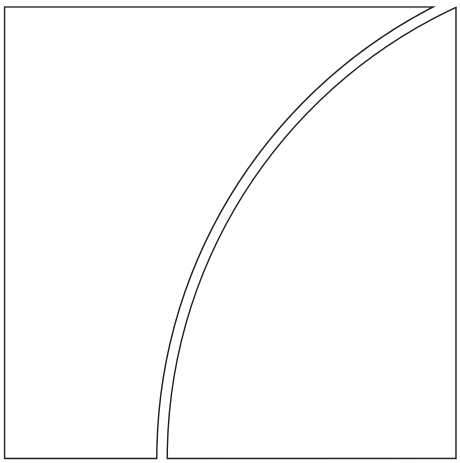
BANK FOR INTERNATIONAL SETTLEMENTS



77th Annual Report

1 April 2006–31 March 2007

Basel, 24 June 2007

Copies of publications are available from:

Bank for International Settlements
Press & Communications
CH-4002 Basel, Switzerland

E-mail: publications@bis.org
Fax: +41 61 280 9100 and +41 61 280 8100

ISSN 1021-2477 (print)
ISSN 1682-7708 (online)
ISBN 92-9131-170-7 (print)
ISBN 92-9197-170-7 (online)

Also published in French, German, Italian and Spanish.
Available on the BIS website (www.bis.org).

Contents

The chapters of this Report went to press between 30 May and 7 June 2007.

Graphs

Tables

Conventions used in this Report

lhs, rhs	left-hand scale, right-hand scale
billion	thousand million
...	not available
.	not applicable
$	US dollar unless specified otherwise

Differences in totals are due to rounding.

77th Annual Report

submitted to the Annual General Meeting
of the Bank for International Settlements
held in Basel on 24 June 2007

Ladies and Gentlemen,

It is my pleasure to submit to you the 77th Annual Report of the Bank for International Settlements for the financial year which ended on 31 March 2007.

The net profit for the year amounted to SDR 639.4 million, compared with SDR 599.2 million for the preceding year. Details of the results for the financial year 2006/07 may be found on pages 182–4 of this Report under "Net profit and its distribution".

The Board of Directors proposes, in application of Article 51 of the Bank's Statutes, that the present General Meeting apply the sum of SDR 139.3 million in payment of a dividend of SDR 255 per share, payable in any constituent currency of the SDR, or in Swiss francs. This year's proposed amount compares to the dividend of SDR 245 per share paid out last year.

The Board further recommends that SDR 50.0 million be transferred to the general reserve fund, SDR 6.0 million to the special dividend reserve fund and the remainder – amounting to SDR 444.1 million – to the free reserve fund.

If these proposals are approved, the Bank's dividend for the financial year 2006/07 will be payable to shareholders on 2 July 2007.

Basel, 8 June 2007

MALCOLM D KNIGHT
General Manager

I. Introduction: piecing the puzzle together

The performance of the global economy over the last few years has been extraordinary, and this includes the period April 2006 to May 2007 under review in this Annual Report. First, and most importantly, real growth has been maintained around levels that are among the highest recorded in the postwar period. The fact that many of the world's poorest countries have shared in this growing prosperity has been another welcome feature. Second, notwithstanding this rapid growth and despite significant upward shocks to most commodity prices, underlying inflation levels have generally remained subdued. Third, real interest rates and risk premia of all sorts have remained uncharacteristically low. And finally, record global trade imbalances have thus far been easily financed and exchange rates have been generally quite stable. In isolation, each of these outcomes might be welcomed without further reflection. However, the combination of developments is so extraordinary that it must raise questions about the source and, closely related, the sustainability of all this good fortune.

A variety of hypotheses have been suggested to explain subsets of these phenomena, but each falls short of explaining them all. For example, the idea of a global "investment strike" has merit when attempting to explain worldwide low inflation and low interest rates. However, it is more difficult to reconcile this hypothesis with the recent record rates of real growth. The idea that "globalisation" is a positive supply side shock driving down inflation also appeals, but what have been the forces simultaneously driving up demand and global growth? Simply asserting that supply creates its own demand, certainly arguable as a short-run proposition, also ignores an important fact. While emerging market economies have been the source of a large part of the supply side shock, it is the advanced industrial countries, above all the United States, that have accounted for most of the increase in demand. What influences could have led to this asymmetric outcome, and the associated imbalances in global trade? Finally, the "credibility" of vigilant central banks might well have helped explain both low inflation and high real growth for an extended period of time. But surely this cannot be the whole explanation, given that real interest rates have remained so low, and the rate of credit creation so high, for almost all of this decade.

Yet, if individually each of these hypotheses has its shortcomings, together they might well provide a coherent explanation of the favourable global performance seen over the last few years. Begin with the investment strike hypothesis, that is, a deficiency of ex ante fixed investment relative to a high level of ex ante saving. Arguably, the chief factor behind this shortfall in

recent years has been subdued investment rates in many countries following earlier boom-bust cycles. Corporate investment has only begun to pick up in Japan and Germany over the last year or so, and is still showing scant sign of doing so in Southeast Asia. Moreover, as a proportion of GDP, corporate investment has remained very weak in the United States in the aftermath of the "new era" bubble of the late 1990s. Against this backdrop of generally weak investment demand, the global economy was simultaneously affected by a significant increase in supply. Globalisation and the re-entry of previously centrally planned economies into the liberalised trading system were key factors. But, in addition, increases in productivity associated with technological advances also played a role, particularly in the IT and distribution sectors. And the interaction of these phenomena with the credibility gained by central banks in fighting inflation in the 1980s added still further disinflationary momentum to the global economy.

In view of the very low levels of inflation arising from these joint developments, and indeed concerns about deflation in some countries, monetary policy in the advanced industrial countries has been unusually easy for a number of years. This tendency was reinforced by the perceived need to react to financial disruptions in 1997 (the East Asian crisis) and 1998 (the LTCM crisis), and to the sharp fall in global stock markets in 2001. Such monetary ease in the industrial countries might have been expected to lead to lower exchange rates, complemented by a rise in the exchange rates of emerging market economies. However, with emerging market economies also facing an environment of low inflation, and with many countries wishing to build up reserves to "self-insure" against future crises, there was a shared unwillingness to allow this adjustment to occur. Massive sterilised intervention was carried out, particularly in Asia, and domestic monetary conditions were also kept very loose. And, as the accumulated reserves were reinvested, they supported the US dollar and added to the already ample liquidity in the financial markets of the industrial countries.

Nor have these been the only forces acting to stimulate global monetary and credit expansion over the last few years. Analogous to the profound structural changes affecting the real economy, the financial sector has also been undergoing a massive transformation. New technologies for managing risk, new instruments and new players have been increasingly in evidence, with competition demanding that every possible financial opportunity be exploited to the full in the search for yield.

These monetary and financial developments have stimulated aggregate demand to match the increases in global supply. This Introduction will describe how these individual pressures, the pieces of the puzzle, have contributed to this success over the last year or so. Yet this success must be qualified by at least two observations that will be returned to in the Conclusion of this Annual Report.

First, there is at least a possibility that the massive financial stimulus provided to spending might have inadvertently tipped the global economy, or significant parts of it, into a situation where inflationary pressures might again be resurgent. Second, in part as a by-product of all this monetary and financial

stimulus, an ever increasing number of economic and financial variables have been observed to deviate significantly from what might be deemed traditional "norms". In particular, easy financial conditions have led to an unprecedented drop in the household saving rate in the United States and an equally unprecedented rise in the investment rate in China. Whether these will eventually prove sustainable, with new "norms" being generated consistent with underlying structural changes, or whether they will rather prove subject to a more traditional form of mean-reversion, remains to be seen.

Demand and supply side considerations

Over the last 12 months or so, the global economy has continued to expand rapidly, with virtually no region failing to feel the benefit. China and India continued to grow at breakneck speed, drawing much of Asia along with them, while oil producers generally set records in terms of national income growth. With a few exceptions, countries in Latin America and central and eastern Europe also prospered. Based partly on better macroeconomic management, but also on higher commodity prices, growth in large parts of Africa was also maintained at atypically high rates.

