III. Low interest rates: do the risks outweigh the rewards?

In the crisis, central banks cut policy rates ...

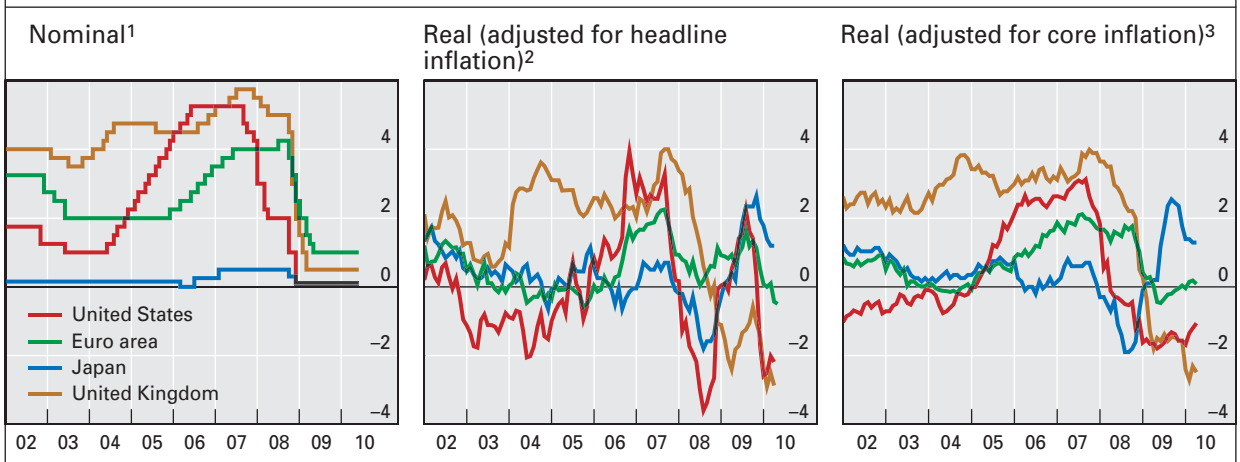
Central banks around the world first reacted to the economic downturn caused by the financial turmoil by aggressively cutting interest rates. As a result, policy rates in the main advanced economies range currently between zero and 1%, leaving little to no room for additional cuts to accommodate any further negative shocks (Graph III.1). In real terms, rates are around zero in the euro area and negative in the United Kingdom and the United States. In Japan, by contrast, mild deflation has pushed real rates just above zero again.

... and adopted unconventional monetary policies

As the crisis worsened, central banks adopted unconventional policies to help prevent what many observers feared might become a second Great Depression.[1] Among other things, they provided extensive liquidity in domestic currency, made use of swap arrangements to offer foreign currency to domestic institutions and intervened in fixed income markets. The unconventional measures significantly increased the size and altered the composition of central bank balance sheets (Graph II.4). Governments complemented the central bank response by supporting individual financial institutions and providing substantial fiscal stimulus (see Chapter V).

Nominal and real policy rates

In per cent



[1] For the United States, target federal funds rate; as of mid-December 2008, midpoint of the target rate corridor (0–0.25%); for the euro area, minimum bid rate up to October 2008 and fixed rate of the main refinancing tenders thereafter; for Japan, target for the uncollateralised overnight call rate; for the United Kingdom, Bank rate. [2] Ex post real rates; nominal policy rate minus annual headline inflation: CPI for the United States and Japan, HICP for the euro area and the United Kingdom (for the United Kingdom, RPIX prior to 2003). [3] Ex post real rates; nominal policy rate minus annual core inflation: for the United States, CPI excluding food and energy; for the euro area and the United Kingdom, HICP excluding energy and unprocessed food; for Japan, CPI excluding energy and fresh food.

Sources: Bloomberg; Datastream; national data. Graph III.1

[1] On unconventional monetary policy measures, see C Borio and P Disyatat, "Unconventional monetary policies: an appraisal", *BIS Working Papers*, no 292, November 2009; and BIS, *79th Annual Report*, June 2009, Chapters III and IV.

Policymakers have started pondering the exit

In the early months of 2010, when the danger of a financial meltdown seemed to have passed and the macroeconomy appeared to be on the road to recovery, policymakers in the major advanced economies began considering their options for exiting from their crisis-related positions.[2] While the developments in the Greek sovereign bond market and the related turbulence in April and May led some central banks to revise their envisaged timing for these decisions, the commitment to an eventual exit has not changed. It remains the case that the timing of the exit from unconventional monetary policy can be determined independently from the exit from low interest rates. The exact sequencing of the exit from those two areas will probably differ across economies, depending on the relative speeds of recovery in financial markets and real activity.

