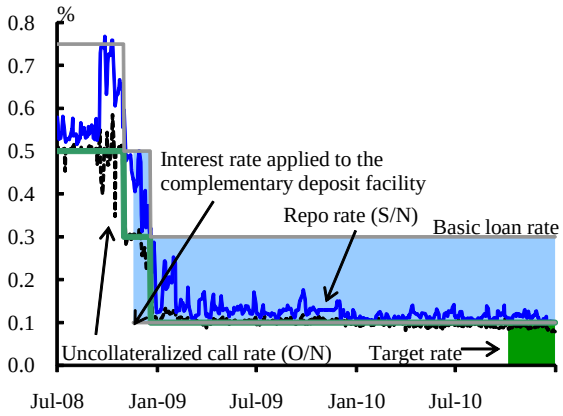
[29] The Bank's target for the uncollateralized overnight call rate was changed from around 0.1 percent to around 0 to 0.1 percent.

Overnight market

The uncollateralized overnight call rate remained at around 0.10 percent during the first half of the period (Chart 2-3). It then stayed slightly below the 0.1 percent level after the introduction of the comprehensive monetary easing policy in October 2010.

In the repo markets, some participants shifted their short-term financing from markets for term instruments to the overnight market, reflecting heightened expectations for additional monetary easing. Moreover, from November 2010, when long-term interest rates rose, demand for inventory funding of securities companies receiving Japanese government securities from major banks increased. As a result, upward pressure was temporarily exerted on repo rates, but they regained stability with the completion of such funding. Throughout the period, general collateral (GC) repo rates (for spot/next-day transactions) stayed in the range of 0.10-0.15 percent.

Chart 2-3: Overnight rates



Note: Horizontal axis indicates the settlement dates. The target rate from October 5, 2010 indicates the target range.
Source: Bank of Japan.

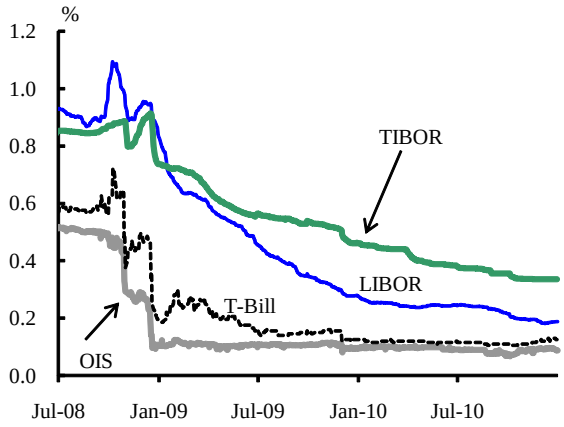
Markets for term instruments, the CP market, and foreign currency funds markets

Interest rates on term instruments fluctuated, reflecting fluctuations in government bond yields at home and abroad and speculation regarding future monetary policy (Chart 2-4).

Among interest rates on term instruments, yields on treasury discount bills (T-Bills), particularly those with a one-year maturity, where there remained more room for further declines, declined when expectations for additional monetary easing heightened in response

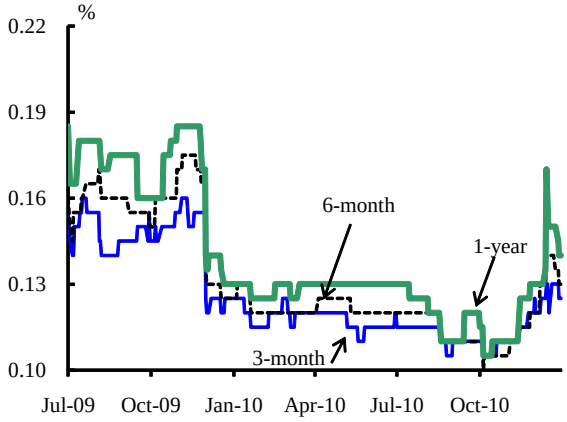
to the appreciation of the yen and weak stock prices and immediately after the comprehensive monetary easing policy was introduced[30] (Chart 2-5). Then, buying pressure from foreign investors subsided in view of the fact that the yen's appreciating trend came to a halt, and long-term interest rates, including shorter-term ones such as two-year yields, rebounded. Reflecting these developments, yields on T-Bills rose. Meanwhile, the Tokyo Interbank Offered Rate (TIBOR), which had remained at a somewhat higher level compared to yields on T-Bills, declined moderately.

Chart 2-4: 3-month rates



Note: The T-Bill rate prior to the integration of FBs and TBs in February 2009 is the FB rate.
Sources: Bloomberg; Japan Bond Trading.

Chart 2-5: Yields on T-Bills

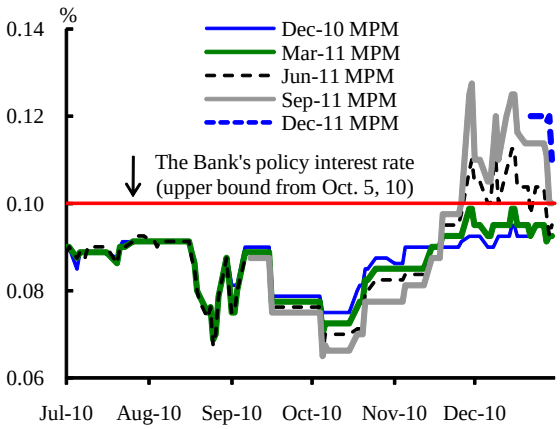


Source: Japan Bond Trading.

Reflecting heightened expectations for additional monetary easing, the OIS rates, which reflect the outlook for the uncollateralized overnight call rate, and interest rates on Euroyen futures declined significantly toward October 2010 (charts 2-6 and 2-7). Nonetheless, upward pressure was exerted on these rates thereafter. This was because investors who had actively purchased T-Bills and medium-term JGBs with expectations of monetary easing established short positions to hedge when interest rates rose rapidly.

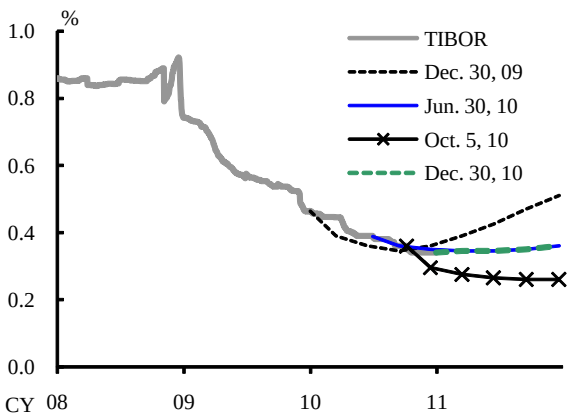
[30] In response to the fiscal problem in peripheral European countries since May 2010, the yen as a safe-haven currency was increasingly bought as an emergency evacuation. In this situation, foreign investors preferred to invest in T-Bills as a means of short-term funds management. This also seemed to contribute to a declining trend in yields on T-Bills until early autumn 2010.

Chart 2-6: OIS rates



Sources: Meitan Tradition; Thomson Reuters.

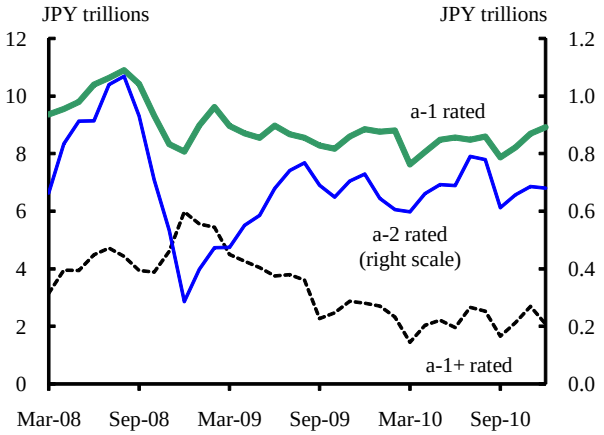
Chart 2-7: Forward curves for Euroyen futures



Sources: Bloomberg; Tokyo Financial Exchange.

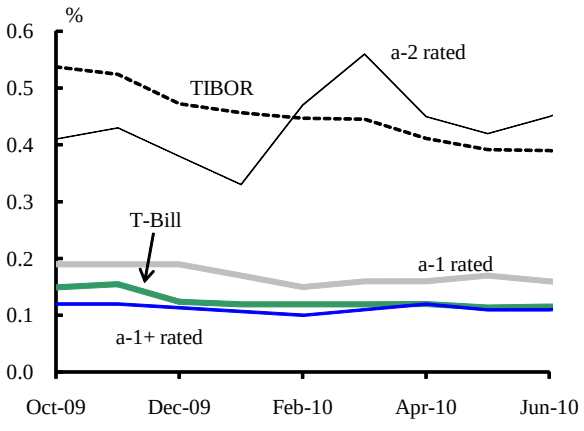
In the CP market, as firms' demand for external funds remained weak and firms sought to raise longer-term funds through issuance of corporate bonds, the amount outstanding of CP issued and issuance rates remained at low levels (charts 2-8 and 2-9). Immediately after the introduction of the comprehensive monetary easing policy, which included purchases of CP, yield spreads between T-Bills and some CP tightened. However, since the rate of most CP rated a-1 or higher had already been at a level close to the floor, the tightening of the spreads was limited. Then, CP issuance rates increased slightly, following the rise in yields on T-Bills, the benchmark rate.

Chart 2-8: Amount outstanding of CP



Note: Data are at the end of the month.
Source: Finance Facsimile News.

Chart 2-9: CP issuance rates

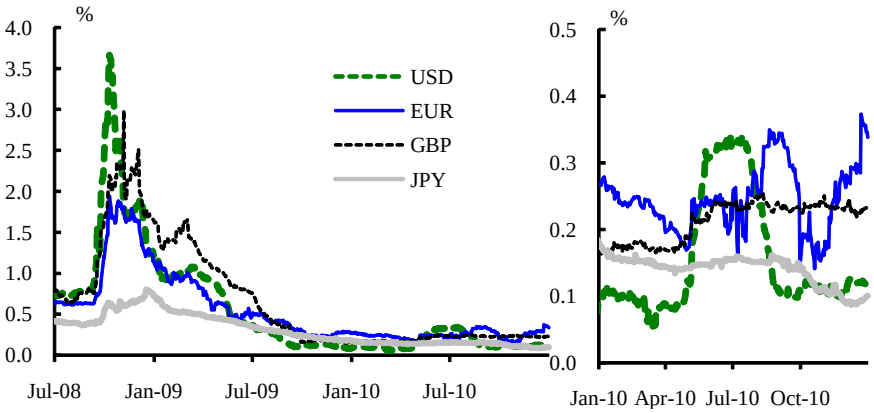


Note: 3-month maturity. Monthly weighted average.
Sources: Bloomberg; Japan Bond Trading;
Japan Securities Depository Center.

In the foreign currency funds markets, the euro LIBOR-OIS spread was sensitive, affected by the fact that the OIS rates fluctuated in both directions due to speculation regarding the

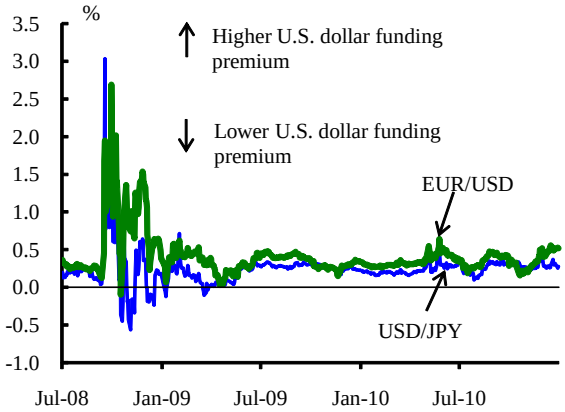
amount of funds provided through the ECB's operations (Chart 2-10). The spreads for other currencies, however, generally remained stable at low levels. Costs of funding U.S. dollars in FX swap markets were stable on the whole, although they fluctuated in tandem with changes in expectations for monetary easing in each country (Chart 2-11).

Chart 2-10: LIBOR-OIS spreads



Note: 3-month.
Source: Bloomberg.

Chart 2-11: U.S. dollar funding premiums in the FX swap market



Note: 3-month spreads between FX swap-implied U.S. dollar rates and U.S. dollar LIBOR.
Source: Bloomberg.

Box 3: Theoretical Analysis of the Bid-to-Cover Ratios of the Fixed-Rate Operation[31]

The Bank has conducted a fixed-rate (and fixed-amount) funds-supplying operation since December 2009. This type of funds-supplying operation had been adopted by the ECB's MRO by 2000, and overbidding -- a phenomenon in which total bids drastically exceed the

[31] The analysis presented here is based on Shino (2010a).

total allotment offered by a central bank -- had been observed. The bid-to-cover ratio (total amount of bids received/amount of funds provided) had reached a maximum of more than 100. One possible explanation for this phenomenon is that heightened expectations of an interest rate hike had enhanced the attractiveness of funding through a fixed-rate operation, leading to an increase in demand for the operation. It has been pointed out, however, that the bid-to-cover ratio had continuously increased for the entire period during which serious overbidding was observed, independent of any changes in interest rate expectations.[32]

A financial institution participating in a fixed-rate operation may have initial demand for the auction based on the demand for reserve requirements or daily cash management. If the actual allotment exceeds the initial demand, an opportunity cost is incurred through such factors as holding of excess reserves. Meanwhile, under the condition where the interest rate applied to a fixed-rate operation is lower than market interest rates, the difference in these rates will also become a cost if the actual allotment is below the initial demand. Therefore, the loss function of a bidder in a fixed-rate operation would be a convex function that attains the minimum value of zero when the actual allotment equals the initial demand and the positive costs which increase exponentially otherwise (the left-hand chart in Chart for Box 3).

Now denote a bidder by A and suppose that, as an example, all bidders other than A bid their initial demand and the sum of their bids exceeds the total allotment offered by a central bank. In this case, A's actual quota is equal to A's bids multiplied by the allotment ratio, which is strictly less than one. Therefore, in order for the actual quota to equal the initial demand, A must bid more than the initial demand.