The major industrial countries also fared very well, indeed giving further evidence of a welcome rebalancing as growth in Japan and the euro area accelerated further and domestic demand growth in the United States began to moderate. Germany in particular emerged from its long period of torpor with unexpected vigour. However, as the period under review wore on, concerns began to mount that the US economy might slow excessively, with potential implications for growth elsewhere. In the United States, consumption spending began to falter only after very rapid gains. While some deceleration was then to be expected, the fact that income and employment growth had not kept up, and that much consumption was financed through debt and lower saving, probably also played a role. A particular concern was a possible link with the US housing cycle, which began to turn down sharply in early 2006.

Throughout this last year, US housing starts fell precipitously as the ratio of inventories of unsold houses to sales rose to levels not seen since the early 1970s. While the full impact on employment in the construction sector has not yet been felt, the simultaneous sharp deceleration in house prices has begun to have some implications. The capacity of consumers to use higher house values as collateral to support borrowing and spending has clearly diminished. Closely related, some borrowers with less than prime credit status were only able to service their mortgages through similar refinancing. With this avenue closed to them, many may lose their homes and the inventory of unsold houses could then rise further. Fortunately, there is no firm evidence to date that these developments have undermined general consumer confidence in the United States, even if some greater constraints on the availability of consumer credit are beginning to be put in place.

Although it had been hoped that corporate investment in the United States might offset the drag from the housing market, investment fell back near the end of 2006. To many, this was surprising since capacity utilisation was rising,

US corporate profits were very high and financing conditions were still supportive. Moreover, there was evidence of resurgent investment and business confidence, if not yet consumer confidence and spending, in other advanced industrial countries such as Germany and Japan. Yet investment must be based on expectations of rates of return, and here perhaps the omens were less positive. US productivity gains slowed in 2006, the pace of wage increases picked up and the rate of profit growth in the non-financial sector decelerated rapidly. Looking forward, a concern that US domestic consumer demand might falter, just as many of China's recent massive investment projects come on line, might also have had a restraining influence on profit expectations. And, perhaps, not only in the United States.

Certainly, the rising global influence of China and India is becoming increasingly hard to ignore. Investment spending in China, much of it export-oriented, amounted to almost 45% of GDP last year. Moreover, Chinese firms continued to move rapidly up the value chain, and are now extending into service areas which had previously been thought non-tradable. India too continued to expand its export sector last year. Indeed, evidence emerged that it was moving more aggressively into manufacturing to complement the IT services for which it has become well known. Chinese and Indian companies have both begun to make substantial direct investments in companies abroad, with the former reportedly particularly intent on ensuring the sustainability of future commodity supplies.

Rapid productivity growth in China allowed both wages and profits to increase strongly in aggregate, while maintaining competitiveness, but concerns were again expressed that wages were not being adequately transformed into domestic consumer spending. The fact that profits seemed to be increasingly concentrated, while investment growth was widespread, also raised fears of excess capacity and further reliance on exports should domestic investment falter. The Chinese government took administrative and monetary measures in the course of the year to slow the economy, but growth expectations nevertheless continued to be revised up during the period under review. In India, monetary policy was also tightened, but the economy continued to grow very rapidly.

Against this backdrop, global headline inflation moderated further in the past year, but with a partial reversal of the earlier spike in energy prices playing a key role. Core inflation in China, Japan and some continental European countries was relatively low and stable, although a number of emerging market economies in Asia and Latin America experienced either high or rising inflation. In the United States as well, some saw an unwelcome, if slight, upward drift. Yet in countries, including the United States, where surveys or financial markets provided information about longer-term inflation expectations, these expectations remained quite stable. Nor, during the period under review, did any firm evidence emerge that the recorded decline in inflation volatility in recent years, as well as in the pass-through to inflation of cost-push shocks, was beginning to reverse.

It was nonetheless rather surprising that the stable inflation picture in industrial countries was maintained last year given evidence of shrinking global

capacity gaps. By the end of 2006, many Japanese officials considered that the economy was operating above full capacity, the US authorities estimated that the country was at full capacity, and the euro area in aggregate was thought to be approaching full capacity as the result of an earlier sharp fall in the unemployment rate. While rising and stable unit labour costs in the United States and many European countries, respectively, might be seen as consistent with these developments, the continuing weakness of German and Japanese wages has been remarkable. Finally, it became increasingly doubtful, over the year, whether the previous impetus for global disinflation coming from the emerging market economies was being maintained. During the year, both the Chinese and Indian authorities made reference to overheating at home and, as noted above, took concrete steps to offset it.

Commodity prices both helped and hindered the continued moderation of inflationary pressures over the last year. It was certainly helpful that energy prices fell back, after a sharp run-up in the first half of 2006. Less helpful was the persistently high level of many other commodity prices, in part reflecting rapidly rising costs of exploration, extraction and processing. Perhaps least helpful was the increase in the prices of a number of staple foods, as a result partly of drought, but also of moves to diversify crops away from food towards fuel production.

Monetary and financial conditions

Against this backdrop of strong growth but still low inflation and stable inflation expectations, monetary policy in the industrial countries tightened moderately. Policy rates in the United States, which had been raised at a measured pace from early 2004, remained unchanged from June 2006. Policy rates were increased more substantially by the ECB, in the period under review, albeit from a low level. In Japan there was an end to the zero interest rate policy, but the policy rate rose to only 0.5% in February. Real policy rates (ex post) also rose and are now around the level of estimated potential growth in the United States and the euro area, but still well below it in Japan.

By some measures, however, overall monetary and financial conditions remained highly accommodative in the industrial countries. Credit growth in the G3 peaked at around 10% in mid-2006, and then decelerated only very slightly. Real long-term rates also rose, but much less than policy rates. Indeed, at the end of the period under review, they were no higher than they had been in mid-2004 when the tightening phase began. Some commentators noted that an inverted yield curve had been a reliable indicator of imminent recession in the past. However, others preferred a different interpretation: the latest decline in long rates seemed to an unusual degree to indicate a decline in term (risk) premia, rather than the expectation of lower future short rates.

This "conundrum" concerning the term premia on long bond rates could partly reflect the stimulative influence of monetary authorities worldwide, together with a marked willingness on the part of both the private and public sectors to accept exchange rate risks. Relatively low policy rates in many parts of the industrial world, but particularly in Switzerland and Japan, contributed to

a continuing high level of capital inflows into a number of emerging market economies and also into other industrial countries with higher yields. Outright "carry trades" involved borrowing in low-yielding currencies to invest in high-yielding currencies, but also in countries where asset prices or currency values were expected to increase. And a variety of other flows played similar roles, notably large-scale Japanese retail outflows, and household borrowing in foreign currency to finance mortgages in central and eastern Europe. While improved macroeconomic fundamentals, in particular trade surpluses, in many recipient countries were also cited as a factor, others had sharply deteriorating current accounts and sometimes other negative indicators.

These capital inflows took various forms, adding to the upward pressure on equity and property prices already being exerted by relatively loose domestic monetary conditions. For countries that had experienced earlier crises associated with capital flows, especially in Asia, these developments began to raise concerns in spite of high reserve levels and current accounts generally being in surplus. Perhaps reflecting lessons from earlier periods, there was a significantly greater readiness to allow currencies affected by upward pressures to appreciate. In this regard, Korea, Thailand and Brazil stand out. Nevertheless, there was still massive recourse by a few countries to sterilised intervention, with the global change in reserves in 2006 being twice that of 2005. In addition, many countries either eased monetary policy, or were loath to tighten it, for fear of attracting still more capital inflows. In extremis, a number of emerging market economies turned to administrative measures, either to reduce inflows and ease the problem of sterilisation, or to encourage capital outflows.

This combination of relatively accommodative monetary policy and a substantial appetite for portfolio investments – purchases by the private sector of emerging market securities, and even greater purchases by reserve managers of bonds issued by the major industrial economies – seems to have put downward pressure on term premia everywhere. And to this must be added the influence in the industrial countries of another force. Pension funds and insurance companies with longer-term liabilities have been purchasing larger proportions of long bonds to "immunise" themselves against potential interest rate movements and valuation swings. While it is impossible to estimate the relative importance of these influences on longer-term risk premia, they both point in the same downward direction.