Low interest rates and unconventional monetary policies cause distortions ...

As they make these decisions, policymakers will need to consider the distortions caused by prolonged conditions of monetary ease. After all, sustained low interest rates have been identified by many as an important factor that contributed to the crisis (see BIS, *79th Annual Report*, Chapter I). At the same time, policymakers should also closely monitor the distortions arising from unconventional monetary policy tools. These include price distortions in bond markets that can result from changes in central banks' criteria for eligible repo collateral and from their asset purchases. Artificially high asset prices in certain markets might delay the necessary restructuring of private sector balance sheets. There are also distortions in market activity that arise from central banks' increased intermediation during the crisis. Moreover, the asset purchases have exposed central banks to considerable credit risk, which together with the changed balance sheet composition may expose them to political pressures.

... that may create problems in the future

History offers little guidance on the economic significance of the side effects of unconventional monetary policy. By contrast, distortions arising from low interest rates have been observed in the past. In this chapter, we review these risks in the current context and argue that, if not addressed soon, they may contain the seeds of future problems at home and abroad. In doing so, we draw on lessons from the run-up to the financial crisis of 2007–09 and on Japanese experiences since the mid-1990s.

Domestic side effects of low interest rates

Low interest rates caused misallocations before the crisis ...

Previous episodes of low interest rates suggest that loose monetary policy can be associated with credit booms, asset price increases, a decline in risk spreads and a search for yield. Together, these caused severe misallocations of resources in the years before the crisis, as evidenced by the excessive growth of the financial industry and the construction sector. The necessary structural adjustments are painful and will take time.

... and are now delaying necessary adjustments

In the current setting, low policy rates raise additional concerns since they are accompanied by considerably higher long-term rates. This may lead

[2] Some unconventional monetary policy tools have already been actively terminated or have wound down naturally as markets have started to recover.

to a growing exposure to interest rate risk and delays in the restructuring of the balance sheets of both the private and public sector. The situation is further complicated because low interest rates may have caused a lasting decline in money market activity, which would make the task of exiting from loose monetary policy more delicate.

Decline of measured and perceived risk

Low interest rates have an impact on risk measures and perception

Standard economic models predict that a decrease in real interest rates causes faster credit growth, if it is expected to be sustained. Moreover, it raises asset prices since it drives down the discount factor for future cash flows. Other things equal, this leads to a rise in the value of collateral, which may induce financial institutions to extend more credit and to increase their own leverage to purchase riskier assets. Rising asset prices are also often associated with lower price volatility, which is reflected in lower values for commonly used measures of portfolio riskiness such as value-at-risk (VaR).[3] These factors in turn reinforce the amount of capital invested in risky assets and the increase in asset prices and lead to a further narrowing of measured risk spreads.

This contributed to rising asset prices before the crisis …

This mechanism is widely seen as a major driving force behind the increase in asset prices and the decline in risk spreads in the run-up to the financial crisis of 2007–09. The crisis then brought a surge in risk premia, a sharp drop in asset values, higher VaRs and losses for investors, including highly leveraged players who were not well positioned to bear them. Price reversals triggered calls on collateral and a mass rush to sell, generating further price declines.

… and may be at work again today

Starting in the spring of 2009, a fast recovery in global equities and a rise in house values in many economies (the euro area and Japan are exceptions) were accompanied by a reduction in corporate bond spreads and other risk premia (Graphs II.1 and III.2, top panels), though some risk measures have meanwhile risen again in the context of the Greek sovereign debt crisis. Reported VaR figures show that risk as measured by potential losses from banks' trading positions remains high (Graph III.2, bottom left-hand panel). At the same time, a primary goal of central bank and government actions during the 2007–09 crisis was to stop the collapse of asset prices and reduce the risk of insolvencies. The broad rise in asset prices and the reduction in risk spreads that took place in 2009 and the early months of 2010 is thus best seen as reflecting both the success of these policies and a new build-up of potentially overly risky portfolios.