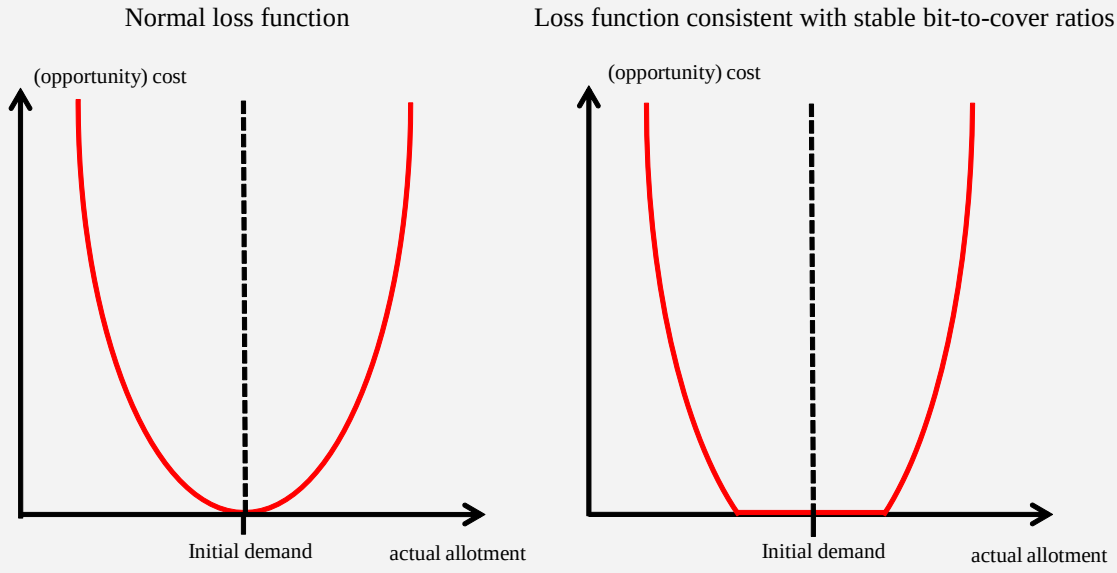
Letting x be an allotment ratio that will be attained when all bidders choose their initial demand, an actual allotment ratio resulted in a total lower than x. Furthermore, since bidders presume a lower allotment ratio than x in the next fixed-rate operation, they will choose larger bids. Since this process continues infinitely (or until their bids reach the maximum bidding limit), the bid-to-cover ratio rapidly increases. This is the basic mechanism behind the overbidding.

On the other hand, the bid-to-cover ratio for the Bank's fixed-rate operation has remained

[32] For details, see, for example, Nautz and Oechssler (2004, 2006).

stable in general, albeit with some fluctuations due to changes in expectations about monetary policy, and has not shown rapid changes such as surges observed in the ECB's operation or plunges leading to undersubscription[33] (Chart 2-1). As factors behind such developments, the level of interest rates applied to the complementary deposit facility and the accommodative financial environment in Japan can be identified. By paying interest on excess reserve balances, the facility has the effect of reducing the opportunity cost of holding excess reserves to zero when the actual allotment is larger than the initial demand. Furthermore, under a situation in which longer-term interest rates remain at a low level, the external funding cost incurred is sufficiently small when the actual allotment is below the initial demand. As a result, as long as the difference between the initial demand and the actual allotment remains in a certain range, the cost will approximate zero (the right-hand chart in Chart for Box 3).

Chart for Box 3: Loss function of a bidder



With such a modified loss function, bidding the same amount as the previous auctions can still be the best response, even when bidder A presumes that the allotment ratio will decrease at the current auction. As a result, a rapid increase in the bid-to-cover ratio does

[33] Moreover, the actual bid-to-cover ratio was lower than the case when all participants in the operation choose the maximum bidding limit. Thus, the maximum bidding limit is insufficient evidence to explain why overbidding has not been observed.

not occur, and the ratio that remains within a certain range can be described as equilibrium.

Box 4: Trends in Money Market Transactions (Summary of the Tokyo Money Market Survey [August 2010])

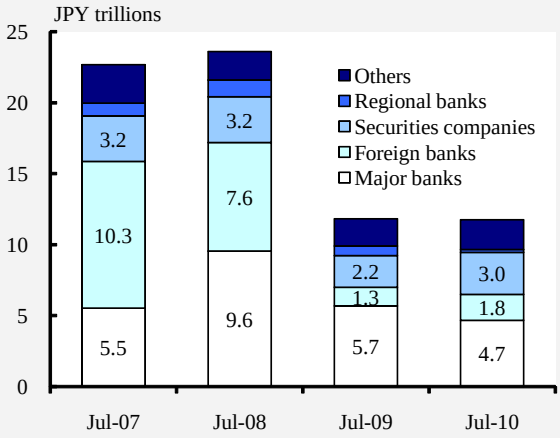
The Bank carried out the Tokyo Money Market Survey (August 2010) and released the survey results in December 2010 (see Chapter IV.A). In order to evaluate the functioning of money markets after the failure of Lehman Brothers Japan Inc., the survey examined trends in transactions of money markets such as the call and repo markets and changes in market participants' structure.

After the failure of Lehman Brothers Japan Inc., in the uncollateralized call market, funding by foreign banks decreased significantly reflecting the rise in concerns over counterparty risk for transactions with foreign banks. In addition, the amounts of JGB outright transactions decreased considerably as foreign hedge funds scaled down their positions in the JGB market. This led to a significant decrease also in the amount of repo transactions, most of which are used by securities companies for inventory financing and short covering. From summer 2010 onward, as the Bank has provided ample liquidity and opportunities for arbitrage have decreased under the low interest rate conditions, the amount outstanding in the uncollateralized call market has remained at a low level and that of GC transactions has decreased moderately in the repo market (charts 1 to 3 for Box 4). Meanwhile, a significant decline has also occurred in the number of market participants, mainly regional banks, regional banks II, and foreign banks, in both the uncollateralized call market and the repo market (Chart 4 for Box 4).

While the fiscal problem in Europe has worsened from spring 2010, the restoration or expansion of credit lines by Japanese financial institutions to foreign banks has been very limited (Chart 5 for Box 4). Although foreign banks recognized the necessity of raising funds stably in the Japanese yen market from a medium- to long-term perspective, they did not have much incentive to raise funds actively in the uncollateralized call market. This was because (1) they could raise funds stably at low cost in comparatively large amounts through currency swaps with their head offices and branches overseas, (2) they could obtain longer-term funds also through the Bank's money market operations, and (3) they scaled

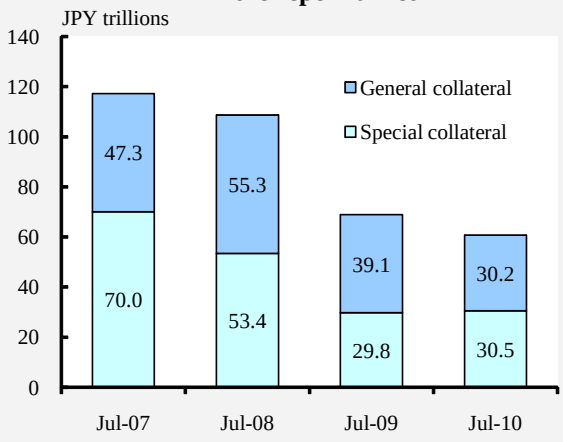
down the balance sheets of their branches in Japan in line with directions from their headquarters (Chart 6 for Box 4). As a result, the presence of foreign financial institutions in the call market has considerably diminished.

Chart 1 for Box 4: Amount outstanding in the uncollateralized call market



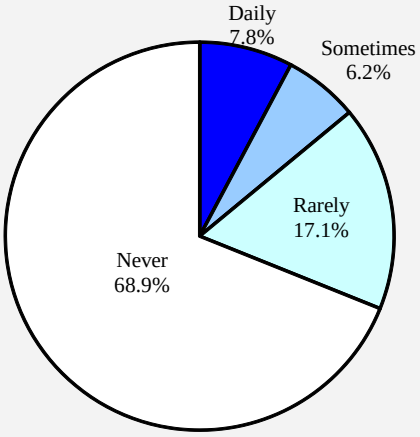
Note: Amount outstanding of the fund-raising side (transactions through *tanshi* companies and with direct dealing except those conducted in the same financial group).

Chart 2 for Box 4: Amount outstanding in the repo market



Note: Amount outstanding of the fund-raising side.

Chart 3 for Box 4: Stance toward arbitrage transactions



Note: Results of the question about transactions in the uncollateralized call market, "when you have an opportunity to execute an arbitrage transaction between the uncollateralized market and other money markets, do you conduct fund-raising in the uncollateralized call market?"

Chart 4 for Box 4: Number of participants in the repo and uncollateralized call markets

	Number of market participants		
	July 2008	July 2009	July 2010
Repo transactions	79	71	70
Uncollateralized call transactions	146	121	121

Note: Among all respondents, market participants are defined as those who have the amount outstanding of the repo or uncollateralized call transactions at the time of each survey (total number of respondents: 172 in July 2008 and 190 in July 2009 and July 2010).

Chart 5 for Box 4: Credit lines

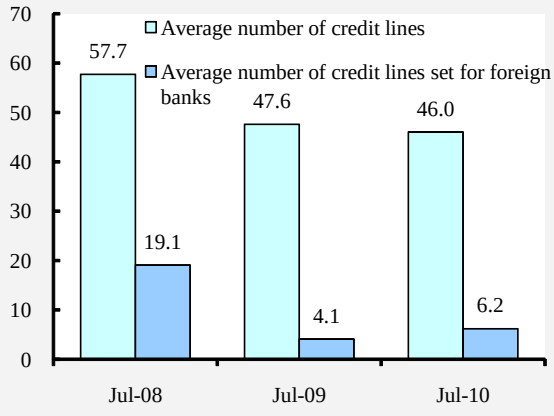
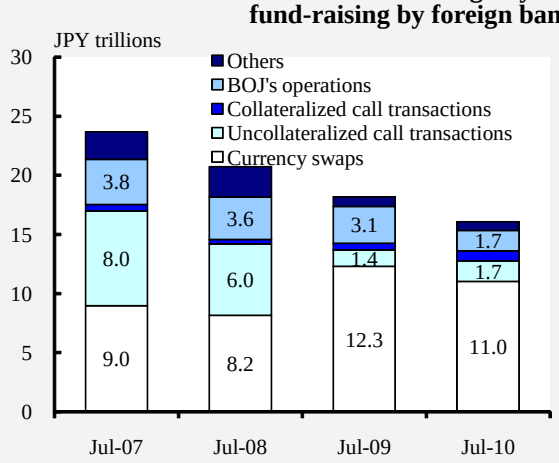


Chart 6 for Box 4: Amount outstanding of yen fund-raising by foreign banks



B. Japanese Government Bond Markets

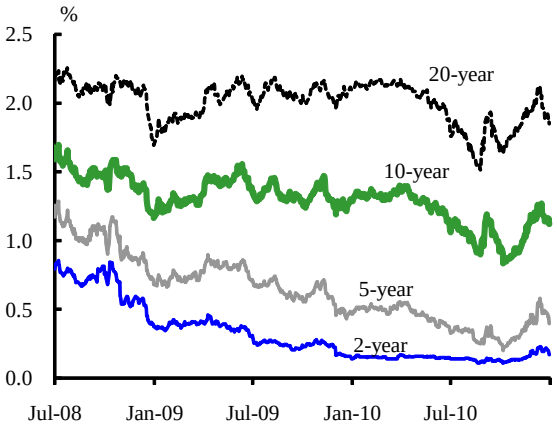
JGB yields declined rapidly from the middle of September to the beginning of October 2010, due to concerns over an economic slowdown at home and abroad and expectations for additional monetary easing. From November 2010, however, they rose significantly partly due to investors' position adjustments triggered by rises in U.S. long-term interest rates, in addition to subsiding pessimistic views about the U.S. economy and the global rise in stock prices. Overall, JGB yields showed large fluctuations.

Developments in JGB yields

Regarding developments in JGB yields during the second half of 2010, a declining trend from the first half of 2010 continued, reflecting concerns over an economic slowdown and weak stock prices. The yield on ten-year JGBs temporarily declined to a level below 0.9 percent (Chart 2-12). Later, JGB yields increased sharply, due to growing speculation about future large-scale fiscal spending and subsequently to investors' position adjustments for the period leading up to the semiannual book closings for the first half of the fiscal year. From the middle of September 2010, however, a declining trend in JGB yields reintensified, reflecting heightened expectations for additional monetary easing in Japan as U.S. long-term interest rates declined significantly.

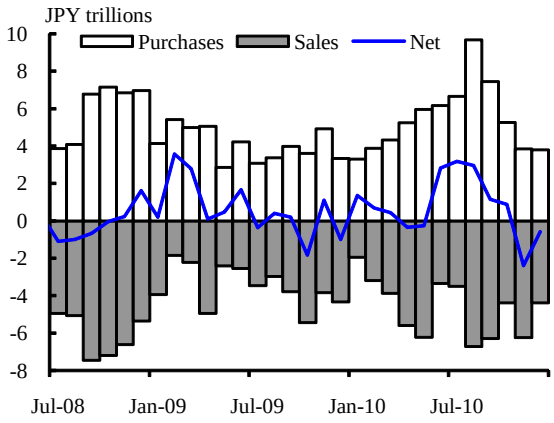
The declining trend in JGB yields then came to a halt, and in November 2010 they started rising sharply again. This was because upward pressure was exerted on JGB yields against a background in which pessimistic views about the U.S. economy subsided and stock prices at home and abroad showed steady developments. Moreover, U.S. long-term interest rates rose at a rapid pace, given the reduced expectations about the Federal Reserve's further easing after the FOMC meeting held in November 2010 and the extension of lower income tax rates for individuals that had been scheduled to expire at the end of 2010. This also became a factor contributing to a rise in JGB yields. While U.S. long-term interest rates had followed a declining trend, domestic investors, mainly major banks, had generally became more active in investing in U.S. Treasury securities[34] (Chart 2-13). This seemed to increase the comovement between U.S. and Japanese long-term interest rates.

Chart 2-12: JGB yields



Source: Japan Bond Trading.

Chart 2-13: Purchases and sales of foreign securities by banks



Source: Ministry of Finance Japan.

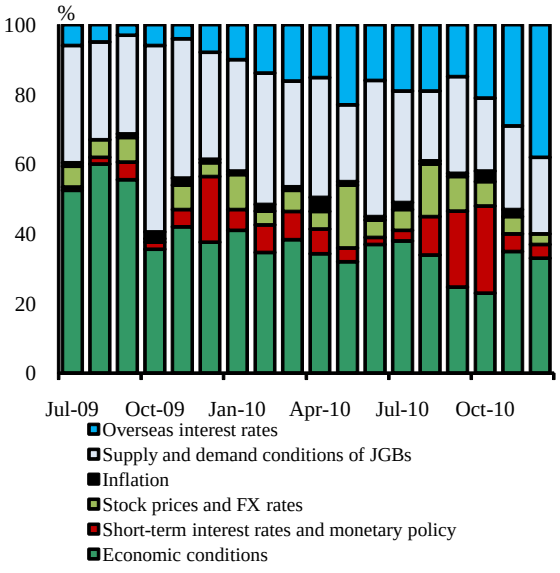
Factors behind such fluctuations in JGB yields could be confirmed through a market survey. The results of the survey indicated that in September and October 2010 many market participants focused on short-term interest rates and monetary policy as a factor causing

[34] Reporting banks were banks located in Japan and in principle authorized to conduct business in the Japan Offshore Market and included banks other than major banks, but the Locational International Banking Statistics for the end of September 2010 posted a record-high increase in gross external assets (claims on nonbanks of the United States and others) from the end of March 1990. The factor behind the increase seemed to be significantly higher investment in U.S. Treasury securities and MBSs by Japanese financial institutions, particularly major banks, with the strong expectation of a decline in long-term interest rates.

downward pressure on JGB yields (charts 2-14 and 2-15). This suggested that heightened expectations for additional monetary easing contributed to a further decline in JGB yields. Contrarily, from November 2010 -- as pessimistic views about the economy subsided -- economic conditions drew less attention as a factor causing downward pressure on JGB yields, while stock prices attracted greater attention as a factor causing upward pressure on JGB yields. Moreover, market participants started to consider overseas interest rates -- which had been previously identified as a factor causing downward pressure on JGB yields -- as a factor causing upward pressure on JGB yields. This implied that changes in the external environment such as a rise in U.S. long-term interest rates from November 2010 influenced a rebound in JGB yields.