Relatively low risk-free rates over the last year or so certainly contributed to the prevailing view that the world was awash with liquidity – that is, credit was both cheap and commonly available with weaker conditionality than had previously been the case. But institutional developments within the financial sector also contributed to both the perception and the reality of the greater availability of credit: changes in regulation and technology altered what could be done, and changes in attitude altered what people wanted to do.

Examples of new practices abound, not least in the area of credit to households. Mortgage credit has become available on easier terms to borrowers almost everywhere, thanks both to deregulation in many countries and to the global extension of the mortgage scoring techniques pioneered in the United States. Indeed, in the United States and a number of other

countries, both mortgage and consumer credit became available to many who previously would not have had access at all. Until quite late in the period under review, this was generally considered to be a healthy development supporting owner-occupied housing. Only in recent months, as noted above, has the downside to these new practices become more apparent.

Responding to new developments in the financial sector over the course of the year, supervisory authorities repeatedly urged investment banks to tighten the credit terms made available to their clients, particularly hedge funds and private equity firms, and to monitor their counterparty exposures more vigorously. As the year proceeded, hedge funds themselves became increasingly involved in the financing of high-risk corporations through the purchase of collateralised debt obligations, leveraged loans and high-risk derivative products. And a record level of mergers and acquisitions last year, driven to an unprecedented degree by private equity firms, ensured a growing supply of the assets most in demand. One possible motivating force behind all this activity was a perception that the risks involved had in fact diminished, given a more benign macroeconomic environment. But a second factor appears to have been a growing willingness on the part of virtually all investors, including pension and mutual funds, to take on more risk as a way of raising returns.

Why this appetite for risk? A first and obvious reason is that relatively low risk-free rates encouraged such behaviour, particularly on the part of investors committed for institutional reasons to achieving high rates of return. A second reason was increased competition among providers of funding. For example, the rates of return on hedge funds declined last year, and a number of funds went out of business, compelling those surviving to behave more aggressively. Indeed, the same factor was even cited in the case of highly profitable banks, whose competitive behaviour stemmed from concerns that other banks would be seen to outperform them. Third, and perhaps most important, those providing credit increasingly follow a business model that involves originating credit and then transferring the exposure to others via securitisation or derivatives markets. Clearly, this raises a major principal-agent problem. What are the implications if originators no longer feel the need for due diligence, and the ultimate buyers do not have the skills or the information required to manage the risks inherent in the complex instruments they are buying?

The implications for asset prices last year were more or less the same as in previous years: that is, they generally moved further upwards, continuing a trend which had begun around mid-2003 when policy rates in the major industrial countries were at their lowest. House prices rose significantly in most countries; global stock markets reached record levels; the spreads on relatively high-risk instruments, including sovereign debt, stayed at record lows; and the markets for vintage wine, stamps and fine art rose to unprecedented levels. In contrast, the price of purchasing access to liquidity, in the form of options to buy and sell instruments of various sorts, stayed very low.

In spite of this overall positive performance, signs emerged in the course of the period that a change in the credit cycle might be on the way. The prices of most financial assets fell back sharply in April and May 2006 before quickly

recovering. There was a further, if smaller, bout of turbulence at the end of February 2007. While recovery again followed, growing concerns about the prospects for the US housing market and the broader economy raised the possibility of future financial implications. Some reflections on what these and other indicators might portend for the global economy are offered in the Conclusion of this Annual Report.

Exchange rates, global imbalances and reserve management

Concerns about a disorderly market response to global current account balances were somewhat alleviated last year by a stabilisation of the US trade deficit as a percentage of GDP, some rebalancing of global demand growth, a resumption of the downward trend in the effective value of the US dollar, and continued low volatility in the major cross rates. Among the other principal currencies, the further movement in the value of the euro also seemed supportive of an external rebalancing, even if not wholly welcome for those directly affected.

Nevertheless, the persistently high level of the US current account deficit, the growing external debt, and the fact that the real effective value of the dollar finished the year only 5 percentage points below its 30-year average were less encouraging. Another counterproductive factor was the continuing effective depreciation of the yen, in spite of Japan's large current account surplus and foreign exchange reserves, which had earlier stabilised around $1 trillion. Other currencies which either hardly appreciated or even fell on an effective basis included those of some major oil producers and of China, although the renminbi did rise at a faster rate against the US dollar. Since these countries were also registering large and sometimes even growing trade surpluses, this too was not conducive to a reduction in global trade imbalances.

Another emerging source of concern with respect to the major cross rates last year was the possibility that major holders of foreign exchange reserves might change their management policies. As reserves rose still further beyond levels that might be needed for liquidity purposes, the authorities in a number of countries announced institutional changes to put more emphasis on increasing returns, even at the price of accepting more risk. While this could well affect the price of various asset classes looking forward, in effect extending the current exuberant phase of the credit cycle, the implications for currency values are less clear. The reasoning behind this is discussed in the Conclusion.

In the event, the establishment of so-called "wealth funds" by a number of countries last year was accompanied by reassuring statements that risks would continue to be carefully managed. Perhaps even more importantly, it was also suggested that the broader implications for the smooth functioning of the international financial system would continue to be given serious consideration by those managing the world's growing level of foreign exchange reserves. In the light of history, it is both important and welcome that creditors and debtors increasingly realise the extent to which their fortunes are now intertwined.

II. The global economy

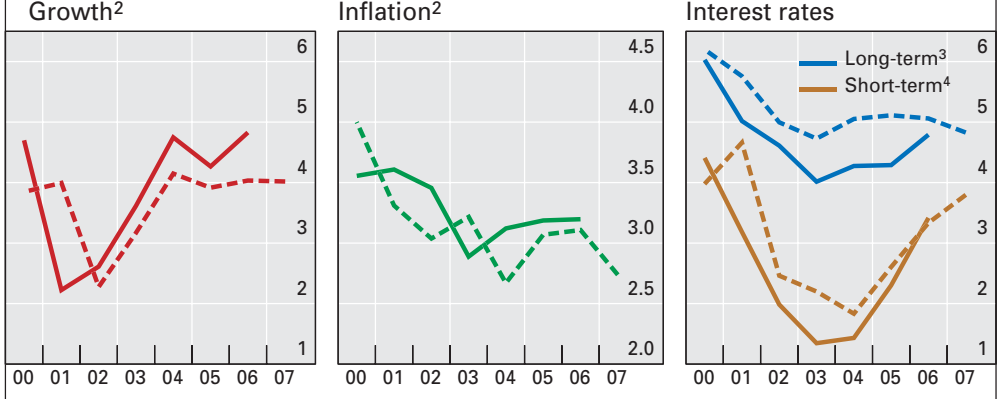
Highlights

The strength of the global economy surprised again in 2006 (Graph II.1). This was due to resilient US consumption in spite of the weakening housing market, a broad-based upswing in other advanced industrial countries, and continued rapid growth in emerging market economies. Inflation remained subdued, with headline inflation receding in the second half of the year. However, underlying inflation pressures persisted against the backdrop of high, or rising, rates of resource utilisation in major economies.

The consensus view for 2007 is for a broad-based economic expansion, easing inflation pressures and gradually receding current account imbalances. This scenario is supported by growing evidence of a classical recovery in the euro area and Japan, with exports leading to rising investment, and in turn to rising employment and consumption. Healthy domestic demand in major emerging market economies is also encouraging.

Yet the baseline scenario remains subject to significant near-term risks. The impact of the downturn in the US housing market might not yet have been fully felt. Admittedly, Europe and Asia appear less dependent on US growth than a few years ago. Even so, there are questions regarding the strength of consumption in these regions and advanced industrial countries in general. At the same time, it is not clear whether inflationary pressures have been contained. Financing conditions, which have remained supportive to growth, might also eventually tighten, especially if inflationary risks were perceived to increase.