The search for yield

Low policy rates can induce a search for yield

Risky portfolios can also result from a search for yield, whereby low nominal policy rates lead investors to take on larger risks in pursuit of higher nominal

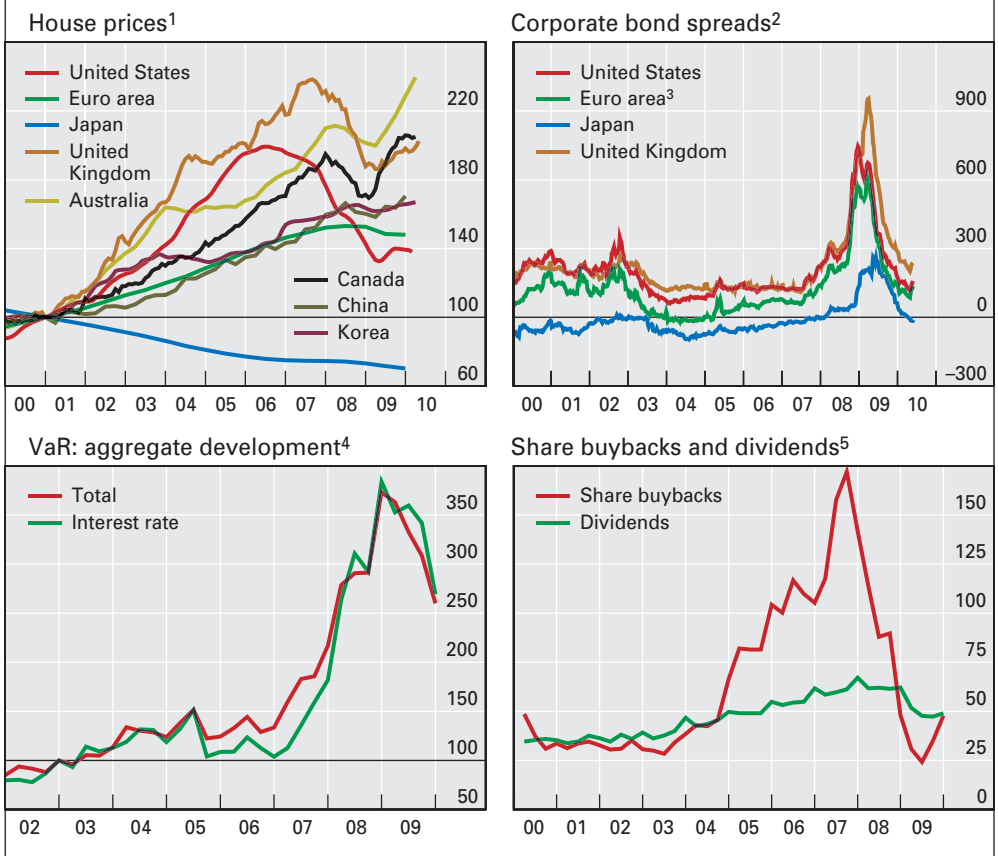
[3] For the impact of loose monetary policy on VaR measures, see T Adrian and H S Shin, "Financial intermediaries and monetary economics", Federal Reserve Bank of New York, *Staff Reports*, no 398, October 2009. For empirical evidence that commercial banks take on more risk in times of loose monetary policy, see Y Altunbas, L Gambacorta and D Marqués-Ibáñez, "Does monetary policy affect bank risk-taking?", *BIS Working Papers*, no 298, March 2010.

returns.[4] In the years preceding the financial crisis, many investors targeted a nominal rate of return that they thought was appropriate based on past experience. Furthermore, institutional investors, such as insurers and pension funds, faced pressure to fulfil implied or contractual obligations made to their customers at a time when nominal returns had been higher; they looked for those returns in alternative investment opportunities. The fact that many compensation schemes were linked to nominal returns also contributed to the search for yield.

This may drive up asset prices ...

A number of symptoms can indicate a search for yield. The first is an increase in asset prices and a reduction in risk premia. While the recovery in many asset markets in 2009 and early 2010 in part represented a reversal of crisis-related risk aversion, the search for yield phenomenon, against the background of near zero policy rates, may have started to play a role towards the end of this period.

Indicators of the search for yield



[1] End-2000 = 100. [2] Weekly averages of BBB-rated Merrill Lynch bond index yields against 10-year government bond yields, in basis points. [3] Against 10-year German government bond yields. [4] Market capitalisation-weighted average of value-at-risk data (in US dollar terms) of Citigroup, Credit Suisse Group, Deutsche Bank, Goldman Sachs, JPMorgan Chase, Morgan Stanley and Société Générale; Q4 2002 = 100. [5] Of S&P 500 companies, in billions of US dollars; preliminary data for Q4 2009.

Sources: Bloomberg; Standard & Poor's; corporate financial reports; national data. Graph III.2

[4] See R Rajan, "Has financial development made the world riskier?", in Federal Reserve Bank of Kansas City, *Proceedings*, August 2005, pp 313–69.