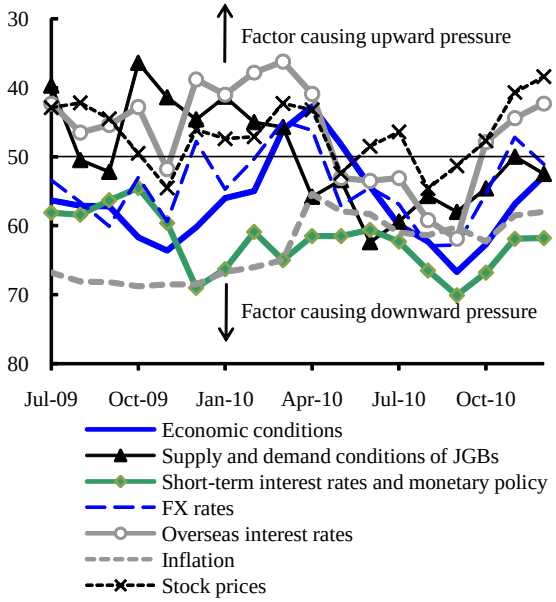
As the JGB yields rose, efforts to deal with losses and earn profits from the position through unrealized profits were widely observed, together with sales of JGBs to reduce risk in the portfolio. In these circumstances, term premiums, which had tightened following a decline in JGB yields, widened across maturities. This suggested that given the growing uncertainty regarding the interest rate level, large-scale position adjustments spread throughout the yield curve. (For information on the correlation between Japanese and U.S. long-term interest rates in terms of term premiums, see Box 5.)

Chart 2-14: Factors affecting JGB prices



Source: QUICK, "QUICK Survey System Report."

Chart 2-15: Directions of the effects on JGB yields



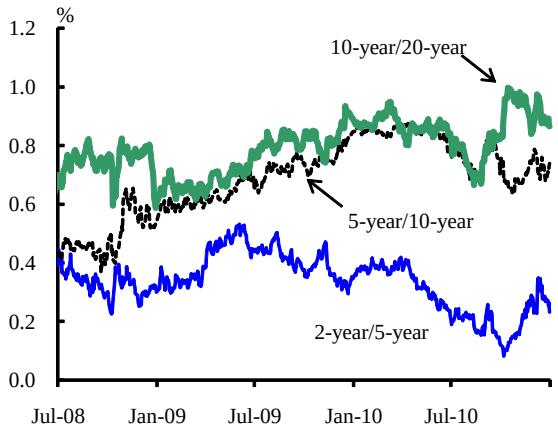
Note: Each factor is indexed with strong downward pressure=100, downward pressure=75, neutral/unknown=50, upward pressure=25, and strong upward pressure=0.
Source: QUICK, "QUICK Survey System Report."

JGB yield spreads by maturity

Looking at JGB yield spreads by maturity, the 2-5 year spread narrowed rapidly toward October 2010 (Chart 2-16). This was because investors shifted a large portion of funds from the short-term zone, with limited room for further declines, to the medium-term zone. The 2-5 year spread then widened at a rapid pace during the latter half of the period, as a result of position adjustments by investors, mainly major banks. In addition, a tightening trend in the 5-10 year spread became more evident toward October 2010. This indicated that investors increasingly purchased long-term JGBs with the aim of improving their investment performance, mainly reflecting expectations for additional monetary easing.

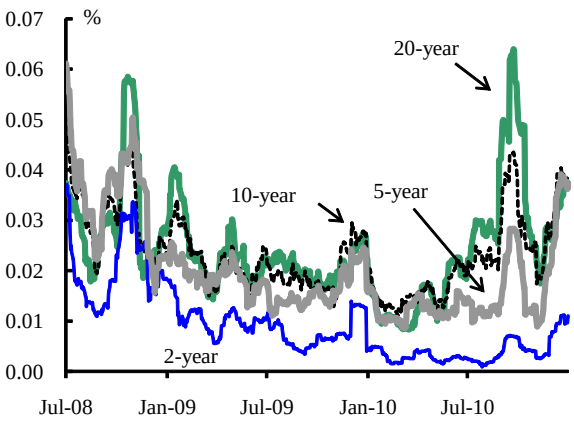
Meanwhile, the 10-20 year spread widened toward October 2010, showing movements that clearly differed from other spreads. Life and non-life insurance companies -- which had traditionally been major investors in super-long-term JGBs -- as well as investors such as major banks actively purchased super-long-term JGBs, such as 20-year JGBs, to enjoy a capital gain within a limited period. However, as concerns emerged in late August 2010 over the deterioration in future fiscal conditions, major banks and other investors increasingly reduced their holdings of super-long-term JGBs. In response, the volatility of these JGBs increased considerably, and this development continued to restrain purchases of these bonds (Chart 2-17). Somewhat idiosyncratic movements in the super-long-term JGBs contributed to different developments between 10-20 year spreads and other spreads.

Chart 2-16: JGB yield spreads



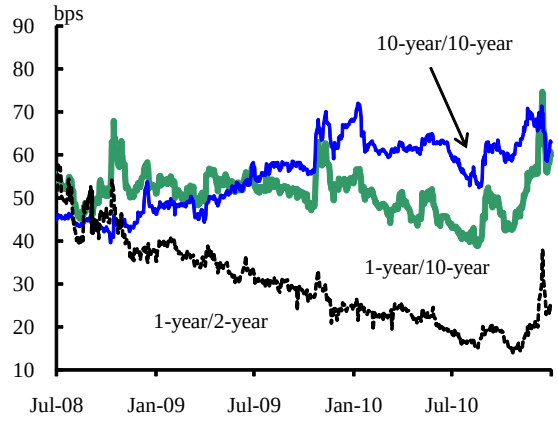
Sources: Japan Bond Trading; Bank of Japan.

Chart 2-17: Historical volatility of JGB yields



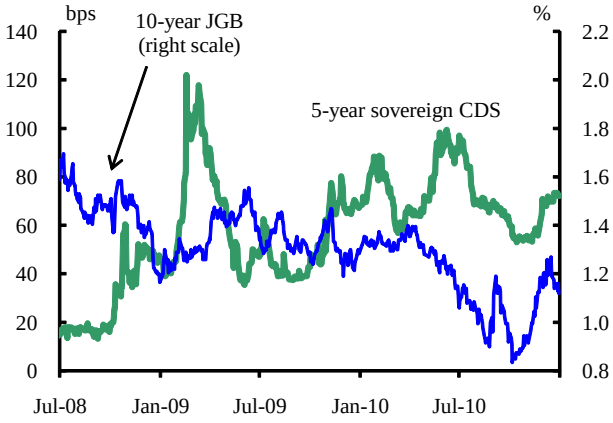
Note: Past 20 business days' standard deviation of daily yield changes.
Source: Bloomberg.

Chart 2-18: Implied volatility of yen swaptions



Note: *m*-year/*n*-year means the implied volatility of swaptions with *m*-year expiry period and *n*-year swap tenor.
Source: Bloomberg.

Chart 2-19: Japan's sovereign CDS premium and government bond yield



Sources: Bloomberg; Japan Bond Trading.

Developments in derivatives markets and sovereign risk

In derivatives markets, the volatility of swaptions, particularly of the longer-term ones, increased (Chart 2-18). This was because the historical volatility in the JGB cash market increased, as investors adjusted their positions due to an increase in long-term interest rates (Chart 2-17). In the swaption market, as with the cases seen in the second half of 2009, volatility increases as foreign investors build up their positions in view of the potential deterioration in the Japanese government's fiscal conditions. Developments in the second half of 2010, however, seemed to mainly reflect an increase in the historical volatility of long-term interest rates given the fact that the volatility of swaptions with shorter expiry period showed a relatively large increase, and this development could be viewed separately from concerns over the deterioration in fiscal conditions. In fact, Japan's sovereign CDS premiums did not show signs that transactions focusing on the heightened fiscal risk increased considerably (Chart 2-19).

Box 5: Correlations of the Term Premium between Japan and the United States

JGB yields increased from November toward the end of 2010, following the U.S. Treasury yields. Long-term bond yields in both Japan and the United States increased without any significant changes in inflation expectations. It is probable that both the expectations component of future real interest rates (the average of future short-term real interest rates),

and the term premium -- the reward for bearing uncertainty over long-term holdings of government bonds (the risk of price fluctuations) -- increased simultaneously in both Japan and the United States.[35]

To check this hypothesis, we estimate the term premium with the standard term structure model. We find that (1) although some deviations existed due to the decline in the term premium in Japan during the quantitative easing policy period, term premiums in both countries showed more or less similar dynamics; and (2) especially in the second half of 2010, term premiums showed quite similar movements, namely, a rather abrupt increase after a decrease in both countries[36] (Chart for Box 5).

Not a few believe that the international bond markets are segmented, and therefore bond yields tend to follow idiosyncratic country factors at least in the short run. The fact that the term premiums in both Japan and the United States show similar dynamics, however, implies that JGB yields are affected to some extent by not only expectations about Japan's monetary policy and inflation but also changes in the risk aversion of investors in the foreign bond markets.[37] The recent high similarity in the term premiums seems to be related to the following fact. As the U.S. long-term bond yields decreased in the second half of 2010, the expectation emerged that the low interest rate environment should be kept for an unprecedentedly long time temporarily, and the yen appreciated. The yen's appreciation was linked to Japan's monetary policy, significantly heightening domestic investors' expectations for additional monetary easing in Japan. Such expectations for additional monetary easing in Japan seemed to have subsided to some extent as the expectation for additional monetary easing abruptly disappeared in the United States. Thus, the fact that the uncertainty surrounding the future interest rate fluctuations -- namely, term premiums -- comoved seems related to the correlated expectations on the future monetary policy in both Japan and the United States.

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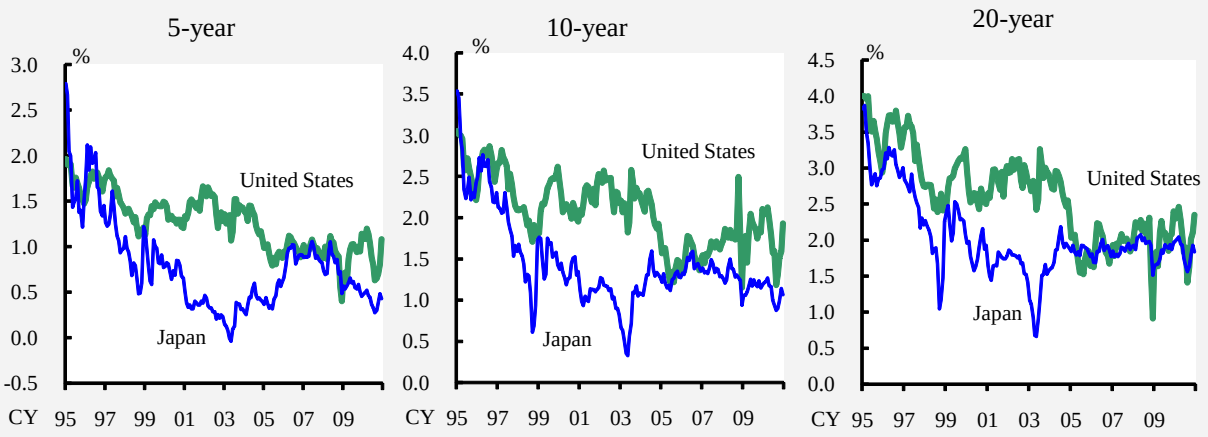
[35] Term premiums are also included in the OIS and the FF forward rates. It is not easy to completely separate the expectations component and term premiums even for short-term interest rates.

[36] We use the term premiums in Japan and the United States estimated in Kikuchi (2010a). Since the estimated models differ, the level of the term premium here differs from those in Chart 1-9, but the dynamics are quite similar.

[37] Jotikasthira, Le, and Lundblad (2010) report that long-term bond yields in different countries tend to show similar dynamics, through not only monetary policy but also correlations in the risk assessment of investors.

Chart for Box 5: Term premiums in Japan and the United States



Sources: Federal Reserve; Japan Bond Trading; Bank of Japan.

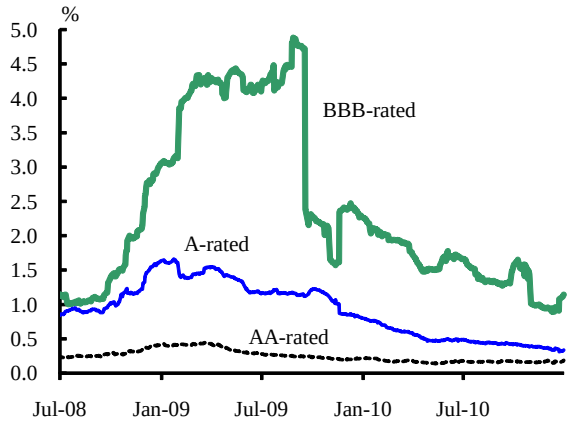
C. Credit Markets

In corporate bond markets, given investors' steady demand, credit spreads on corporate bonds with high ratings remained stable at low levels. On the other hand, credit spreads on corporate bonds with medium and low ratings, particularly those with relatively greater room for a decline in yields, were on a moderate decreasing trend. From November 2010, as specific conditions for outright purchases of corporate bonds became available in response to the introduction of the comprehensive monetary easing policy by the Bank, credit spreads -- particularly on corporate bonds with ratings and maturities that were subject to the Bank's purchases -- tightened further. Meanwhile, the environment for corporate bond issuance by firms generally remained favorable.

Secondary market for corporate bonds

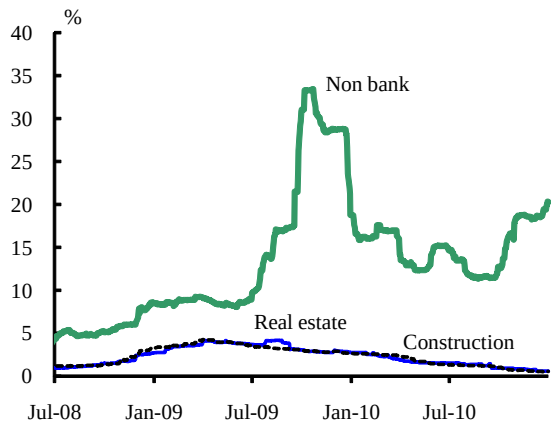
In the secondary market for corporate bonds, given investors' steady demand, credit spreads on corporate bonds with high ratings remained stable at low levels (Chart 2-20). On the other hand, as with corporate bonds with medium and low ratings, credit spreads were on a moderate decreasing trend, particularly corporate bonds with relatively wide spreads.

Chart 2-20: Corporate bond spreads by rating



Note: 3- to 7-year maturity. Corporate bond spreads are corporate bond yields minus 5-year JGB yields.
Source: Japan Securities Dealers Association.