Global macroeconomic developments[1]



[1] In per cent. The dashed lines show the consensus forecasts made at the end of the preceding year. [2] Annual changes in real GDP and consumer prices. Average of major countries available in Consensus Economics. [3] Ten-year US Treasury notes and bonds. [4] Three-month money market (G3 economies).

Sources: © Consensus Economics; national data. Graph II.1

Review of the global economy

Overview

Strong growth and subdued inflation continued

In 2006, the global economy again enjoyed a combination of strong growth and moderate inflation. Total world output expanded at a rate of 5½%, marking the fourth consecutive year of growth above 4%. Economic strength was more broadly based than in the previous years. Virtually all advanced industrial countries grew at or above trend in 2006, and the major emerging market economies in Asia and Latin America expanded strongly. Commodity-exporting countries benefited from an improvement in their terms of trade compared to 2005. Oil prices declined in late 2006, but the prices of many other commodities rose further (Graph II.2). Despite the robust expansion, however, global consumer price inflation remained subdued.

The balance of risks shifted from overheating ...

The balance of macroeconomic risks shifted in the course of the year. In the first half of 2006, buoyant growth led to concerns that the global economy might be approaching a "speed limit". Oil prices increased by more than 35% in dollar terms between February and August on the back of persistently strong demand growth. Moreover, signs that slack was evaporating in major economies gave rise to concerns about overheating. Long-term inflation expectations in financial markets rose temporarily in the first half of 2006, especially in the United States (see Chapter IV), and financial market volatility increased sharply, if briefly, in May (see Chapter VI).

... to weakness in growth

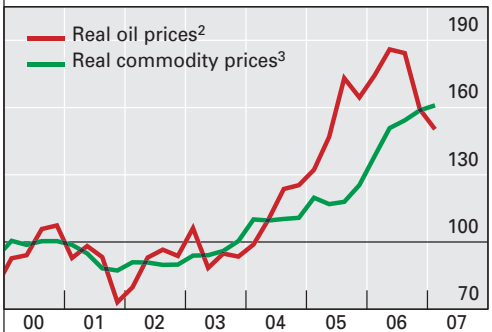
In the second half of the year, downside risks to economic growth became more apparent amidst mounting evidence of weakening US growth. At the same time, concerns about near-term inflation risks eased as oil prices began to decline. After peaking at more than $75 per barrel in August, spot oil prices fell by about 25% by the end of 2006. This and the associated fall in petrol prices supported consumer spending towards the end of the year, especially in the United States.

The current upswing differs from earlier ones

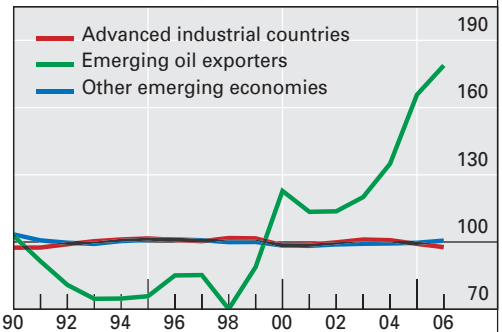
The upswing of the past four years has differed in several respects from that of 1994–97, when the global economy also recorded four consecutive

Commodity prices and terms of trade

Oil and commodity prices[1]



Terms of trade, goods[4]



[1] Deflated by world export prices; 2000 = 100; in US dollar terms. [2] Unweighted average of Dubai Fateh, UK Brent and West Texas Intermediate. [3] World market; industrial raw materials. [4] 1990–2005 = 100.

Sources: IMF; Bloomberg; Hamburg Institute of International Economics (HWWI); national data. Graph II.2

The current global upswing in perspective

In per cent and percentage points

	Current		Previous	
	2003–06[1]	2006	1994–97[1]	1997
World GDP growth	4.9	5.4	4.0	4.2
Contributions to world GDP growth[2]				
Advanced industrial countries	1.3	1.5	1.7	1.8
United States	0.7	0.7	0.8	0.9
Emerging economies	3.6	3.9	2.3	2.4
China	1.4	1.5	0.9	0.9
Contributions to GDP growth of advanced industrial countries[3]				
Household demand[4]	67.4	52.2	60.2	51.0
Residential investment	7.4	0.2	4.1	0.4
Corporate demand[5]	24.3	31.5	29.9	35.3
Change in real oil prices[6, 7]	93.8	14.1	10.5	1.0
Change in real commodity prices[6, 8]	66.6	25.4	15.4	5.3
Real interest rates[9, 10]				
Short-term (policy rates)	0.6	1.3	0.0	2.2
Long-term (10-year government rates)	–0.7	1.9	1.1	3.6
Fiscal indicators[9, 11]				
Structural financial balance[12]	1.8	–1.9	2.4	–1.6
Gross public debt[13]	6.9	85.8	7.1	77.2
Credit to the private sector[9, 13]	12.0	134.5	2.0	105.7

[1] For GDP growth and contributions to GDP growth, annual average; for other indicators, cumulative change. [2] In percentage points. [3] As a percentage of total GDP growth. [4] Private final consumption expenditure plus private residential gross fixed capital formation. [5] Private non-residential gross fixed capital formation. [6] Deflated by world export prices. [7] Unweighted average of Dubai Fateh, UK Brent and West Texas Intermediate. [8] World market; industrial raw materials, in US dollar terms. [9] Weighted average of the United States, the euro area and Japan, based on 2000 GDP and PPP exchange rates. [10] Deflated by the personal consumption deflator (United States) or consumer prices (euro area and Japan). [11] General government. [12] Cyclically adjusted financial balance, as a percentage of potential GDP. [13] As a percentage of GDP.

Sources: IMF; OECD; Bloomberg; HWWI; national data. Table II.1

years of growth at or above trend (Table II.1). First, emerging market economies, especially in Asia, have contributed 1¼ percentage points more to global growth than they did a decade ago. To an important extent, this reflects the buoyancy of the Chinese economy. More generally, however, major reforms seem to have strengthened growth in many emerging market economies (see Chapter III). Second, despite relatively moderate rises in real incomes in the advanced industrial countries, household demand has been a significantly larger (and corporate spending a smaller) factor behind growth in advanced economies than in the earlier upturn.

In particular, financing conditions have remained easy

Third, financing conditions have remained much more supportive than a decade ago. Long-term real interest rates have not risen despite strong global growth and the progressive removal of monetary accommodation since 2004. Low interest rates have underpinned valuations of financial and real assets worldwide (see Chapter VI). In addition, they have been associated with rapid credit growth and substantial financial deepening (see Chapter VII). As a

consequence, credit/GDP ratios have, on aggregate, reached new historical highs. Finally, structural fiscal deficits have declined during the current upswing, but to a lesser extent than in the mid-1990s.

A marked shift in global economic activity

The drivers of global growth changed in 2006

The engines driving the global expansion changed in 2006. Output growth in the United States slowed from an annual rate of more than 4% in the first two quarters of the year to about 2% in the second half and 1¼% in the first quarter of 2007. At the same time, demand growth strengthened, or remained firm, in most other advanced economies, including the euro area, Japan, the United Kingdom and Canada. Domestic demand growth also continued to play an important role in major emerging market economies in Asia, central and eastern Europe and Latin America (see Chapter III).

The US housing market downturn ...

A sharp downturn in housing market activity was the main factor behind slower US growth. Housing starts fell by 35% in 2006 and inventories of unsold houses soared (Graph II.3). Residential investment, which had contributed about ½ percentage point to GDP growth in 2005, on average subtracted more than 1 percentage point at an annual rate in the second half of 2006. Nonetheless, the US economy continued to grow at a moderate pace as consumption appeared to be largely unaffected by the housing slowdown.

... still appears shallower than the previous one ...

The current downturn in the US housing market has been steep, but still appears shallower than the previous one in the early 1990s. Housing starts and new home sales have both declined by about 40% to date, compared to 60% and 55% respectively in the previous cycle. Indeed, housing starts and home sales continued to hover around their long-term average levels in the first quarter of 2007. Inventories of unsold new homes looked as if they had peaked, but remained high by historical standards.