A second symptom is distorted financial innovation. In the early 2000s, intermediaries responded to investors' desire for higher returns by engineering financial products that appeared to minimise the risk associated with them. A large variety of these "structured" products were widely sold in the years before the crisis. On the surface they appeared to embody the investor's holy grail of low risk and high yield, but during the crisis their character proved to be the opposite. As a consequence, the market has become reoriented towards less exotic investment products. That said, financial innovation is difficult to monitor and the shortcomings of new products are easier to spot with hindsight.

... fuel financial innovation ...

A third symptom can be an increase in dividends and share buybacks. If investors expect high nominal returns and if these are difficult to come by, non-financial corporations may find themselves under pressure to return funds to investors rather than pursuing risky but economically profitable real investments in new plants or research and development. Buybacks and high dividends, rather common in the run-up to the crisis, have become much rarer in its aftermath, as is normal during cyclical downturns (Graph III.2, bottom right-hand panel). Both dividends and buybacks rebounded somewhat in the course of 2009 as the economic outlook brightened, but they remain below pre-crisis levels, suggesting that this aspect of the search for yield is currently not observable.

... and discourage real investment

Interest rate risk

Low policy rates in combination with higher long-term rates increase the profits that banks can earn from maturity transformation, ie by borrowing short-term and lending long-term. Indeed, part of the motivation of central banks in lowering policy rates was to enable battered financial institutions to raise such profits and thereby build up capital. The heightened attractiveness of maturity transformation since the crisis was reflected in rising carry-to-risk ratios in 2009 and early 2010 (Graph II.1, bottom right-hand panel). Increasing government bond yields, caused by ballooning deficits and debt levels and a growing awareness of the associated risks, make the yield curve even steeper and reinforce the appeal of maturity transformation strategies.

Low policy rates can steepen the yield curve ...

However, financial institutions may underestimate the risk associated with this maturity exposure and overinvest in long-term assets.[5] As already noted, interest rate exposures of banks as measured by VaRs remain high. If an unexpected rise in policy rates triggers a similar increase in bond yields, the resulting fall in bond prices would impose considerable losses on banks. As a consequence, they might face difficulties rolling over their short-term debt. These risks may have increased somewhat in the aftermath of the 2007–09 crisis, because the poor credit environment for banks and the greater availability of central bank funding have left many banks with funding structures skewed towards shorter maturities. A squeeze on banks' wholesale funding might set off renewed asset sales and further price declines.

... exposing banks to interest rate risk

[5] Banks may also have increased their holdings of government bonds so as to improve their results in liquidity stress tests.

Thus, an unexpected tightening of monetary policy might cause serious repercussions in the banking sector. Signalling policy rate changes early can help to allow markets and institutions to make a smooth adjustment to the anticipated shift in asset prices and funding costs.

Delays in balance sheet adjustments

Low policy rates can delay the restructuring of balance sheets

One legacy of the financial crisis and the years preceding it is the need to clean up the balance sheets of financial institutions, households and the public sector, which finds itself in a poor fiscal position, partly as a result of the rescue measures adopted during the crisis. Low policy rates may slow down or even hinder such necessary balance sheet adjustments. In the financial sector, the currently steep yield curve provides financial institutions with a source of income that may diminish the sense of urgency for reducing leverage and selling or writing down bad assets (see also Chapter VI). Central banks' commitment to keep policy rates low for extended periods, while useful in stabilising market expectations, may contribute to such complacency.

Low rates can lead to an "evergreening" of bank loans ...

Past experience has shown that low policy rates allow "evergreening", ie the rolling-over of non-viable loans. During the protracted run of low nominal interest rates in Japan in the 1990s, banks there permitted debtors to roll over loans on which they could afford the near zero interest payments but not repayments of principal. Banks evergreened loans instead of writing them off in order to preserve their own capital, which was already weak due to the earlier fall in asset prices. This delayed the necessary restructuring and shrinking of financial sector balance sheets. Moreover, the presence of non-viable ("zombie") firms sustained by evergreened loans probably limited competition, reduced investment and prevented the entry of new enterprises.[6]

... which is difficult to measure

While there is no definitive way to establish the extent of evergreening empirically, an indicator that it may be taking place would be data showing that ailing industries are receiving a disproportionate share of loans. Such a pattern was in evidence in Japan in the 1990s.[7] Another indicator would be a loosening of commercial banks' lending standards for existing debtors. The Federal Reserve Senior Loan Officer Opinion Survey began reporting information on the changes in the credit lines for existing customers in January 2009. On the commercial and industrial side, credit lines have been decreasing but at an ever slower pace. Once they start growing again, this will initially reflect a normalisation of lending conditions, but might eventually signal evergreening and thus delays in the adjustment of financial and non-financial balance sheets in the private sector.