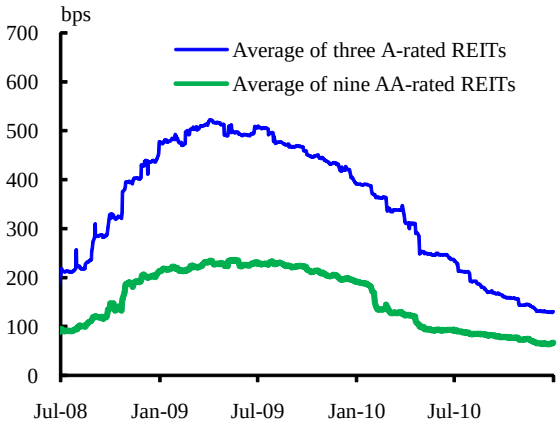
Chart 2-21: Corporate bond spreads by sector



Source: Bloomberg.

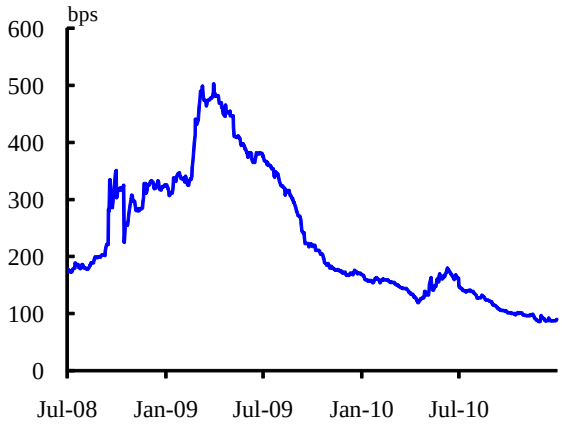
By sector, credit spreads on bonds of consumer finance companies widened due to the persistent concerns over an increase in excess interest repayment claims in addition to the effects of failure of some consumer finance companies (Chart 2-21). Credit spreads on bonds of other sectors, including REIT bonds and *samurai* bonds, were on a tightening trend (charts 2-22 and 2-23).

Chart 2-22: Spread on REIT bonds relative to JGBs



Source: Bloomberg.

Chart 2-23: Spreads on *samurai* bonds relative to JGBs

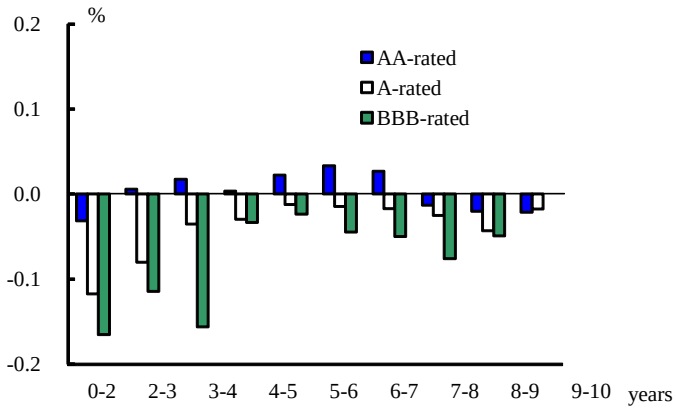


Sources: Bloomberg; Nomura Securities.

Immediately after the MPM held on October 4 and 5, 2010, at which the Bank decided to introduce the comprehensive monetary easing policy, market reactions were limited because ratings of corporate bonds subject to the Bank's purchases and details of the method of purchases were uncertain. From late October 2010, when specific conditions for outright

purchases of corporate bonds became available, however, credit spreads tightened on corporate bonds subject to the Bank's purchases -- particularly on those rated BBB to A with a short residual maturity (Chart 2-24). The effects of outright purchases of corporate bonds seemed to spill over to longer-term corporate bonds through investors' behavior of selling increasingly high-priced corporate bonds with a short residual maturity while purchasing corporate bonds with a longer residual maturity. Contrarily, the tightening of credit spreads on corporate bonds with high ratings was limited, as they had already been tight before the announcement of outright purchases of corporate bonds.

Chart 2-24: Changes in corporate bond spreads by rating and maturity



Note: Changes for November 2010. The *m*-*n* on the horizontal axis indicates that the maturity is equal to or longer than *m*-year and shorter than *n*-year.
Source: Japan Securities Dealers Association.

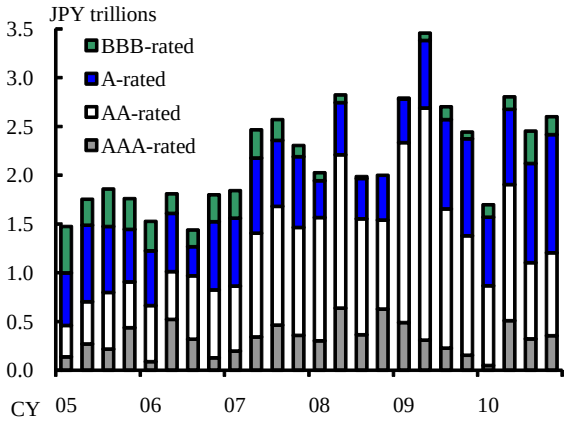
Meanwhile, after the Bank decided to introduce the comprehensive monetary easing policy, credit spreads on REIT bonds rated AA or higher that were subject to the Bank's purchases narrowed. In response, corporate bonds rated A or lower that were not directly subject to the Bank's purchases became relatively more attractive, and their credit spreads in the secondary market also tightened (Chart 2-22). (For information on the recent developments in the J-REIT market, see Box 7.)

Corporate bond issuance market

In the corporate bond issuance market, investors maintained their active stance on investing in corporate bonds, and market participants found that corporate bonds were becoming

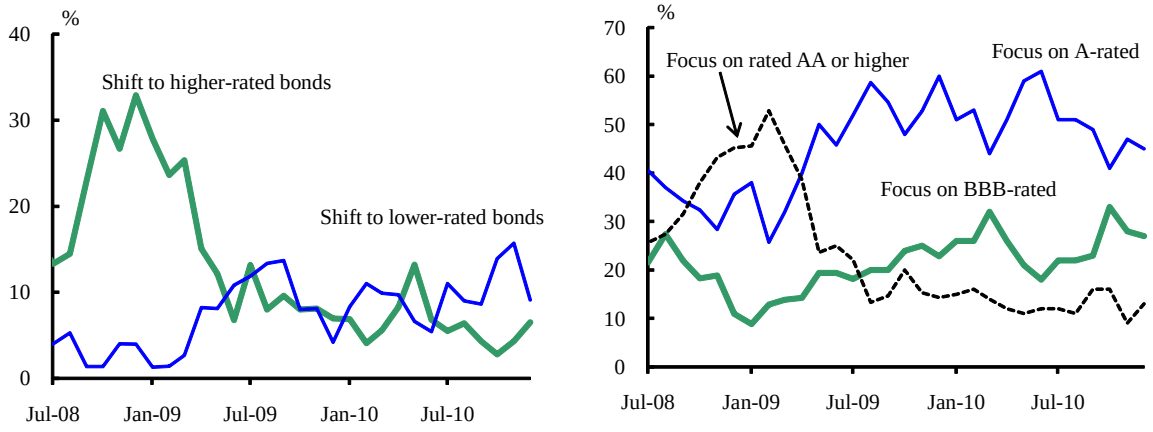
scarce given firms' sluggish demand for external funds. Under these circumstances, the environment for corporate bond issuance remained favorable (Chart 2-25).

Chart 2-25: Corporate bond issuance



Sources: Capital Eye; I-N Information Systems.

Chart 2-26: Japanese corporate bond investors' opinion survey



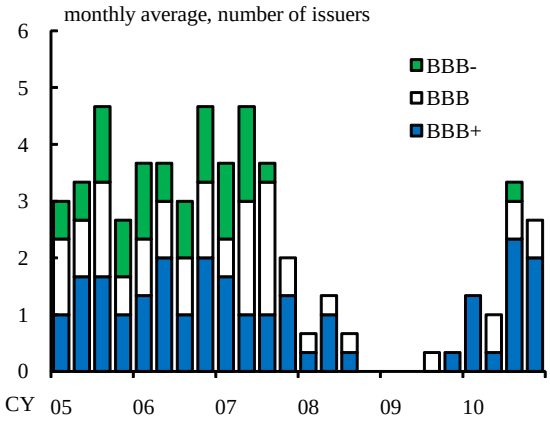
Source: QUICK, "QUICK Survey System Report."

Looking at an opinion survey of corporate bond investors for reference, the proportion of respondents shifting their investment to lower-rated bonds or showing interest in purchasing BBB-rated bonds increased again, after having decreased following the Greek shock in May 2010 (Chart 2-26). In response to investors' active stance, some firms that had temporarily postponed issuing corporate bonds since May 2010 resumed their issuance in the second half of 2010. Looking at individual issuances, there continued to be some notable issuances in which the amount exceeded the initial plan and the issuance spread was tight, and a

favorable environment for corporate bond issuance was observed. As for BBB-rated bonds, not only the amount issued but also the number of issuing firms recovered to close to the level seen before the Lehman shock in 2008 (Chart 2-27). In addition, among BBB-rated bonds, issuance occurred of bonds rated BBB- (a relatively low creditworthiness), indicating that issuance by a wider range of firms was gradually increasing.

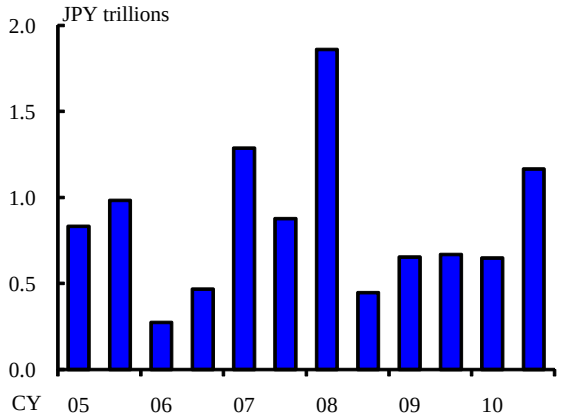
Investors temporarily had taken a cautious stance on investment in *samurai* bonds after the Greek shock. In the second half of 2010, however, investors' demand for these bonds recovered again, and issuing conditions remained favorable. The amount of *samurai* bonds issued in 2010 exceeded that of the previous year reflecting several factors (Chart 2-28). First, prices of *samurai* bonds remained undervalued compared to corporate bonds issued by domestic firms. And second, in some cases issuing firms such as financial institutions, given the series of financial crises experienced, started to issue bonds in markets other than their home country with the aim of diversifying their funding tools.

Chart 2-27: Number of issuers of BBB-rated corporate bonds



Note: Excluding bonds issued by banks, securities companies, and railway business, and those sold to individual investors.
Sources: Capital Eye; I-N Information Systems.

Chart 2-28: *Samurai* bond issuance



Source: I-N Information Systems.

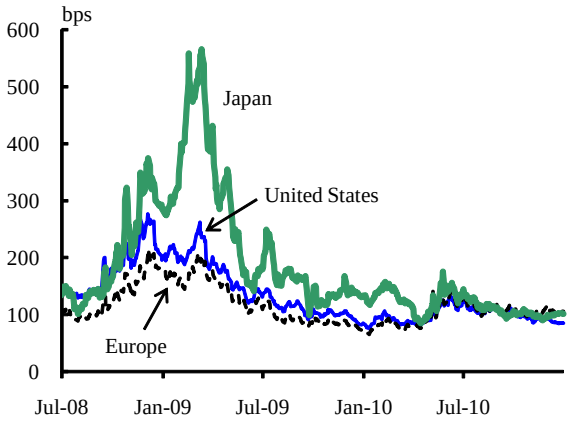
CDS premiums

CDS premiums decreased during the second half of 2010 (Chart 2-29). Although Japan's CDS premiums are known to be highly correlated with stock prices, the gap between developments in CDS premiums and stock prices widened in the second half of 2010, as

CDS premiums continued to decrease despite weak stock prices[38] (Chart 2-30).

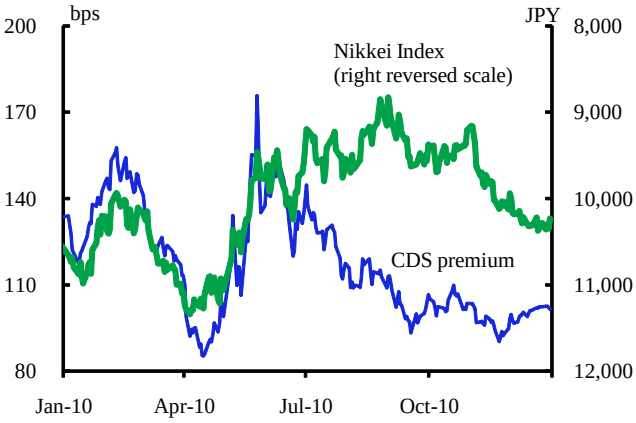
As the background to these developments, it was considered that while corporate bond spreads tightened further, investors, in the face of limited investment opportunities, assumed credit risks through investment in credit-linked notes with embedded CDSs. Foreign investors had expected corporate bond spreads to widen and bought protection, but they decided to sell the protection in order to deal with losses in view of the tightening of spreads in corporate bond markets. This development also seemed to be attributable to the decrease in CDS premiums.[39] (For information on factors behind the changes in CDS premiums, see Box 6.)

Chart 2-29: CDS indices



Note: CDX.NA.IG for the United States; iTraxx Europe for Europe; iTraxx Japan for Japan. 5-year.
Source: Markit.

Chart 2-30: CDS premium and stock price



Note: CDS premium is iTraxx Japan. 5-year.
Sources: Bloomberg; Markit.

Box 6: Factors behind the Changes in CDS Premiums

CDS premiums, financial variables reflecting firms' credit risks, fluctuate reflecting expected values and variances in future corporate profits. If the expected value increases, CDS premiums decrease because default risks of the firm abate. If the variance increases, on the other hand, the premiums increase because downside risks that induce the firm to default are anticipated. In this analysis, we take stock prices and implied volatilities of the

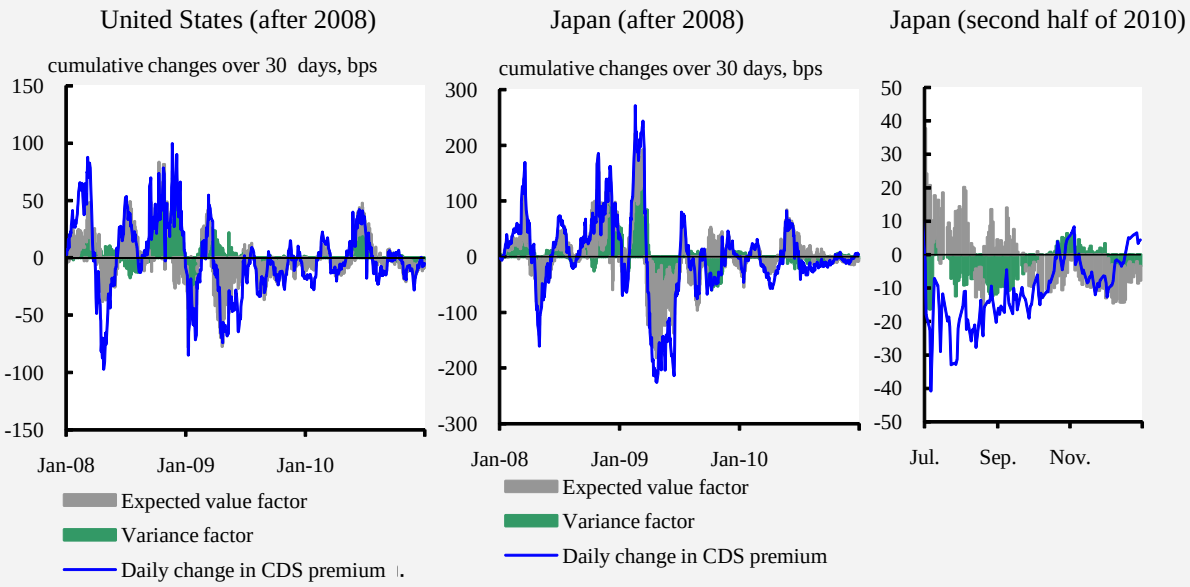
[38] For details on the correlation between CDS premiums and stock prices, see the Bank of Japan's August 2010 issue of the *Financial Markets Report* and Shino (2010b).