... and its impact has been cushioned by rising asset values

Continued increases in household wealth and income limited the impact of the US housing downturn on consumption. House prices in real terms dropped in some places that had earlier experienced particularly large rises, but they

Anatomy of the US housing market slowdown

[1] Changes over four quarters, in per cent; deflated by consumer prices. [2] Existing houses for sale as a ratio of those sold in a given month. [3] In millions. [4] Seasonally adjusted at an annual rate. [5] In residential construction. [6] Contributions to quarterly real GDP growth, in percentage points; four-quarter moving averages.

Source: National data. Graph II.3

did no more than level off nationally. At the same time, the value of US households' financial assets continued to grow strongly (see discussion below). Perhaps even more importantly, unemployment remained low. Even employment in residential construction, which amounts to about 2½% of total US employment, remained stable. Indeed, it appears remarkably high relative to the current level of housing starts.

Signs of classical recovery in the euro area

Growth in the euro area exceeded that in the United States in the second half of last year, for the first time since 2002. The upswing seems to have followed the classical pattern of rising exports, then resurgent business investment and employment, and finally, albeit moderately, increased private consumption. The unemployment rate dropped below the levels seen at the peak of the previous cycle in 2001. Job creation was especially strong in Germany, where the unemployment rate fell by almost 1½ percentage points in 2006. The recovery of the German economy also supported growth in the country's major trading partners in Europe.

Moderate growth continued in Japan

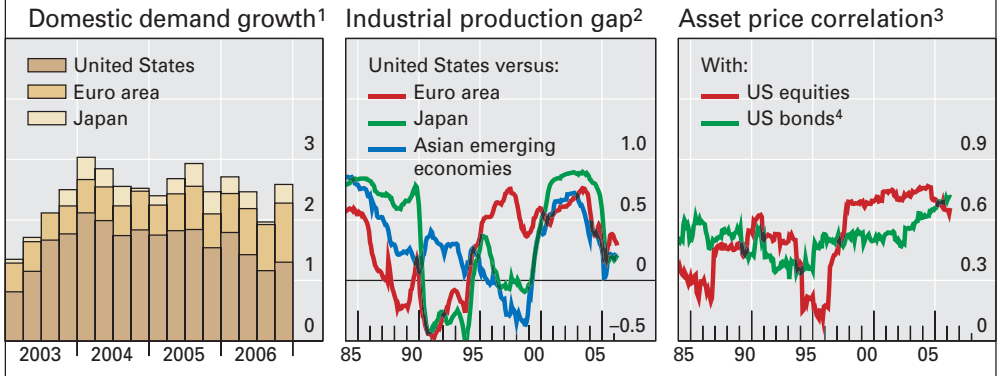
The Japanese economy continued to expand at a moderate rate, although the pattern of demand growth remained somewhat uneven. Corporate investment continued at a brisk pace, especially in export-oriented sectors, which were supported by buoyant growth in China and a weak yen (see Chapter V). Consumption growth remained solid, although it lost momentum in the second half of 2006, despite cyclically low unemployment.

Has the rest of the world decoupled from US growth?

An apparent reduction in dependence on US growth ...

As a result of these trends, the United States contributed less to the global economic expansion as 2006 progressed. While aggregate domestic demand in the G3 economies continued to grow at a rate of about 2½%, the United States accounted for only about 50% of this in the second half of 2006, compared with an average of 70% over the previous three years (Graph II.4). The weakening of US domestic demand growth was, however, largely confined

Demand, output and asset market correlations



[1] Contributions, in percentage points, to changes (over four quarters) in final domestic demand in the G3. [2] Rolling correlations, on a four-year moving window, of industrial production gaps (using an HP filter). [3] Rolling correlations of monthly changes on a four-year moving window. Average of the euro area and Japan. [4] Ten-year government bond yields.

Sources: Datastream; national data. Graph II.4

Trade exposures to the United States

	Direct exposure[1]		Indirect exposure[2]		*Memo: Trade openness*			
					Exports/GDP[3]		*Imports/GDP*[3]	
	2006	2001	2006	2001	*2006*	*2001*	*2006*	*2001*
Canada and Mexico	81.2	87.9	4.0	2.5	*31*	*32*	*29*	*29*
Europe	7.6	9.1	7.7	9.5	*31*	*28*	*31*	*27*
Japan	22.7	30.4	10.6	11.0	*14*	*9*	*12*	*8*
China	21.0	20.4	10.1	14.5	*37*	*23*	*30*	*21*
Other Asia[4]	13.5	19.2	12.4	14.0	*44*	*41*	*42*	*39*
Latin America[5]	26.2	30.5	10.6	10.2	*19*	*14*	*12*	*13*

[1] Exports to the United States as a share of total exports. [2] Exposure through exports to countries other than the United States, calculated as the sum of the export shares of these countries multiplied by their share of direct exports to the United States. [3] In per cent. [4] Excluding China. [5] Excluding Mexico.

Sources: IMF, *Direction of Trade Statistics*; national data; BIS calculations. Table II.2

to non-tradable goods: US real imports of goods and services continued to grow in the second half of the year. Allied with firmer demand elsewhere, especially from Europe, this helped to sustain strong export growth in the major emerging market economies. In early 2007, the value of China's exports to Europe exceeded that to North America for the first time.

... seems to reflect the different character of the current cycle ...

Some developments suggest that the world economy might have become somewhat less dependent on the US business cycle than it turned out to be during the last US recession in 2001. In the past few years, industrial production in major regions has been much less synchronised with the United States than was the case during the early 2000s. In part, this reflects the fact that, unlike the current upswing, the earlier cycle was driven by a worldwide boom and subsequent collapse in IT-related capital goods. This involved a close co-movement in the production of these goods across regions.

... changing trade patterns ...

Moreover, the past few years have seen greater regional diversification of trade linkages. While the openness of economies has generally increased, the proportion of exports from the major economic regions going to the United States declined between 2001 and 2006 (with the major exception of China). Rising emerging economies and growing intraregional trade have reduced this direct, and possibly also the indirect, export exposure since 2001 (Table II.2). Much of the change in trade exposures – for instance those of Japan, emerging Asia and Latin America – has to do with the integration of China into the global marketplace (see Chapter III).

... and possible decoupling of business confidence

Another, more recent, indication that dependence on the US business cycle may have declined is the continued optimism in the corporate sector of the euro area and other major economies in late 2006 and early 2007. This decoupling of sentiment bodes well for the near-term outlook, given that business sentiment tends to be correlated with capital spending.

Yet the linkages formed via corporate activity ...

Yet the likely impact of broader-based or more protracted weakness in the United States on business confidence among internationally active firms remains uncertain. For instance, German companies included in the DAX stock index generate about 70% of their revenues abroad, and the effects of weaker

US growth on their profit expectations and corporate spending might be considerable. Increasingly global trade linkages, not least through greater international integration of production processes, underline the potential importance of such effects.

... and financial markets remain close

A closely related reason for caution concerns financial linkages with the United States. Foreign exposures to a US downturn in the form of holdings of US assets have surged in the past few years. US external liabilities have risen, by over $4 trillion between 2001 and 2005. Portfolio debt has increased especially rapidly, from 28% to about 34% of US external liabilities since 2001. Moreover, close co-movements of asset prices might spread the impact of a downturn in US financial markets beyond the holders of US assets. Equity market returns worldwide are generally highly correlated with those of the United States. Correlations of US long-term government bond yields with those in Europe are also high, and have risen during the period of increasing asset prices and output since mid-2003. International co-movements of asset prices tend to be even stronger during market downturns.

Improvement in structural fiscal balances

Structural deficits declined in 2006 ...