The adjustment of public finances may also be delayed

Low interest rates may also delay necessary balance sheet adjustments in the public sector (see Chapter V for more details). By shifting their debt profile towards shorter-term financing, governments can reduce interest rate

[6] See T Hoshi and A Kashyap, "Solutions to Japan's banking problems: what might work and what definitely will fail", in T Ito, H Patrick and D Weinstein (eds), *Reviving Japan's economy: problems and prescriptions*, MIT Press, 2005, pp 147–95; and R Caballero, T Hoshi and A Kashyap, "Zombie lending and depressed restructuring in Japan", *American Economic Review*, vol 98, no 5, December 2008, pp 1943–77.

[7] See W Watanabe, "Does a large loss of bank capital cause evergreening? Evidence from Japan", *Journal of the Japanese and International Economies*, vol 24, no 1, March 2010, pp 116–36.

payments. While this provides them with useful breathing space for returning sovereign debt levels to a sustainable path, it also exposes fiscal positions to any increase in policy rates if the needed budgetary adjustments are not put in place in a timely manner. This can raise concerns about the independence of monetary policymakers.

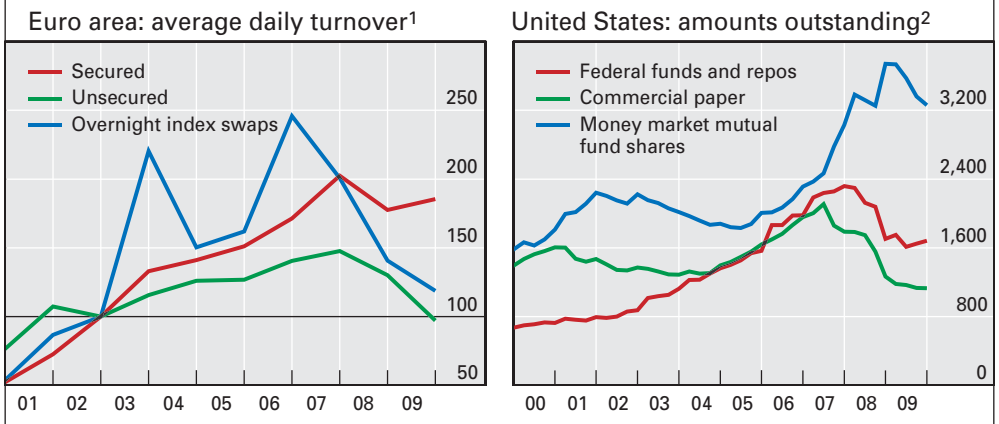
Paralysed money markets

Low policy rates can paralyse money markets and complicate the exit …

Once central banks begin the exit and raise their policy rates, it is essential that money markets transmit this change to the wider economy. However, low policy rates can paralyse money markets. When the operational costs involved in executing money market deals exceed the interest earned – which is closely related to policy rates – commercial banks may shift resources out of these operations. Japanese money markets suffered such atrophy: the turnover in the uncollateralised overnight call market fell from a 1995–98 average of more than ¥12 trillion per month to a 2002–04 average of less than ¥5 trillion.[8] As a result, the tightening of Japan's monetary policy in 2006 was complicated by overstretched staff on the money market desks at commercial banks. In the current setting, one reason why many central banks have refrained from lowering their policy rate all the way to zero during the recent financial crisis has been to avoid precisely this problem. International differences in how close policy rates got to zero are probably related to diverging money market structures.

Money market volumes in the euro area and the United States have declined since the onset of the financial crisis and are close to their levels during 2003–04, also a period when policy rates were low (Graph III.3). The drop in market volumes in 2008 was mainly caused by liquidity hoarding, counterparty and collateral concerns and the increased provision of liquidity by central banks, but the continued low level may also reflect the reduced margins available in

Indicators of activity in money markets



[1] As reported by panel banks in the *Euro Money Market Survey*; 2002 = 100. [2] Excluding Federal Reserve holdings; in billions of US dollars.