[39] In addition, the decrease in foreign CDS premiums also exerted downward pressure on Japan's CDS premiums.

stock prices as proxies for the expected value of profits and variance, respectively, and examine the effects of these factors on CDS premiums by using the Kalman filter.

Estimation results show that the expected value factor made a substantial contribution during the entire period in both Japan and the United States (Chart for Box 6). These results are consistent with the existing view that changes in CDS premiums and stock prices have a tendency to comove. Meanwhile, the variance factor made a relatively larger contribution when heightened downside risks that could trigger defaults were perceived by market participants.

Chart for Box 6: Factors affecting changes in CDS premiums



Note: 5-year.
Sources: Bloomberg; Markit; Bank of Japan.

Looking at the United States, the variance factor made a larger contribution immediately after the Lehman shock in 2008 and the Greek shock in May 2010. On the other hand, the estimation results in Japan showed a certain contribution by the variance factor in spring 2009. This reflected the fact that market participants were concerned about the deterioration in firms' funding availability and in the environment surrounding corporate profits at the first fiscal year-end after the Lehman shock. Another observation is that around summer 2010 CDS premiums decreased even when the expected value factor exerted upward pressure on the premiums. Such a result is consistent with the fact that, as noted earlier, the

developments in CDS premiums moved differently from those in stock prices as investors took on credit risks by selling CDS protection, based on their perception that corporate bonds were becoming scarce.

D. Stock Markets

Although U.S. stock prices showed a clear upward trend from around September 2010, the upward momentum of Japanese stock prices continued to be constrained partly by the downward pressure of the yen's appreciation. After the FOMC meeting held in November 2010, the yen depreciated somewhat, and risky asset prices rose further against the background of the improvements in business sentiment in the United States. In response, Japanese stock prices rose at a relatively faster pace. Meanwhile, the Tokyo Stock Exchange REIT Index rose significantly from October 2010, as the Bank's decisions on conditions for outright purchases under the introduction of the comprehensive monetary easing policy increased investors' confidence.

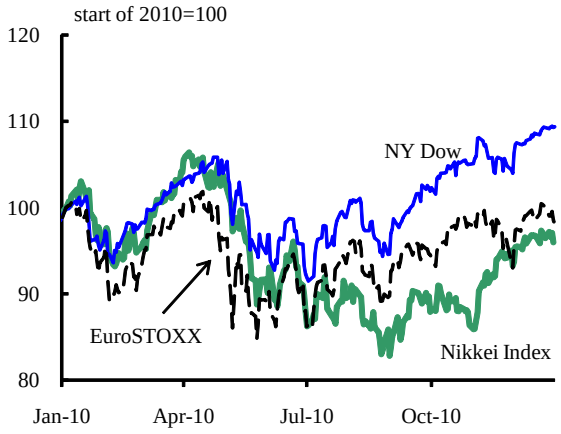
Developments in stock prices

Japanese stock prices followed a declining trend until around August 2010, due to the appreciation of the yen in addition to weak U.S. and European stock prices driven by concerns over the U.S. economic slowdown (charts 2-31 and 2-32). Japanese stock prices then showed a recovery trend, as U.S. stock prices started to rise against the background of the heightened expectation of continued low interest rates and market participants perceived the FX intervention in September 2010 as a positive factor. Overall, however, Japanese stock prices remained weaker than in the United States and Europe and lagged behind. This seemed to be because the yen appreciated further reflecting heightened expectations for additional monetary easing in the United States.

After the FOMC meeting held in November 2010, however, the U.S. dollar started to appreciate against the yen, and the environment surrounding stock prices became directly susceptible to the favorable external environment such as the rise in U.S. stock prices. Examining the factors causing changes in stock prices, market participants in the stock markets became deeply aware of FX rates as a factor causing downward pressure on stock

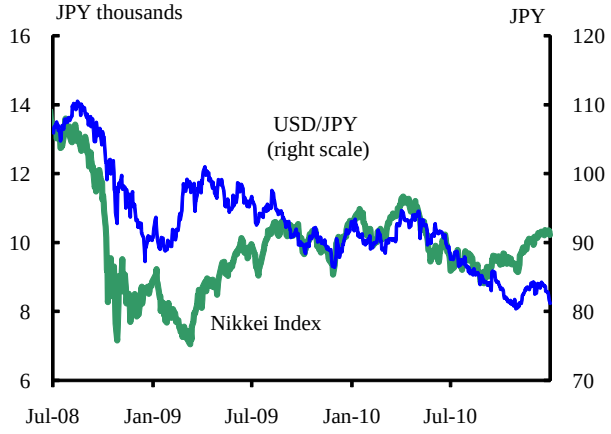
prices from August to around October 2010, when the yen appreciated (charts 2-33 and 2-34). From November 2010, when the yen started to depreciate against the dollar, however, FX rates began to draw attention as a supportive factor for stock prices. In addition, from the end of October 2010 it gradually became evident that corporate results of Japanese firms for the July-September 2010 quarter were generally steady, although the external environment surrounding corporate profits was severe due to the yen's appreciation (Chart 2-35). As a result, overly pessimistic views about corporate profits subsided, and this also seemed to have worked as a supportive factor for stock prices.

Chart 2-31: Stock indices



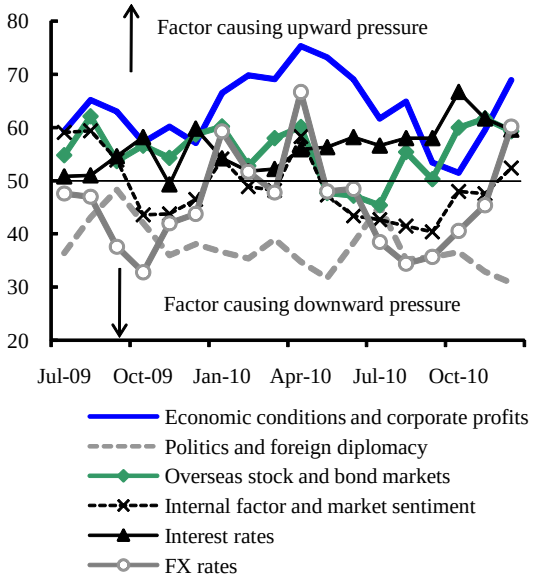
Source: Bloomberg.

Chart 2-32: Stock price and FX rate



Source: Bloomberg.

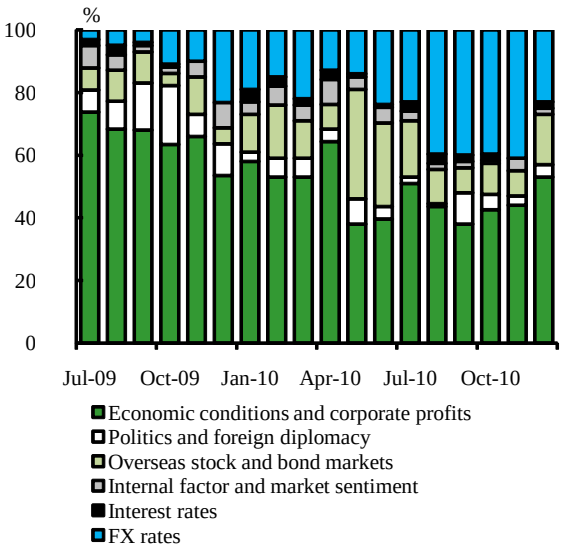
Chart 2-33: Directions of the effects on stock prices



Note: Each factor is indexed with strong upward pressure=100, upward pressure=75, neutral/unknown=50, downward pressure=25, and strong downward pressure=0.

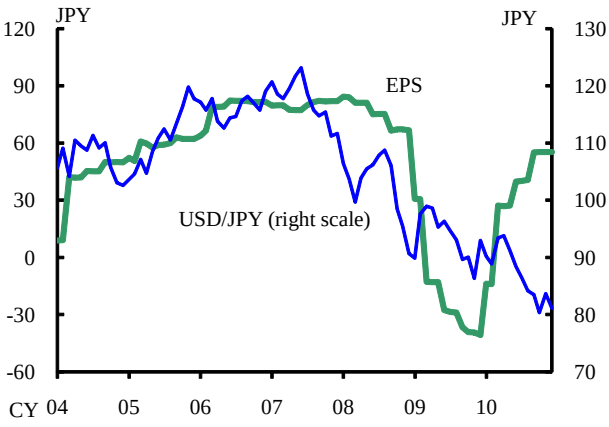
Source: QUICK, "QUICK Survey System Report."

Chart 2-34: Factors affecting stock prices



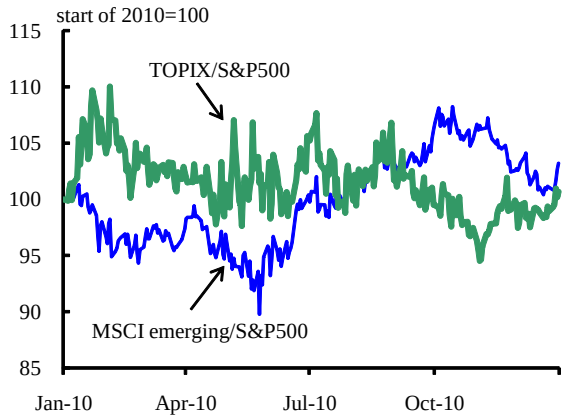
Source: QUICK, "QUICK Survey System Report."

Chart 2-35: Corporate profits and FX rates



Note: Earnings per share (EPS) means the latest twelve months' records of TOPIX components.
Source: Bloomberg.

Chart 2-36: Relative stock prices



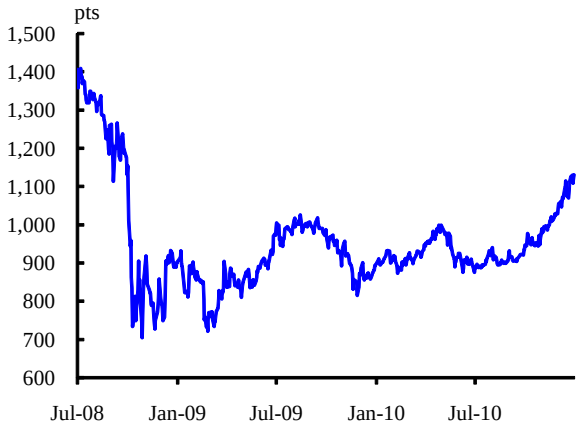
Note: Denominated in U.S. dollars.
Source: Bloomberg.

Furthermore in stock markets of emerging economies where extremely active capital inflows had been seen thus far, investors were concerned about the high level of stock prices and monetary tightening by authorities in these economies. In response, investors appeared to increase their investment in Japanese stocks to some degree, as Japanese stock prices clearly lagged behind. Looking at developments in stock prices of emerging economies and Japan relative to U.S. stock prices, it seemed that investors preferred to invest in emerging economies with high growth prospects, but were relatively reluctant to invest in Japanese stocks that were negatively affected by the yen's appreciation (Chart 2-36). However, such developments were temporarily reversed after the FOMC meeting held in November 2010.

Turning to REITs, investment unit prices (the equivalent of stock prices) rose significantly from October 2010, as the Bank's decisions on details of asset purchases under the introduction of the comprehensive monetary easing policy increased investors' confidence (Chart 2-37). It was considered that a rise in unit prices of REITs due to the decision on the Bank's purchases would act as a catalyst, that is, further improvements in funding conditions in this sector would promote the acquisition of real estate, eventually leading to an enhancement of the real estate markets. Furthermore, there seemed to be capital inflows to REITs with medium and low ratings that were not directly subject to the Bank's purchases, through investment trusts, and a wide range of REITs was purchased. Reflecting

these developments, the Tokyo Stock Exchange REIT Index followed an increasing trend, and in particular, the pace of increase accelerated from November 2010. (For information on the recent developments in the REIT market, see Box 7.)

Chart 2-37: Tokyo Stock Exchange REIT Index



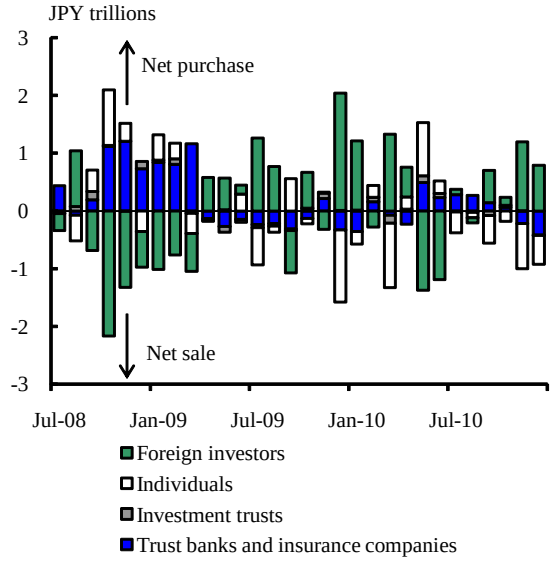
Source: Bloomberg.

Stock trading activity by type of investor and equity financing

Looking at stock trading by type of investor, foreign investors did not make stable purchases of Japanese stocks until October 2010, although their risk-taking stance recovered gradually (Chart 2-38). From November 2010, investment by foreign investors recorded large net purchases, but it was considered that main purchasers continued to be short-term investors -- for example, hedge funds sought capital gains within a limited period. Meanwhile, the investment stance of individual investors remained unchanged: in view of foreign investors' investment stance, they registered net sales when stock prices rose, and net purchases when stock prices fell.

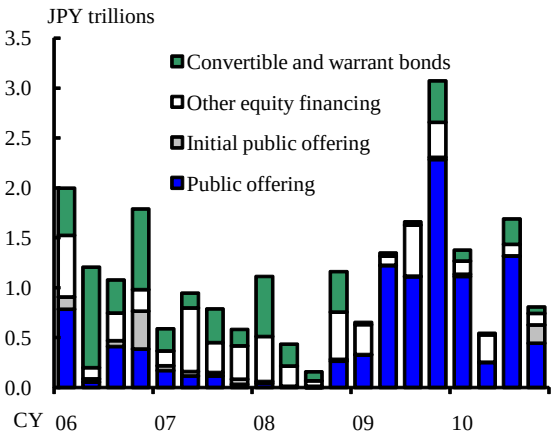
Equity financing through public offerings in the July-September 2010 quarter increased from the previous quarter, driven by large-scale equity financing by some firms. Nonetheless, firms' demand for external funds was generally weak, and equity financing remained at a low level throughout the second half of 2010 (Chart 2-39). Meanwhile, equity financing through initial public offerings (IPOs) continued to be sluggish.