Fiscal balances in advanced industrial countries finally showed signs of improvement in 2006. Measures of structural budget deficits, which attempt to remove cyclical effects from headline deficit figures, decreased in the United States (by over 1 percentage point of GDP), Germany (by ¾ percentage point) and Japan (by 3¾ percentage points, largely due to one-off changes in capital transfers), and increased marginally only in Italy (Table II.3). Changes in US and German headline balances were even more pronounced, with their deficits each decreasing by 1½ percentage points. While in most countries fiscal

Recent fiscal performance and medium-term fiscal projections[1]

	Financial balance			Structural balance[2]			Gross public debt		Change in fiscal position over medium term[3]	
	2005	2006	2007	2005	2006	2007	2006	2007	Financial balance	Gross public debt
United States	–3.7	–2.3	–2.7	–3.6	–2.5	–2.8	62	62	1.0	1
Euro area	–2.4	–1.6	–1.0	–1.5	–1.0	–0.8	76	74	0.9	8
France	–3.0	–2.6	–2.3	–2.0	–1.7	–1.7	75	74	1.5	6
Germany	–3.2	–1.7	–0.7	–1.9	–1.1	–0.8	71	69	0.4	2
Italy	–4.3	–4.5	–2.5	–3.2	–3.4	–2.0	120	119	2.1	4
Spain	1.1	1.8	1.5	1.3	1.9	1.5	47	43	–0.6	5
Japan	–6.4	–2.4	–2.7	–5.9	–2.2	–2.7	179	179	1.6	7
United Kingdom	–3.3	–2.9	–2.7	–3.3	–2.8	–2.6	47	47	0.9	0
Canada	1.4	0.8	0.8	1.3	0.7	0.8	68	67	0.0	22
Australia	1.4	1.5	1.4	1.3	1.6	1.5	16	15	–0.5	5[4]

[1] General government; as a percentage of GDP. [2] Cyclically adjusted financial balance, as a percentage of potential GDP. [3] Change, in percentage points, between the 2006 outcome and 2012 (for Australia, 2011; for Spain, 2008). Positive numbers indicate a reduced deficit/increased surplus and reduced gross debt, respectively. [4] Net debt.

Sources: European Commission; IMF; OECD. Table II.3

outcomes improved due to unusually buoyant tax revenues, in Germany and Japan expenditure restraint also played an important role.

... and continued to improve moderately in early 2007 ...

Recent data suggest that fiscal performance continued to improve in early 2007. The US federal budget deficit is projected to decline to 1.6% of GDP in fiscal year 2007, about 1 percentage point less than the general government deficit and the lowest since 2002. In the euro area, most countries under the excessive deficit procedure are projected to keep or bring down their deficits below the ceiling of 3% of GDP in 2007, including Italy, where the fiscal deficit is expected to decline by 2 percentage points. Germany implemented a 3 percentage point increase in the VAT rate at the start of 2007 with a view to bringing the headline deficit below 1% of GDP this year. Japan's draft budget envisages a reduction in the primary deficit of about 1% of GDP in 2007/08, advancing the plan to achieve a primary surplus for the government's budget by 2011/12.

... but durable fiscal consolidation remains a distant goal

Even so, durable fiscal consolidation remains a distant goal for most advanced industrial countries. Public debt levels are high in many large economies, and their reduction is projected to proceed at a snail's pace over the medium term. The stubbornly high debt levels in Italy and Japan, despite low interest rates and, in Japan, above trend growth, are particularly worrying. Even greater fiscal challenges lie ahead, as the ageing of populations will affect government budgets and, possibly even more strongly, household behaviour over the next several decades (discussed below).

Current account positions stabilised, but underlying imbalances persisted

Current account balances stabilised owing to lower oil prices ...

Current account balances broadly stabilised as a percentage of GDP last year. In particular, the US current account deficit remained at about 6½% of GDP (Table II.4). Lower energy prices towards the end of 2006 were one major factor behind this: the US oil trade deficit fell by almost $20 billion in the fourth quarter. For 2006 as a whole, the current account deficit of oil-importing countries remained unchanged at about 1% of GDP, compared to an increase of ½% of GDP in 2005. Correspondingly, the surpluses of oil exporters rose less than in the previous year; the combined current account surpluses of oil-exporting countries remained broadly unchanged at 9¼% of GDP, compared with a jump of almost 3 percentage points in 2005.

... and more balanced growth

Another factor that prevented current account imbalances from rising was the more balanced global economic expansion. Real exports of goods from the United States grew by more than 10%, the highest rate since 2000, supported by stronger growth of its major trading partners. The euro area recorded a small current account deficit, following an almost balanced current account in 2005 and a moderate surplus in 2004. Emerging Asia (excluding China) and Latin America recorded small increases in current account surpluses relative to GDP.

Changes in real effective exchange rates remained moderate

Movements in real effective exchange rates in 2006 appear to have been still too small to lead to any substantial reduction of external imbalances. The dollar depreciated by 4% in real effective terms, but is still only 5% below its long-term average (see Chapter V). Correspondingly, the euro appreciated by about 5%. At the same time, however, the yen depreciated by 6½% and Japan's current account surplus increased to almost 4% of GDP. In addition, the exchange rates of many surplus countries in Asia appreciated only moderately

Global current account balances

In billions of US dollars

	Average 1991–2002	2003	2004	2005	2006	*Memo: 2006*[1]
United States	–202	–528	–665	–792	–857	*–6.5*
Euro area[2]	15	36	97	8	–29	*–0.3*
Japan	106	136	173	166	172	*3.9*
Other advanced industrial countries	1	54	56	64	63	*1.1*
China	16	46	69	161	239	*9.1*
Other emerging Asia	19	117	104	84	102	*2.8*
Latin America	–46	8	20	35	49	*1.7*
Central and eastern Europe	–14	–36	–58	–63	–89	*–6.7*
Oil-exporting economies	12	139	234	402	472	*9.3*
Norway	11	28	33	47	56	*16.7*
Russia	14	35	59	83	96	*9.8*
Saudi Arabia	–5	28	52	87	96	*27.4*
Oil-importing economies	–114	–212	–275	–451	–490	*–1.1*
Advanced	–86	–339	–394	–626	–728	*–2.2*
Emerging	–27	127	118	175	239	*2.3*

[1] As a percentage of GDP. [2] Sum of the balance of individual euro area economies.

Sources: IMF; national data. Table II.4

or even depreciated. In particular, China's currency depreciated by about 1% in real effective terms. Against this background, China's current account surplus rose by 50% (to over 9% of GDP).

Unusual patterns of saving ...

Moreover, the major factors behind the domestic saving/investment imbalances underlying international external payments imbalances seem to be persisting. Perhaps most importantly, the US household saving rate remained in negative territory in 2006. The moderate increase in the US national saving rate was primarily attributable to the lower fiscal deficit. At the same time, saving rates in emerging Asia stayed at high levels. The national saving rate in China even seems to have remained at a record level in 2006.

... and investment persisted

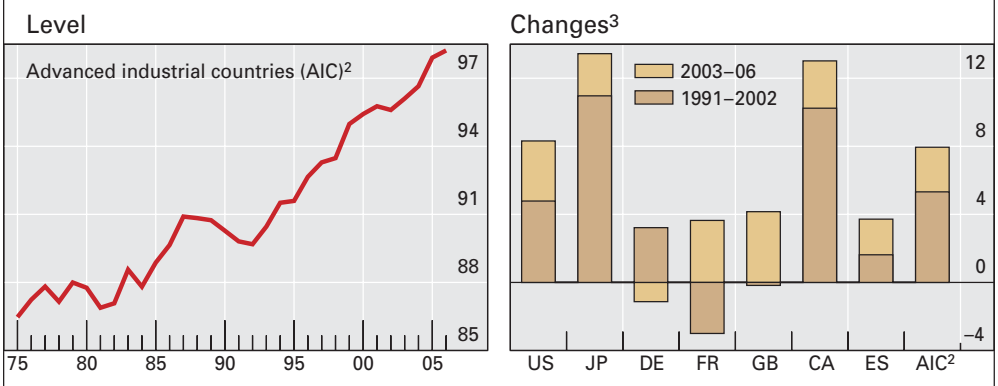
The pattern of global investment remained uneven. Lower residential investment contributed to a narrowing national savings gap in the United States, while changing little in other advanced economies. US corporate investment growth slowed markedly as the year progressed; non-residential fixed investment actually declined in the fourth quarter of 2006. Corporate investment picked up in emerging Asia but, as in previous years, this was driven entirely by China, where investment as a share of GDP reached a new record level. Machinery and equipment investment elsewhere in the region seemed to remain at a low ebb.

Household consumption in advanced industrial countries

The propensity to consume ...