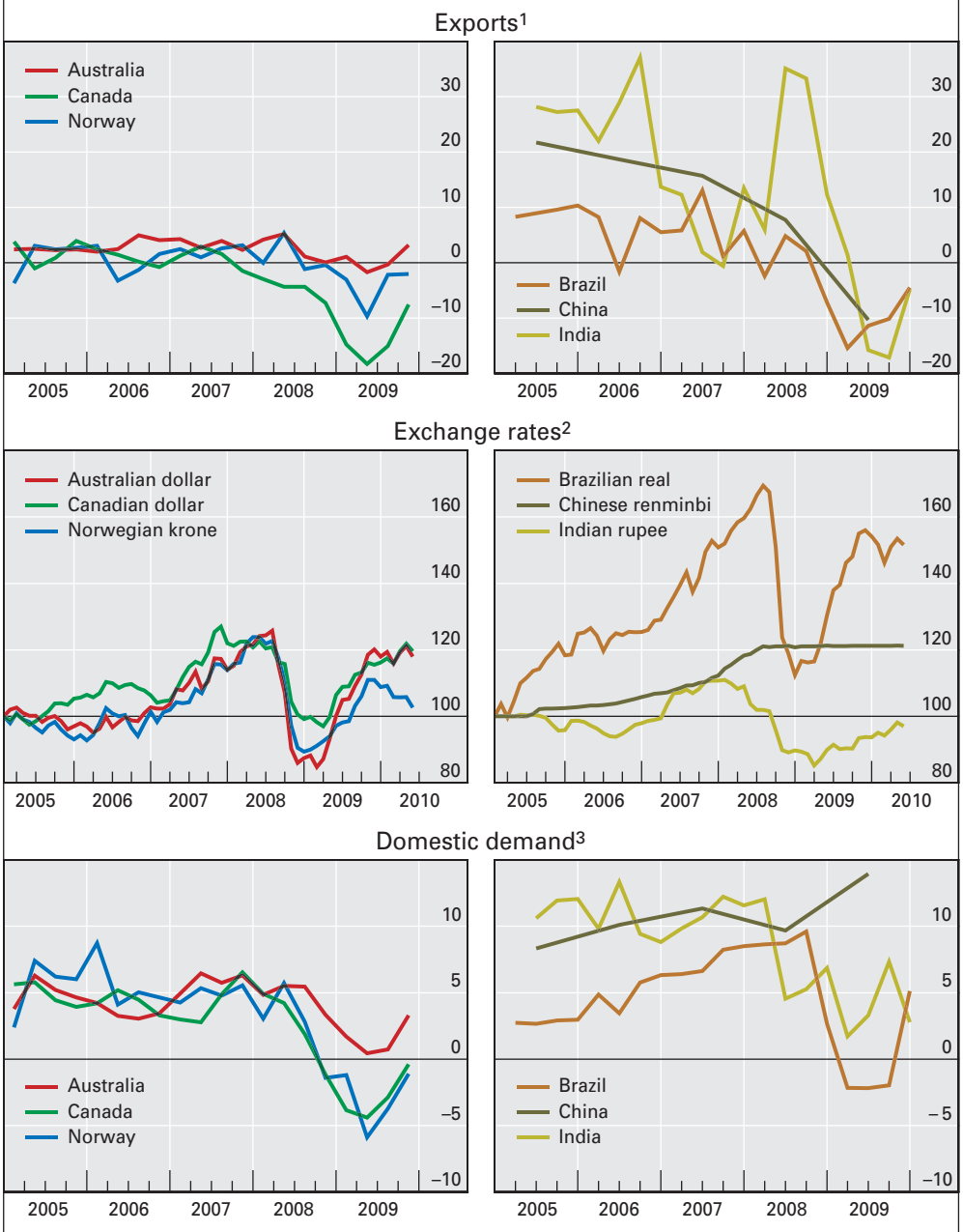
Sources: ECB, *Euro Money Market Survey*; Federal Reserve flow of funds accounts. Graph III.3

[8] See N Baba, S Nishioka, N Oda, M Shirakawa, K Ueda and H Ugai, "Japan's deflation, problems in the financial system and monetary policy", *BIS Working Papers*, no 188, November 2005.

the current market. In 2009, the money market saw, in the euro area, a rise in the turnover of secured funds and, in the United States towards the end of the year, a small rise in the outstanding amount of federal funds and repos. These advances – observed before the Greek sovereign debt crisis – may mirror an easing of counterparty and collateral concerns and a reduction in central bank open market operations. Whether volumes will eventually return to their previous levels or whether low policy rates have indeed reduced money market activity and thus complicated the implementation of exit strategies remains to be seen.

... although it remains to be seen whether this is a problem today

Commodity exporters and emerging markets



[1] Real exports of goods and services; annual changes, in per cent. [2] Against the US dollar; monthly averages; January 2005 = 100; an increase indicates an appreciation. [3] Real domestic demand; annual changes, in per cent.