Chart 2-38: Japanese stock trading by type of investor



Note: Data include both spot and futures transactions.
Sources: Osaka Securities Exchange; Tokyo Stock Exchange.

Chart 2-39: Equity financing



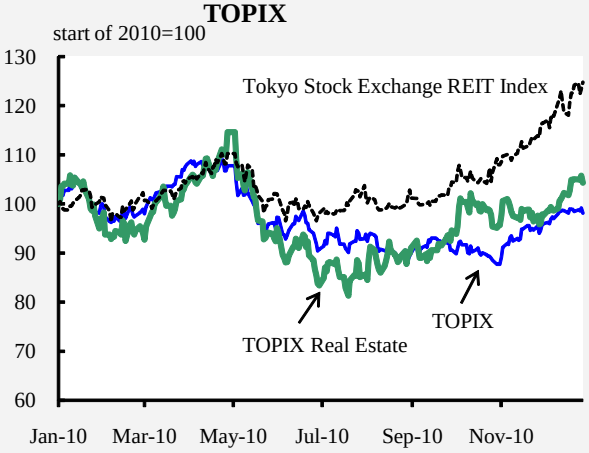
Note: "Other equity financing" includes allotments to third parties and existing shareholders.
Source: QUICK.

Box 7: Recent Developments in the J-REIT Market

The Tokyo Stock Exchange REIT Index was on a moderate increasing trend from the middle of 2010 and rose further after the Bank's announcement of the comprehensive monetary easing policy in October 2010 (Chart 2-37). Its performance relative to the Tokyo Stock Price Index (TOPIX) and the Tokyo Stock Exchange Real Estate Index showed further improvement after the announcement (Chart 1 for Box 7).

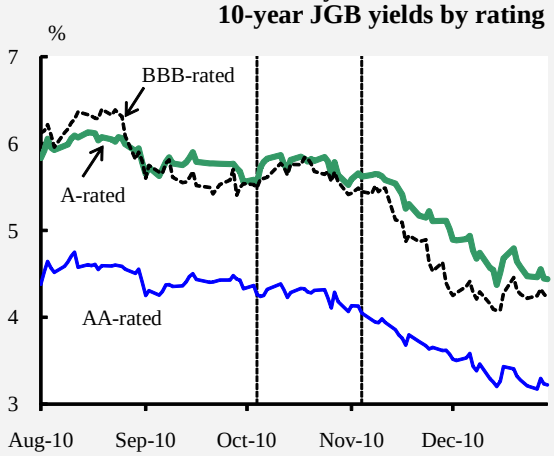
With regard to the performance by credit rating, an immediate reaction after the announcement was observed in J-REITs rated AA, that is, there was a rise in the investment unit price and tightening in the spread between J-REIT dividend yields and ten-year JGB yields (Chart 2 for Box 7). Given the fact that the Principal Terms and Conditions for Purchases of ETFs and J-REITs was not released at the time of the announcement, it is understood that investors first purchased higher-rated (AA) J-REITs based on eligibility standards for bonds issued by real estate investment corporations stated in the Bank's Guidelines on Eligible Collateral ("creditworthiness and other relevant factors such as being rated AA or higher by an eligible rating agency").

Chart 1 for Box 7: Tokyo Stock Exchange REIT Index, TOPIX Real Estate, and TOPIX



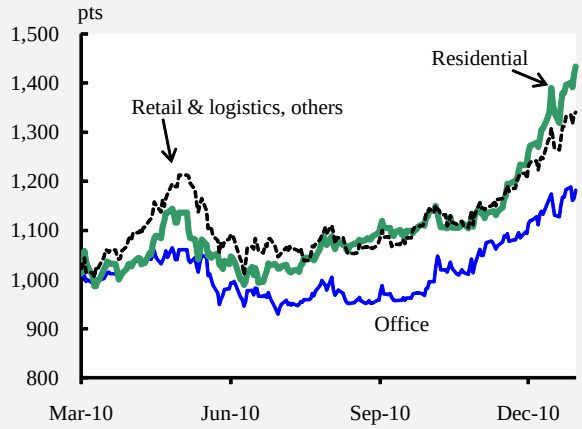
Source: Bloomberg.

Chart 2 for Box 7: Spreads between J-REIT dividend yields and 10-year JGB yields by rating



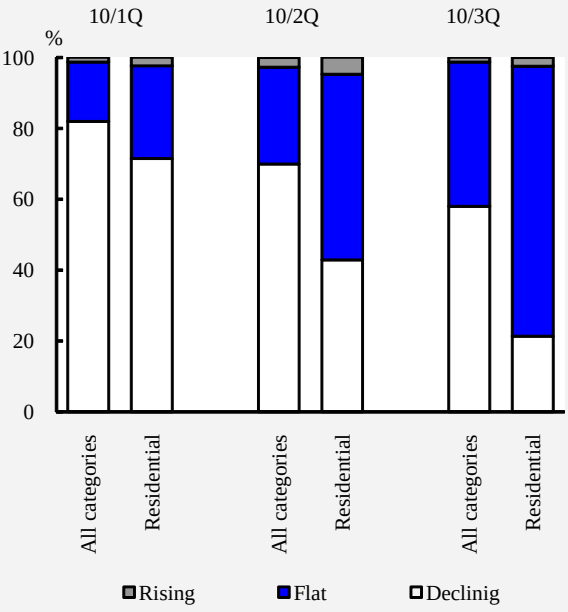
Note: Among 35 J-REITs in the Tokyo Stock Exchange REIT Index, 30 J-REITs for which the credit rating can be confirmed are summed up. The vertical lines indicate the date when the comprehensive monetary easing policy was decided (October 5, 2010) and the date when details of J-REIT purchases were decided (November 5, 2010).
Sources: Bloomberg; Japan Bond Trading.

Chart 3 for Box 7: Tokyo Stock Exchange REIT Property Sector Index Series



Source: Bloomberg.

Chart 4 for Box 7: Land prices



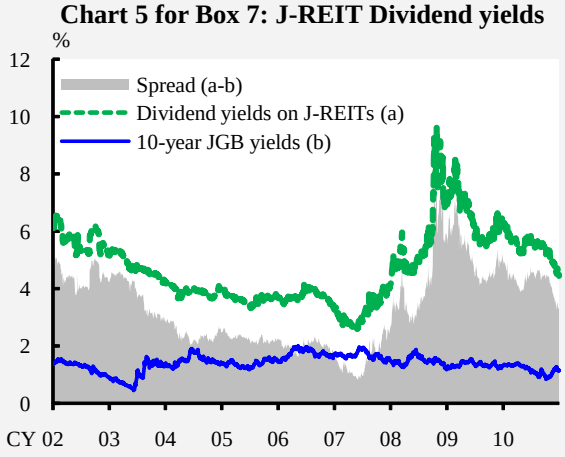
Note: Share of the regions in which land prices were rising (flat or declining) from the previous quarter.
Source: Ministry of Land, Infrastructure, Transport and Tourism.

As for the performance by property sector ("office," "residential," and "retail & logistics, others"), the Tokyo Stock Exchange REIT Office Index outperformed the other sectors

immediately after the announcement (Chart 3 for Box 7). The rise could reflect the fact that the percentage of AA-rated investment equities in the Tokyo Stock Exchange REIT Office Index was higher than other property sectors. Subsequently, the Tokyo Stock Exchange Residential Index experienced a more significant rise than other indices, presumably reflecting a slowdown in the pace of decline in residential land prices (Chart 4 for Box 7).

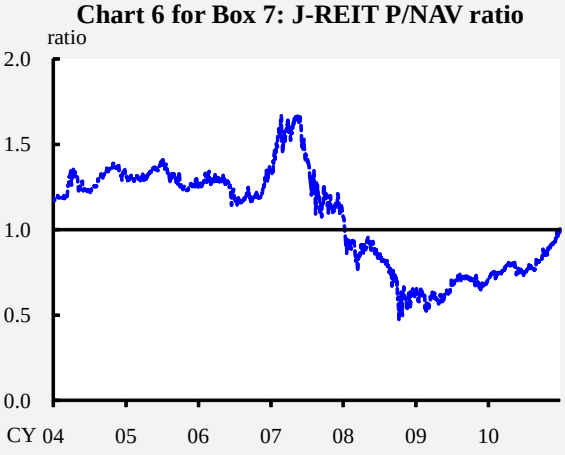
Under these circumstances, J-REIT dividend yields are on a moderate decreasing trend, but the spreads against ten-year JGB yields remained at around 3.5 percent (Chart 5 for Box 7). Although the price to net asset value (P/NAV) ratio stayed below one from the beginning of 2008, the P/NAV ratio has now risen to around one due to the rise in the investment unit price (Chart 6 for Box 7).[40]

Chart 5 for Box 7: J-REIT Dividend yields



Source: Association for Real Estate Securitization.

Chart 6 for Box 7: J-REIT P/NAV ratio



Source: Association for Real Estate Securitization.

E. Foreign Exchange Markets

Until around early November 2010, the U.S. dollar was sold due to a decline in U.S. Treasury yields, as expectations for additional monetary easing in the United States grew significantly. The yen appreciated to the 80.0-80.5 yen level for the first time in about 15 and a half years. Thereafter, reflecting the reduced expectations for additional monetary

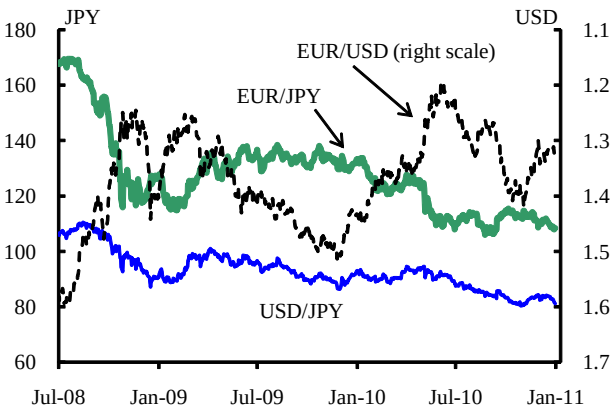
[40] The P/NAV ratio (investment unit price/{[net asset value per unit - dividend per unit] + [appraisal value per unit at quarter-end - book value per unit at quarter-end]}) is the investment unit price divided by the net asset value (NAV) per unit. The NAV is the asset value remaining after all debts are paid, and should reflect the breakup value of a REIT. In theory, if the P/NAV ratio of a REIT is below one, an investor can benefit from acquiring and then selling off all of its assets.

easing and the subsequent rise in U.S. Treasury yields, the dollar started to appreciate somewhat, and the view that the dollar would only move in the direction of the depreciation became less prevalent.

Developments in FX rates

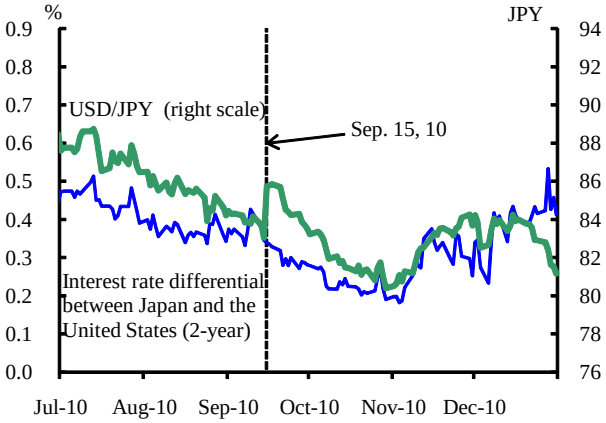
As mentioned in the previous issues of the *Financial Markets Report*, the U.S. dollar/yen exchange rate continued to comove with the interest rate differential between Japan and the United States. During the second half of 2010, the depreciation of the dollar and the subsequent rebound were the major developments[41] (charts 2-40 and 2-41).

Chart 2-40: Nominal exchange rates



Source: Bloomberg.

Chart 2-41: Interest rate differential between Japan and the United States and U.S. dollar/yen exchange rate



Source: Bloomberg.

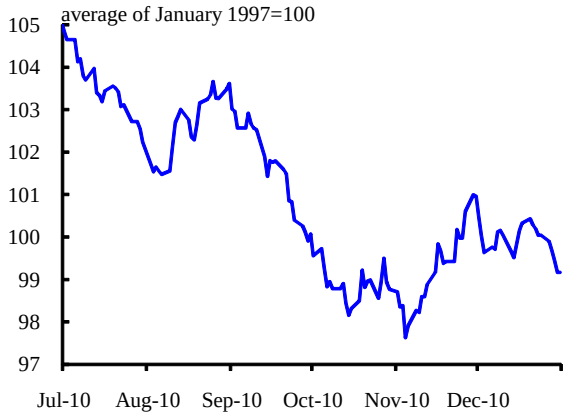
These developments occurred against the background of speculation regarding additional monetary easing in the United States and ensuing changes in U.S. Treasury yields. While deterioration in U.S. economic indicators heightened concerns over an economic slowdown around August 2010, the communication regarding additional monetary easing generated expectations for further easing. Such heightened expectations for additional monetary easing and the ensuing decline in U.S. Treasury yields led the U.S. dollar's depreciation to become a major trend in the market. The dollar's effective exchange rate had depreciated

[41] For information on the relationship between the interest rate differential at home and abroad and FX rates, see "Box 10: Interest Rate Differential at Home and Abroad and Foreign Exchange Rates" in the Bank of Japan's August 2010 issue of the *Financial Markets Report*, and "Box 2: Carry Trade" in the Bank's February 2010 issue of the *Financial Markets Report.*

rapidly since the end of August 2010, and the dollar moved only in the direction of the depreciation against a wide range of currencies including emerging currencies as well as major ones (Chart 2-42). For example, the euro, which had depreciated significantly following the Greek shock in May 2010, was bought back rapidly against the dollar.[42] In these circumstances, the dollar followed a depreciating trend against the yen, and on November 1, 2010 the yen appreciated to the 80.0-80.5 yen level for the first time in about 15 and a half years.

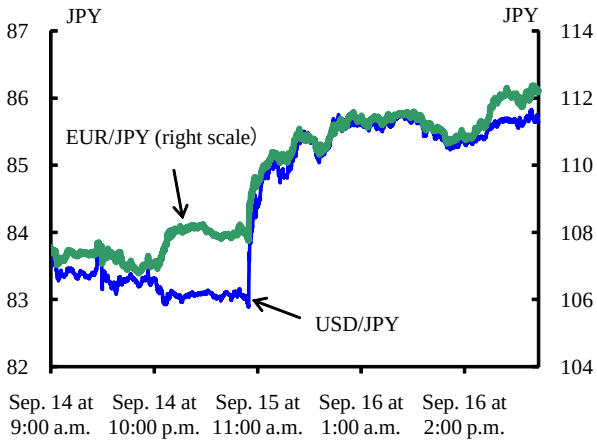
Meanwhile, as the yen appreciated to a level below 83 yen against the U.S. dollar on September 15, 2010, the government and the Bank conducted FX intervention for the first time in about six and a half years. In response, the yen depreciated to the 85-86 yen level (charts 2-41 and 2-43). From November 2010, U.S. Treasury yields rose, given that in the United States economic indicators showed steady developments while expectations for additional monetary easing expectations subsided, and the extension of lower income tax rates for individuals was decided. This led to buybacks of the dollar against a number of currencies, and the yen depreciated to the 84-85 yen level. Toward the end of 2010, as movements in U.S. long-term interest rates regained stability to some extent, the dollar/yen exchange rate generally stayed within a certain range.