Household consumption during the current upswing has made an unusually large contribution to GDP growth in advanced industrial countries, despite

Propensity to consume[1]



[1] Private consumption expenditure as a percentage of household disposable income. [2] Weighted average of the G10 countries, Australia and Spain, based on 2000 GDP and PPP exchange rates. [3] CA = Canada; DE = Germany; ES = Spain; FR = France; GB = United Kingdom; JP = Japan; US = United States.

Sources: OECD; national data. Graph II.5

subdued growth of household income. Average annual growth of household real disposable income was on aggregate somewhat less than 2% in 2003–06, compared to about 2½% during the second half of the 1990s and about 3% from 1975 to 1990. In contrast, consumption grew at an average annual rate of about 2½% from 2003 to 2006. As a consequence, consumption as a share of disposable income, which had been on an upward trend in many advanced economies since the early 1990s, reached new records in the period under review (Graph II.5).

... has risen in many advanced economies

The rise in the propensity to consume, and the corresponding decline in household saving rates, has been broad-based in the past four years. It has included in particular the United States, but has also been evident in other countries such as Japan, the United Kingdom, France and Spain. In some countries, most notably the United States, consumption has exceeded disposable income in the past few years, implying negative household saving rates. One major exception to this picture has been Germany, where the propensity to consume has actually declined since the early 2000s.

Factors supporting strong household spending

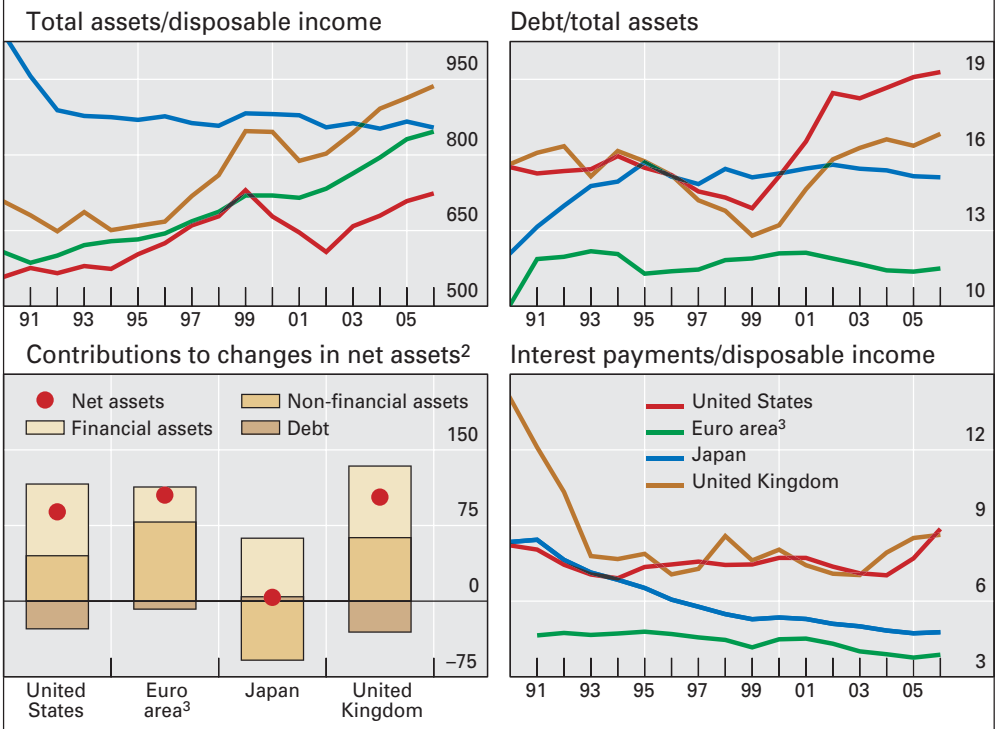
Several developments seem to have supported strong household spending in the face of recent subdued income growth. First, the value of household assets has risen rapidly. Second, in a related vein, rising collateral values and the financial innovations of the past decade have reduced the credit constraints on households. Moreover, low interest rates have helped contain debt service burdens. Growing household balance sheets seem to have supported consumption despite large hidden fiscal liabilities.

Changes in household wealth and borrowing

Rapid increase in the value of household assets ...

Household assets have experienced a rapid and broad-based increase in value during the current upswing in most advanced economies. Since end-2002, the ratio of total assets to disposable income has grown by about 15–20% in the United States, the euro area and the United Kingdom (Graph II.6). This increment is roughly equal in magnitude to annual disposable income, and brought the

Household assets and indebtedness[1]



[1] In per cent and percentage points. [2] Between 2002 and 2006; in percentage points of disposable income.
[3] Weighted average of France, Germany and Italy, based on 2000 GDP and PPP exchange rates.

Sources: OECD; national data; BIS estimates. Graph II.6

asset/income ratios in these economies to record highs. One major exception to this picture is Japan, where the asset/income ratio has barely changed during the past 15 years or so.

... in the form of financial ...

Financial assets have accounted for most of the increase in the United States (60%) and the United Kingdom (55%). Within this, the bulk of the growth in financial assets – three quarters in the United States – has come from capital gains, mainly in equities and the pension and mutual funds that hold them. Net purchases of financial assets account for the small remainder. In Japan, rising values of financial assets and falling property values have largely offset each other.

... and non-financial assets

Increases in the value of non-financial assets have generally also been considerable. In the euro area, where the share of financial assets is relatively smaller, increases in the value of houses and durable goods even dominated. House prices have risen rapidly in most advanced economies in the past few years (Table II.5). This, rather than accumulation of additional housing or consumer durables, has accounted for the lion's share of the growth in non-financial assets. For instance, in the United States, net accumulation of physical assets (including housing) has made up only around 40% of the measured rise in household non-financial assets since end-2002.

Brisk expansion of household credit ...

Along with rising asset values, household credit has expanded briskly in many advanced industrial countries. This has been particularly marked in countries with booming housing markets, including the United States, the

Residential property prices and mortgage debt					
	Change in residential property prices[1]			Change in residential mortgage debt[2]	
	1996–2002	2003–05	2006	2003–05[3]	2006
Norway	8.3	7.2	16.4	7.5	–0.8
Denmark	7.1	12.4	12.3	17.0	5.1
Sweden	8.0	8.9	10.5	6.7	2.5
New Zealand	4.0	17.2	9.6	18.6	7.3
Canada	3.7	9.7	9.4	5.0	2.3
Spain	7.7	16.1	9.1	16.0	6.1
United Kingdom	11.9	8.1	9.1	12.7	4.7
Australia	9.1	7.0	8.9	18.1	4.3
France	6.2	13.3	6.6	6.9	3.0
Italy	3.7	9.2	6.4	5.1	1.3
United States	5.7	10.9	5.9	14.3	1.7
Finland	8.2	7.3	5.7	9.1	2.1
Netherlands	11.2	3.9	5.3	13.2	–0.3
Japan	–4.7	–3.8	4.1	–0.1	–0.2
Switzerland	0.4	2.0	1.8	12.3	1.1
Germany	–0.7	–1.7	0.0	4.6	–0.6

[1] End of period; annual nominal changes, in per cent; for Japan, land prices in six large cities. [2] In percentage points of GDP. [3] Cumulative change.

Sources: Various real estate associations; national data; BIS estimates. Table II.5

United Kingdom, France, Spain and several smaller advanced economies. Correspondingly, the stock of mortgage debt has risen considerably in these countries (Table II.5).

... but leverage has risen less

As both sides of the household sector's balance sheet have expanded, overall leverage – the ratio of debt to assets – has changed much less. In the euro area, debt has increased broadly in tandem with asset values (Graph II.6). In the United States and the United Kingdom, however, debt has risen even faster than asset values. By contrast, in Japan both debt and assets have trended down slightly relative to disposable income over the past decade as property prices have fallen until recently.

Retail interest rates have declined

The expansion of household debt has generally been supported by low retail interest rates. From 2003 to 2006, typical mortgage rates in the countries shown in Graph II.6 were on average around 3 percentage points lower than in the 1990s. Retail interest rates seem to be reflecting the low level of interest rates worldwide and increased credit supply. Relaxation of lending standards due to greater competition and greater reliance on securitisation has contributed to a significant increase in lending, including to riskier households.