Sources: IMF, *World Economic Outlook*; Datastream; national data; BIS calculations. Graph III.4

International side effects of low interest rates

Low policy rates also cause distortions abroad

Low interest rates in the major advanced economies cause side effects beyond their borders, both in emerging markets and in commodity-exporting industrial countries, which fared comparatively well in the crisis. The initial impact of the financial crisis on these countries was in most cases a sharp decrease in exports (Graph III.4, top panels), a withdrawal of US dollar funds by foreign banks, liquidation of equity and bond holdings by investors, and a drop in equity prices. The large emerging economies and the advanced commodity exporters experienced a considerable weakening of their exchange rates against the US dollar in the autumn of 2008, except in the case of China, which held the renminbi fixed (Graph III.4, middle panels). Monetary policy was loosened, both through lower interest rates and – in China, India and, later, Brazil – through lower reserve requirements (Graph III.5). Moreover, many central banks locally offered US dollar funds that some had obtained through swap lines with the Federal Reserve.

Policy has started to tighten in countries less affected by the crisis

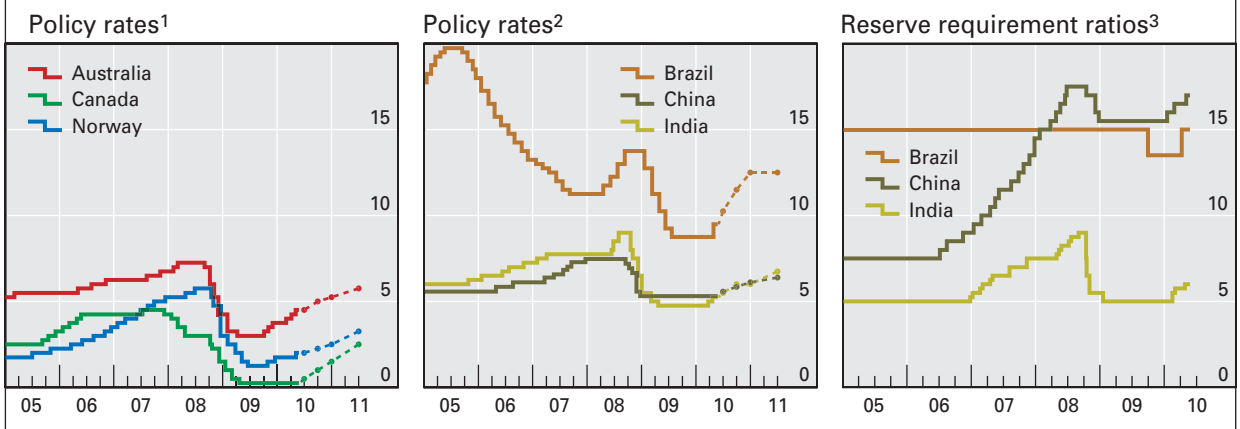
As a result, domestic demand was able to offset some of the contractionary impact of declining exports (Graph III.4, bottom panels). When also asset prices recovered, central banks outside the major advanced economies started tightening monetary policy again, despite the continued weakness of their exports. By the end of May 2010, Australia, Brazil, India and Norway had begun raising interest rates; and Brazil, China and India had all increased reserve requirements. Market expectations at present point to further tightening.

Interest rate differentials have caused capital inflows ...

Tighter monetary policy has created significant interest rate differentials, both real and nominal, vis-à-vis the main crisis countries. Together with better growth prospects, these differentials have generated capital flows to countries with higher rates and increased the attractiveness of carry trades (Graph III.6).