Chart 2-42: Nominal effective exchange rate of the U.S. dollar



Source: Federal Reserve.

Chart 2-43: Intra-day exchange rates (September 14-16, 2010)



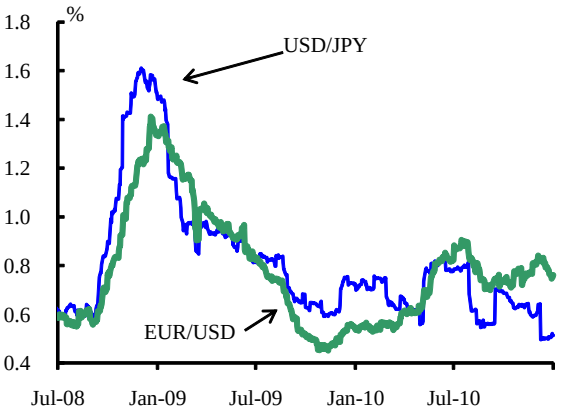
Source: Bloomberg.

[42] The completion of the stress test exercise conducted on European financial institutions without any major disruption eased concerns over the fiscal problem in Europe, and positive economic indicators were released in Germany. Reflecting these developments, the U.S. dollar depreciated to the level prior to the Greek shock against the euro.

FX options markets

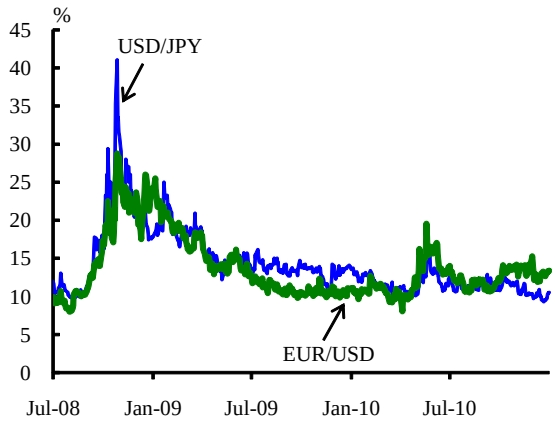
As historical volatility of the U.S. dollar/yen remained at a relatively low level and FX intervention was conducted, the view that the risk of a potentially sharp appreciation of the yen had abated became widespread (Chart 2-44). In response, in FX options markets, implied volatility of the dollar/yen was on a decreasing trend (Chart 2-45). Looking at the risk reversal, the dollar put-over position -- which indicates concerns over the risk of a sudden appreciation of the yen -- tightened to close to zero (Chart 2-46). Meanwhile, implied volatility of the euro/dollar generally followed historical volatility in the spot market and tended to increase. Regarding the risk reversal, the dollar call-over position increased, reflecting investors' heightened concerns over the depreciation of the euro on the back of the resurgence of the fiscal problem in Europe.

Chart 2-44: Historical volatility



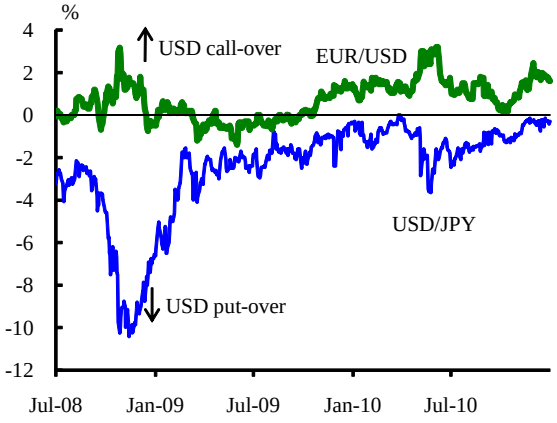
Note: Past 60 days' standard deviation of daily rate changes.
Source: Bloomberg.

Chart 2-45: Implied volatility



Note: 1-month.
Source: Bloomberg.

Chart 2-46: Risk reversal



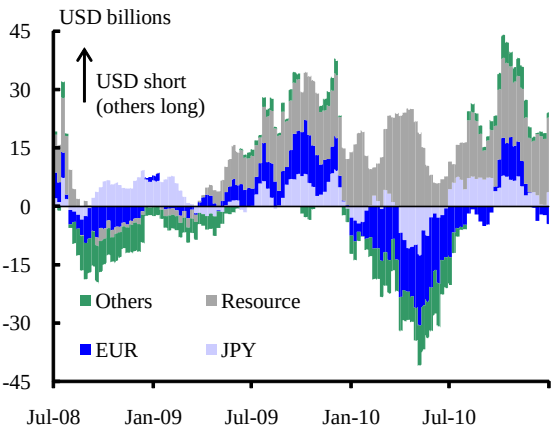
Note: 1-month.
Source: Bloomberg.

Speculators' positions and Japanese retail investors' FX trading

The International Monetary Market (IMM) futures net positions of noncommercial investors showed that speculators rapidly increased their short positions in the U.S. dollar against other currencies, reflecting the depreciation of the dollar during this period (Chart 2-47). In particular, as investors' risk tolerance increased, they strongly preferred currencies of resource-rich countries with high yield differentials relative to the United States and favorable economic fundamentals. Moreover, for the euro, speculators increased and decreased their net short positions in the dollar, in tandem with the alleviation and resurgence of concerns over problems in peripheral European countries.

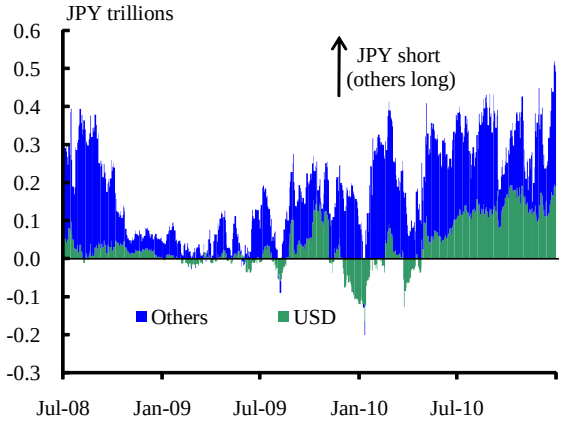
Looking at Japanese retail investors' trading behavior, FX margin traders continued to take contrary positions and unwind these positions (Chart 2-48).

Chart 2-47: IMM futures net position against the U.S. dollar



Note: "Resource" consists of CAD, AUD, NZD, and MXN.
"Others" consists of GBP and CHF.
Source: Bloomberg.

Chart 2-48: Trading volume of FX margin trading on the Tokyo Financial Exchange



Note: Net long position of "others" and "USD" against the yen (excluding market makers).
Source: Tokyo Financial Exchange.

III. Points to Be Noted in the Financial Markets for the Foreseeable Future

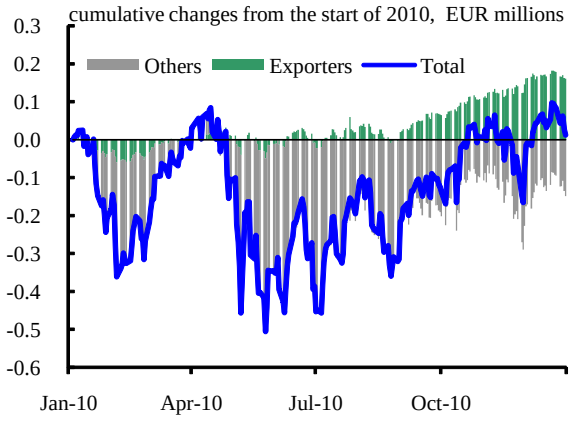
Since the end of 2010, financial markets at home and abroad have regained stability compared to some time ago. This is because uncertainties heightened by the fiscal problem in Europe have abated to some extent in response to a series of policy responses, and drastic changes caused by fluctuations in the economic outlook and the speculation regarding additional monetary easing in the United States have diminished. Among market participants, however, both relief resulting from the subsiding pessimistic views about an economic slowdown and concerns over risk factors for the outlook remain. Financial markets are likely to remain somewhat nervous for the time being, as market participants are sensitive to indicators of the real economy and macroeconomic policies in countries around the world.

The following three factors may have significant effects on the international financial markets in the future: (1) accumulation of risks of a reversal resulting from an increase in capital inflows to emerging economies and commodity markets; (2) sovereign risk; and (3) uncertainty regarding the outlook for the U.S. economy.

Regarding the first factor, the current situation should be taken into account: market participants have factored in the consideration that emerging economies appear to be the driving force for the global economy. For example, looking at changes in European stock prices by industry during the second half of 2010, stock prices of exporters, such as "automobiles & parts" and "chemicals," rose significantly (Chart 3-1). These industries are believed to capture demand from emerging economies, and the rise in their stock prices may have contributed to the steady developments in European stock markets as a whole, despite the resurgence of the fiscal problem in Europe. Given this point, it is possible that a disruption in emerging economies will have more significant effects on developed economies than in the past. As mentioned earlier, the prolonged low interest rate environment in developed economies has been causing capital inflows to emerging economies. It is natural for capital to flow into the emerging economies that are expected to produce high returns with a relatively high growth rate. Nonetheless, if capital flows to emerging economies accelerate accompanying investors' herding behavior, the risk of a

concurrent reversal of capital flows triggered by events will increase.[43] In case of a reversal of capital flows, given the increased comovement of the international financial markets including the financialization of commodities, the risk of volatility in the financial market as a whole has grown.

Chart 3-1: Cumulative changes of European stocks from the start of 2010



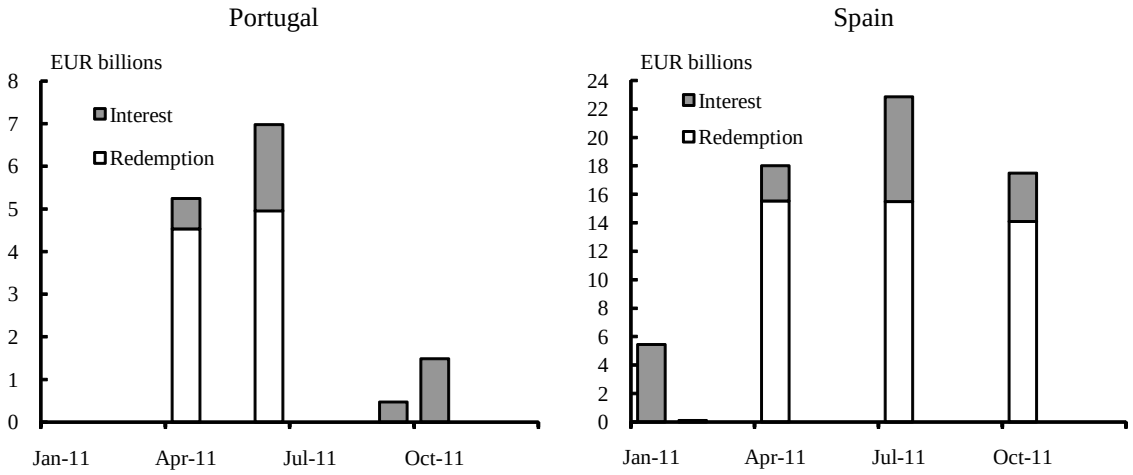
Notes: 1. Cumulative change in market capitalization of the EuroSTOXX.
2. Exporters indicate the sum of chemicals, industrial goods & services, and automobiles & parts.
Source: Bloomberg.

With regard to the second factor, sovereign risk, there are concerns over the fiscal problem in peripheral European countries and its contagion. A rapid deterioration in this problem has been avoided owing to the further development of a safety net, such as the establishment of the European Financial Stabilisation Mechanism, and steady economic developments in developed economies including Germany. Nevertheless, market participants are fairly concerned, as the structural economic and financial problems in Europe are unlikely to be resolved quickly and large-scale redemptions of government securities will take place in peripheral European countries from spring 2011 (Chart 3-2). At the moment, although market participants have a certain degree of confidence in European core countries' capacity

[43] In fact, as seen in the Mexican peso crisis in 1994, the Argentine peso crisis in 2001, and the Asian currency crisis in 1997, a sudden stop, in which asset prices and FX rates decline significantly all at once, repeatedly occurred in emerging economies. These are typical examples of the materialization of a tail risk. Such a risk rarely materializes, but once it does it has a significant impact.

to absorb risks, there remains a risk that European countries will fail to tackle their problems in a cooperative manner, against the background of differences in economic conditions between core and peripheral European countries. Therefore, attention should be paid to future developments.[44]

Chart 3-2: Redemptions of government securities in peripheral European countries



Source: Bloomberg.

The fiscal problem in Europe may influence market participants' views on fiscal conditions in developed economies, depending on how the problem evolves. Following the Lehman shock, responses to a lack of private demand and support to the financial system worsened fiscal conditions in major developed economies. During 2010, investment in government securities gathered momentum given concerns over a potential economic slowdown and deflation, and weak fiscal conditions in countries around the world did not attract much attention. The fiscal conditions, however, remain severe. A sharp decline in long-term interest rates during the second half of 2010 has nearly been reversed, and more recently the risk of a surge in interest rates has not yet accumulated, at least in terms of investors' positions. Nevertheless, careful attention should continue to be paid to market participants' views on the fiscal conditions of developed economies.

[44] Under the accommodative financial environment, some market participants seem to be concerned about growing business sentiment in Germany and other core countries.

Turning to the third factor, as in the second half of 2010, it should be borne in mind that the outlook for the U.S. economy may swing widely between optimistic and pessimistic views. As with the current situation in the United States, in an economy that faces balance-sheet adjustment pressure, activities by economic agents and channels to transfer economic policies remain uncertain, and it is difficult to forecast future developments based on the average economic cycle in the past.[45] In these circumstances fluctuations in sentiment tend to occur: reflecting expectations that the adjustment will be completed in view of positive economic indicators, the sentiment of market participants can become extremely optimistic but then turn sharply pessimistic when the strength of adjustment pressure is reconfirmed. If views on the direction of the U.S. economy fluctuate widely, this will have various impacts on the international financial markets, accompanying the changes in expectations to monetary policy. Thus, close attention should be paid to market participants' view on the outlook for the U.S. economy while assessing the factors causing changes.

Such risk factors for the international financial markets are important in examining future developments in Japanese financial markets, where the comovement with overseas financial markets is increasing.

[45] It is possible that increased uncertainty about growth prospects will exert downward pressure on the pricing of risky assets by preventing investors' risk-taking activities. In fact, equity premiums are above the historical average (Chart 1-14). In this regard, recent research on finance indicates that uncertainty over the long-term growth rate (a long-run risk) and medium- to long-term economic changes (a low-frequency event) such as and disaster risk are important factors affecting the prices of risky assets. For example, see Bansal and Yaron (2004) on the former factor and Barro (2009) on the latter.

IV. Measures to Enhance the Market Infrastructure in 2010

With a view to supporting improvement in the functioning and efficiency of financial markets in Japan, the Bank is committed to enhancing the market infrastructure in cooperation with market participants.

Regarding the JGB markets and repo markets, measures have been taken to achieve the following objectives: (1) improving market practices, mainly establishing and reviewing the fails practice; (2) enhancing the functions of and promoting the utilization of the Japan Government Bond Clearing Corporation (JGBCC); and (3) improving risk management by shortening the JGB settlement cycle. Additionally, measures to enhance financial market functioning have been examined in corporate bond markets, securitization markets, and over-the-counter (OTC) derivatives markets. Furthermore, in regard to the business continuity plan (BCP) in financial markets that had been formulated to ensure financial market stability in the event of a disaster, the joint exercises among money markets, FX markets, and securities markets were conducted in February and November 2010, and great progress was made toward the strengthening of cooperation across markets.

The following are the major issues addressed by the Bank and market participants in 2010.

A. Measures Taken in the Money Markets and JGB Markets

In 2010, the Bank carried out the Tokyo Money Market Survey (August 2010), a comprehensive survey on money markets, and released a research paper[46] in December. As for market infrastructure, significant progress was also seen in some measures taken by market participants in the money markets and JGB markets. In particular, revisions in the fails practice took effect on November 1, 2010. And in December 2010, market participants reached an agreement on shortening the JGB settlement cycle by one business day starting from the first half of 2012. The Bank hopes that market participants will continue to take initiatives to improve market practices and infrastructure in financial markets, and the Bank will continue to support such private-sector initiatives.

[46] For details, see Bank of Japan (2010).

The Tokyo Money Market Survey (August 2010)

The Bank carried out the Tokyo Money Market Survey (August 2008) as one of the measures to improve the functioning of money markets in Japan. Given that two years had passed since the previous survey -- a period that included the failure of Lehman Brothers Japan Inc. in September 2008 -- the Bank conducted the Tokyo Money Market Survey (August 2010) in order to evaluate the functioning of money markets and progress of measures taken to address issues recognized by market participants since the failure. The survey asked a total of 190 money market participants, including counterparties of the Bank's money market operations, major life insurance companies, and large investment trust management companies, to respond to the questionnaire in order to examine recent trends in money market transactions and changes in market participants' structure.

The results of the survey showed that the amount outstanding in money markets decreased significantly after the failure of Lehman Brothers Japan Inc., and that noticeable movement toward recovery had not been seen. This was attributable to the shrinking demand for fund-raising in the market and diminishing opportunities for arbitrage, under circumstances in which the Bank provided ample liquidity and interest rates including those on term instruments declined. In addition, while the fiscal problem in Europe has worsened since spring 2010, the market presence of foreign financial institutions has considerably diminished, and the number of market participants has decreased in the uncollateralized call market and the repo market. (For details on recent trends in money market transactions, see Box 4.)

Establishing and reviewing the fails practice

In Japan, the fails practice was introduced in January 2001 along with the introduction of the settlement of JGB transfers on a real-time gross settlement (RTGS) basis; however, it has not been well established. This is because market participants do not have sufficient understanding of the meaning and role of the fails practice (such as recognition of fails as defaults) and cannot cope with fails due to a lack of adequate operation schemes and systems. Under these circumstances, market participants, who experienced the turmoil in the JGB repo market after the failure of Lehman Brothers Japan Inc., recognized the importance of further establishing the fails practice. In May 2009, the Working Group

concerning Review of Fails Practice for Bond Trading was founded under the Japan Securities Dealers Association (JSDA). The working group discussed specific measures with the intention of further establishing the fails practice. As a result of the discussions, from November 1, 2010, the JSDA revised "The Japanese Government Securities Guidelines for Real Time Gross Settlement" and reviewed the fails practices by, for example, introducing fails charges in JGB transactions.

The results of the Tokyo Money Market Survey (August 2010) showed that efforts to establish the fails practice had spread more widely than found by the previous survey held in August 2008. More than 90 percent of the respondents answered that they would accept the fails practice after the revisions of the practice in November 2010, and that they would be operationally ready to deal with fails and the payment of fails charges. All market participants executing purchase and sale transactions and repo transactions of JGBs are expected to comply with the fails practice. In addition, as it is important to be able to handle fails when they occur, a wide range of market participants are expected to develop business operations to handle fails in order to firmly establish the fails practice.

In response to the review of the fails practice, the Bank revised business operations, such as the timetable of the Securities Lending Facility to provide the markets with a secondary source of JGBs,[47] and the scope of the fails in statistics on fails ("Basic Figures on Fails")[48] beginning with the data for November 2010.

Enhancing the functions of and promoting the utilization of the JGBCC

Challenges for the JGBCC are enhancing the functions and promoting further utilization so that market participants receive the benefits of using a central counterparty (CCP), such as the reduction of counterparty risk by guaranteeing performance of delivery and payment

[47] For details of the revision, see "Shijo Kanko no Henko wo Fumaeta Kokusai Hokan Kyokyu no Jitsumu Un'yo no Henko ni Tsuite (Revision of Business Operations for the Securities Lending Facility in Response to the Review of Market Practices)" released by the Financial Markets Department of the Bank of Japan on August 2, 2010 (available only in Japanese).

[48] To provide information facilitating study of the degree of establishment of the fails practice, the Bank releases statistics on fails ("Basic Figures on Fails"). The statistics provide basic figures such as numbers, total face values, the average duration, and the longest duration of the fails monthly based on the questionnaire sent to market participants.

obligations, as seen in the case of the failure of Lehman Brothers Japan Inc.

In June 2010, market participants and the JGBCC released the roadmap to reduce settlement risk in JGB transactions, which stated that the JGBCC would enhance its governance and the funding arrangements in emergency situations such as defaults of the clearing members and would establish transparent rules to handle settlement fails. In September 2010, the JGBCC announced that it would strengthen mutual cooperative ties with the Japan Securities Clearing Corporation (JSCC) to enhance the JGBCC's governance arrangements. It also established clear rules on how to allocate bonds subject to settlement fails in line with the revision of the fails practice on November 1, 2010. As for promoting the utilization, some participants including a major participant in the JGB market became clearing members of the JGBCC in 2010. In addition, the JGBCC and trust banks, which are also major participants in the JGB market, continue to examine issues regarding the operational arrangements with due consideration to the characteristics of trust banks. It is desirable that further progress will be achieved in the discussion among relevant market participants on the enhancement and effective use of the JGBCC's risk management features.

Improving risk management by shortening the JGB settlement cycle

While coping with the market turmoil resulting from the failure of Lehman Brothers Japan Inc., market participants became well aware of the liquidity risk that they could not receive funds and securities as scheduled due to default and settlement fails. In order to effectively prevent and eliminate such risks and turmoil, it is efficient to reduce unsettled outstanding positions and swiftly resolve settlement fails, and market participants have recognized that the JGB settlement cycle should be shortened.

A working group was set up in September 2009 by the Reform Promotion Center for Securities Clearing and Settlement System. The working group is addressing the issues necessary to achieve the shortening of the JGB settlement cycle and examining the practical way to process transactions and settlements of the JGBs. In December 2010, the working group issued its interim report, stating that the JGB settlement cycle would be shortened by one business day (to the T+2 settlement cycle for outright transactions and the T+1 settlement cycle for GC repo transactions), starting from the first half of 2012. Around autumn 2011, the working group will issue its final report, which will include the results of

a discussion on further shortening of the settlement cycle (to the T+1 settlement cycle for outright transactions and the T+0 settlement cycle for GC repo transactions).

In the meantime, given lessons learned from the current financial crisis, several issues were raised concerning the risk management of repo transactions in the international arena and among market participants. These issues include the appropriate margin calls and haircuts to address potential market deterioration in the future and improvement in the transparency of the repo market through information disclosure. In addition, in light of the situation in which proper liquidity risk management has increased in global importance, it is useful for market participants to consider transitioning to a type of repo contract that enables substitution of securities in order to facilitate longer-term funding.

B. Measures Taken by Market Participants in Credit Markets

Participants in corporate bond markets, securitization markets, and OTC derivatives markets have considered measures to enhance market activities, reflecting the lessons learned from the global financial crisis. The Bank hopes that market participants will continue to take initiatives to improve the transparency and functioning of each market, and the Bank will continue to support such private-sector initiatives by taking part in the participants' discussions.

Measures taken in corporate bond markets

In June 2010, the Study Group to Vitalize the Corporate Bond Market organized within the JSDA in July 2009 released a report that addresses several issues concerning corporate bond markets. The Study Group formed several technical sub-groups and is now discussing measures proposed in the report. For example, the Study Group is reviewing the practices of underwriting examination by securities companies to ensure the flexible issuance of corporate bonds. It is also examining the contents of covenants,[49] information disclosure, and corporate bond management to protect claims in the event of default. To enhance market transparency, the report also notes the necessity to improve the infrastructure for corporate bond price information used by issuers and investors when making decisions on

[49] A covenant is a contract clause that obliges bond issuers to meet certain financial conditions and requirements for collateral in order to ensure their debt repayment.

issuing conditions or investment. In this regard, the Study Group is discussing ways to improve the reference prices managed by the JSDA (Reference Statistical Prices [Yields] for OTC Bond Transactions) and to make use of transaction information.

Measures taken in securitization markets

Securitized products in Japanese markets remained relatively simple, and their risks were identified rather easily compared with U.S. and European securitized products. However, as a preventive measure to improve market transparency, the self-regulatory rule on distribution of securitized products was made effective in June 2009. The self-regulatory rule stated that distributors should be able to provide their customers appropriate information about underlying assets and risks of securitized products, and also introduced Standardized Information Reporting Packages (SIRPs) for major securitized products, which provide disclosure lists as a common platform for customers. Recently, the Working Group on Securitized Products organized under the JSDA in July 2009 has been following up on the implementation of the self-regulatory rule and considering measures to improve the securitization markets.

Measures taken in OTC derivatives markets

In Japanese OTC derivatives markets, concerns that counterparty risk would intensify and damage the soundness of the overall financial system as seen in the United States and Europe were not borne out during the global financial crisis, mainly due to lower trading volume. However, Japanese market participants have taken measures to improve the functioning of the OTC derivatives markets in light of international developments, which improved market transparency, particularly regarding CDS trading, and enhanced risk management through the use of CCPs, particularly regarding CDS trading in the OTC derivatives markets.

The working group established jointly by the Tokyo Stock Exchange and the JSCC, as well as the study committee organized by the Tokyo Financial Exchange, have discussed the use of CCPs for OTC derivatives transactions. In June 2010, the JSCC announced that it would (1) continue discussion with the LCH.Clearnet Ltd., the U.K.-based clearing house, to pursue creation of a link providing clearing services for interest rate swaps, and (2) continue

detailed discussion to launch clearing services for CDS transactions around April to June 2011.

C. Enhancement of the Business Continuity Plan in Financial Markets

To develop operational arrangements that can execute a minimum level of market transactions and settlements even in the event of a natural disaster or terrorist attack is in the interest of each market participant, and also helps to foster the stability of financial markets as a whole. In Japan, along with the BCP developed by each market participant and operator of market infrastructure, measures to maintain a network of market participants in the event of a disaster (a market-wide BCP) have been developed in money markets, FX markets, and securities markets (Chart 4-1). In each market, (1) a BCP-dedicated web site has been developed as a tool for information sharing among market participants, (2) contingency procedures[50] have been prepared, and (3) market-wide exercises have been conducted to assess the effectiveness of these arrangements.

While a market-wide BCP had been developed in each market, it was considered necessary to improve the coordination across markets in the event of a disaster. In February 2010, the first joint exercise among the above three markets was carried out to address this issue. By conducting the exercise under the same disaster scenario and timeline, the participants and the secretariats of the respective markets reviewed procedures for the case in which market-wide BCPs in the three markets were activated concurrently. They also assessed procedures for sharing information and coordination across markets by disseminating information regarding, for example, activation of a market-wide BCP, through the secretariats of the respective markets.

By implementing the market-wide joint exercise, market participants confirmed the effectiveness of the market-wide BCP under the realistic scenario of the three markets being affected concurrently, and cooperation among the secretariats of the respective markets was established through planning and preparation of the exercise, thereby enhancing the framework of the market-wide BCP as a whole. A wide range of participants found the

[50] The basic contingency procedures in case of a disaster consist of three steps: (1) activating the BCP; (2) sharing information on the damage caused by the disaster; and (3) recommending a change in market practices.

exercise to be useful.

Chart 4-1: Market-wide BCP arrangements

	Money markets	FX markets	Securities markets
Secretariat	Japanese Bankers Association (JBA)	Tokyo Foreign Exchange Market Committee (TFEMC)	Japan Securities Dealers Association (JSDA)
Participants[1]	Approximately 190 institutions	Approximately 30 institutions	Approximately 380 institutions
	Banks, *shinkin* banks, securities companies, *tanshi* companies, life insurance companies, non-life insurance companies, investment trust management companies, securities finance companies, and others	Banks and other financial institutions	Securities companies, banks, and others
	Japanese Banks' Payment Clearing Network, Tokyo Bankers Association (TBA), CLS Bank International, Association of Call Loan and Discount Co., Japan Securities Depository Center (JASDEC), Japan Government Bond Clearing Corporation (JGBCC), Japan Securities Clearing Corporation (JSCC), Tokyo Stock Exchange (TSE), and Tokyo Financial Exchange (TFX)	TBA, CLS Bank International, and TFX	Securities exchanges (TSE, Osaka Securities Exchange, etc.), JASDEC, JASDEC DVP Clearing Corporation, JGBCC, and JSCC
	Financial Services Agency (FSA) and the Bank of Japan (BOJ)	Ministry of Finance (MOF), FSA, and BOJ	FSA and BOJ
Start of the BCP arrangements	April 2006	January 2008	April 2008

Note: 1. As of November 2010.

In November 2010, reflecting the lessons learned from the first joint exercise, the second joint exercise among the three markets was conducted to further enhance coordination across markets. In order to improve its effectiveness, the second exercise was carried out based on a more stressed scenario in which public transportation stopped after an earthquake early in the morning and employees were unable to arrive for work. The exercise also required participants, particularly those participating in the BCP arrangements of multiple markets, to confirm the coordination of related in-house departments.

Evaluation of the second exercise by participants and specific issues to be tackled will be made clear after the feedback questionnaires are summarized by the secretariats of the respective markets. To boost the effectiveness of coordination among the three markets, it is desirable to enhance cooperation across markets by further improving the operational arrangements of the BCP in each market and conducting market-wide joint exercises in a more practical manner.

Additionally, in November 2010, under the leadership of the Japanese Bankers Association, a street-wide exercise was conducted under the assumption of an outbreak of a highly pathogenic strain of influenza.

The Bank will continue to both enhance its own BCP arrangements and support private-sector initiatives to improve the market-wide BCP.

Annex: Financial Market Related Reports

This annex lists all reports released by the Bank of Japan since the previous *Financial Markets Report*, as follows.

Bank of Japan Research Paper Series

Financial Markets Department, "Waga Kuni Tanki Kin'yu Shijo no Doko to Kadai -- Tokyo Tanki Kin'yu Shijo Survey (10/8-Gatsu) no Kekka to Lehman Brothers Shoken Hatan Go no Shokadai heno Taio Jokyo (Developments and Issues of Money Markets in Japan: Results of the Tokyo Money Market Survey in August 2010 and Responses to Major Issues after the Failure of Lehman Brothers Japan Inc.)," December, 2010, (in Japanese).

Bank of Japan Working Paper Series

Kikuchi, K., "Choki Kinri Hendo no Factor Bunkai (Factor Analysis on the Long-Term Bond Yields)," Financial Markets Department, December, 2010 (in Japanese).

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