Monetary policy response

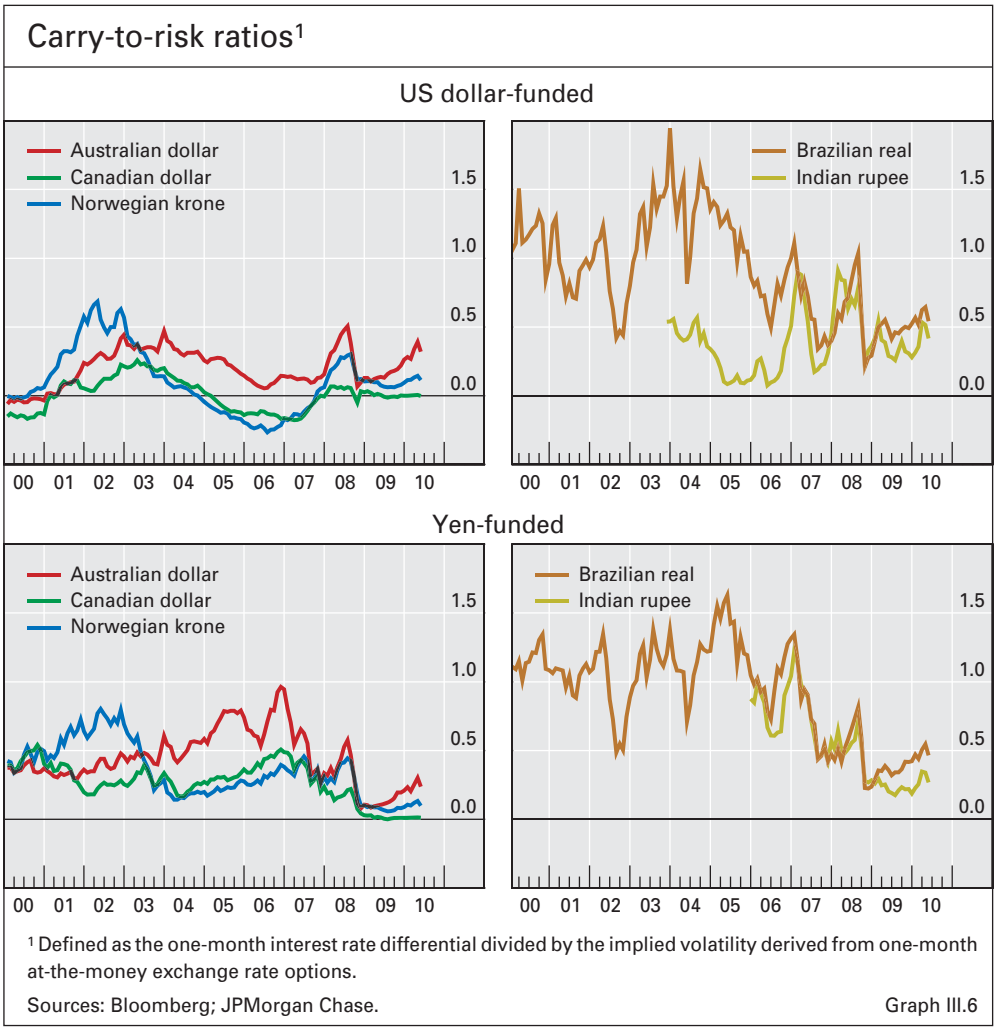
In per cent



The dashed lines represent expectations based on forecasts by JPMorgan Chase as of 21 May 2010 for policy rates in June 2010, September 2010, December 2010 and June 2011 (indicated as dots).

[1] For Australia, target cash rate; for Canada, target overnight rate; for Norway, sight deposit rate. [2] For Brazil, target SELIC overnight rate; for China, benchmark one-year loan rate; for India, repo rate. [3] For Brazil, required reserve ratio for time deposits; for China, required reserve ratio for large banks; for India, cash reserve ratio.

Sources: Bloomberg; JPMorgan Chase; national data. Graph III.5



[1] Defined as the one-month interest rate differential divided by the implied volatility derived from one-month at-the-money exchange rate options.

Sources: Bloomberg; JPMorgan Chase. Graph III.6

... that are accelerating the expansion ...

Capital flows allow a better allocation of economic resources, and inflows are important contributors to growth, especially in emerging market economies. In the current situation, however, they may lead to further asset price increases and have an inflationary impact on the macroeconomy. They have also caused an appreciation of those target currencies that float, which corresponds to a tightening of monetary conditions in those countries. Nevertheless, further interest rate increases seem likely, and these may attract even more funds from abroad. This exposes the receiving economies to the risk of rapid and large capital outflows and the reversal of exchange rate pressures in the event of a change in global macroeconomic, monetary and financial conditions or in investors' perception thereof. Chapter IV discusses the issues associated with capital flows to emerging markets in more detail.

... but may quickly reverse

Summing up

The recent market turbulence associated with sovereign debt concerns is likely to have postponed the necessary return to more normal monetary policy settings in a number of advanced economies. Exactly when monetary conditions will be tightened will depend on the outlook for macroeconomic

activity and inflation, and on the health of the financial system. But keeping interest rates very low comes at a cost – a cost that is growing with time. Experience teaches us that prolonged periods of unusually low rates cloud assessments of financial risks, induce a search for yield and delay balance sheet adjustments. Furthermore, the resulting yield differentials encourage unsustainable capital flows to countries with high interest rates. Because these side effects create risks for long-term financial and macroeconomic stability, they need to be taken into account in determining the timing and pace of normalisation of policy rates.