Household financial deepening and consumption

Positive effect on consumption growth through rising asset values ...

These developments might have supported consumption growth through a variety of closely related mechanisms. First, households simply seem to have consumed more out of current income in the face of rising asset values. While it is difficult to isolate this channel from others, empirical studies generally find a significant impact of wealth on consumption. For instance, simple

consumption functions for the United States yield estimated contributions of higher asset values to consumption that even exceed those of growth of disposable income in the period 2003–06. Wealth effects in other economies seem to have been smaller, but still significant.

... increased borrowing ...

Second, rising asset values have increased households' scope for borrowing. In particular, housing equity withdrawal in the form of borrowing against rising collateral values has been an important source of cash flow, especially in English-speaking countries. For instance, in the United States flow of funds data suggest that housing equity withdrawal was, on average, equivalent to 4½% of household disposable income from 2003 to 2005, and 1½% in 2006. At the same time, its direct effect on consumption is likely to have been smaller than these figures suggest. Surveys conducted in Australia and the United States show that only about one fifth of the equity extracted from housing was spent on consumption.

... and subdued interest payment ratios owing to low interest rates ...

Third, low retail interest rates have allowed households to increase their average debt outstanding without a similar increase in repayment burdens. Total interest payments as a share of disposable income have drifted down in the euro area and, until recently, risen moderately in the United States and the United Kingdom. Debt service also seems to have remained fairly contained in the other advanced economies, although there have been exceptions, such as Australia.

... and debt substitution

The subdued profile of interest payment ratios also partly reflects the substitution of lower-cost housing-related debt for consumer debt. As well as helping to limit overall interest payments, this has lengthened the average duration of household debt. In addition, at least in the United States, some of the increase in mortgage debt service has replaced payment obligations such as rent, as more marginal borrowers have become homeowners. Broader measures of household financial obligations have therefore not risen as quickly as mortgage debt interest.

The capacity to smooth consumption seems to have grown

In addition to supporting faster consumption growth, these developments seem to have helped households smooth spending better than in the past. The past 10 years have seen the variation of aggregate household income growth remain at levels similar to the previous decade (Table II.6). At the

Measures of income and consumption variability[1]

	Canada		France		Germany		Japan		United Kingdom		United States	
	Income	Cons	Income	Cons	Income	Cons	Income	Cons	Income	Cons	Income	Cons
1966–75	0.9	0.9	1.0	1.2	1.3	1.0	1.6	0.9	3.8	2.6	1.2	0.9
1976–85	2.4	1.4	2.6	1.4	2.3	2.5	2.4	0.8	3.0	2.6	1.0	1.0
1986–95	2.9	1.5	1.4	1.3	2.0	1.8	2.5	1.3	1.5	1.2	1.3	0.7
1996–2006	1.2	0.5	1.3	0.8	3.8	2.6	13.0	3.5	1.9	0.6	1.1	0.4
2003–06	1.0	0.4	1.6	0.5	7.0	6.3	3.1	2.1	1.2	0.7	1.1	0.4

[1] Coefficient of variation of quarterly growth in household disposable income deflated by the consumption deflator ("income") and final consumption expenditure at constant prices ("cons").

Source: National data. Table II.6

same time, however, consumption growth has generally fluctuated much less, with the notable exceptions of Germany and Japan, where household balance sheet expansion has been relatively limited. Empirical estimates also show a decline in the income elasticity of US consumption in the past couple of years. These observations are consistent with financial deepening reducing liquidity constraints of households.

How resilient are household balance sheets?

The resilience of balance sheets has not been seriously tested

It is not clear how durable the increase in asset valuations underpinning the expansion of household balance sheets is. Over the past 10 years, there has not been a serious test of the resilience of balance sheets in the form of a sharp and simultaneous decline of asset values in the larger economies. The financial shocks that have occurred have generally only affected one asset class at a time. The drop in equity prices worldwide from 2000 to 2002 coincided with a fairly fast-paced rise in house prices in most advanced industrial countries (with the exception of Germany, Japan and Switzerland). In later years, housing prices declined temporarily in several smaller economies, but they are still rising fairly rapidly in nominal terms in many others.

The impact of lower house prices has been limited ...

The experience of countries where house prices have fallen in recent years suggests that shocks specific to this asset class can be relatively easily absorbed as long as other factors affecting the balance sheet are supportive. Provided macroeconomic and labour market conditions continue to be strong, a moderate reversal in house prices is likely to result in some pullback in consumption, but probably not enough to generate a significant macroeconomic slowdown. However, a more generalised fall in asset prices that coincided with a macroeconomic downturn – as, for instance, happened in the Nordic countries in the early 1990s and the Netherlands more recently – might have more serious implications for consumption. Because sharp equity price falls often occur in the lead-up to recessions, they are also seen to precede larger consumption declines more often than falls in house prices alone (Graph II.7).

... in part because of the distribution of wealth

Another reason for expecting a more benign outcome from isolated declines in house prices can be found in distributional considerations. In most countries that have experienced rapid growth in housing-related debt, the increases have been concentrated amongst mid-career and higher-income households, especially existing homeowners. These groups generally already have substantial financial and other resources, and might be less likely than average workers to lose their jobs in a downturn. They are therefore the most able to bear the risks of additional debt.

US subprime market risks ...

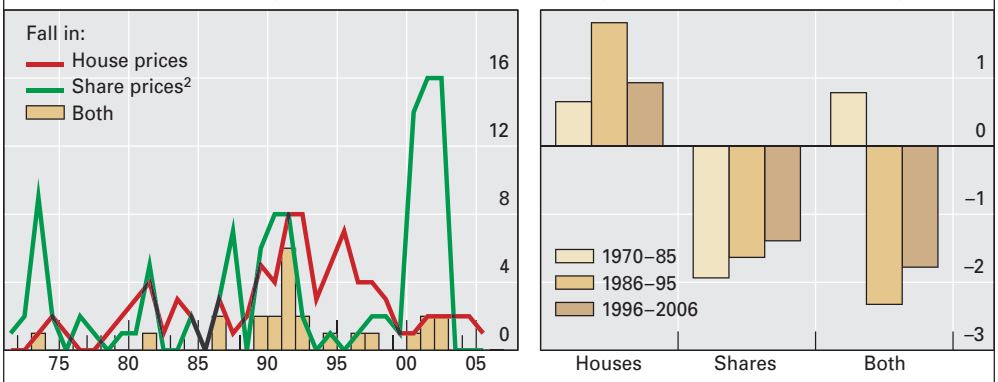
One exception to this pattern might be the United States. Although relaxations of lending standards to households have been a feature of the current cycle in many countries, the substantial expansion of the market to higher-risk borrowers seems to have been particular to the United States. Subprime mortgage lending accounts for a larger share of new mortgage lending in the United States than in other major economies, and has been increasing as a share of the total mortgage market there.

... have led to rising delinquency rates

Many of the subprime and other non-traditional loan contracts incorporated large projected increases in required repayments several years

Episodes of asset price falls

Countries experiencing falls in asset prices[1] | Change in annual consumption growth[3]



[1] Over the course of the year; number of countries. [2] Fall of at least 10%. [3] In the year following a fall in asset prices (for shares, of 10% or more), or as long as asset prices continue to fall, relative to the three years prior to the episode; in percentage points.

Source: National data. Graph II.7

into their terms, even if market rates did not rise. This has generated payment shocks for those borrowers who could not refinance or sell for a profit as planned when the interest payment was reset. The result has been a sharp pickup in mortgage delinquencies and defaults in the United States since late 2006. Although this has been most evident for subprime mortgages, delinquencies have also risen noticeably for prime and near prime loans with variable interest rates and resetting payments.

The role of hidden fiscal liabilities

Growing welfare payments ...

Despite a growing awareness of hidden fiscal liabilities, government welfare programmes and tax policies seem to have provided few incentives for households to increase saving. Since 1990, the share of government welfare payments in total household income has increased slightly in nearly all major industrial countries. This trend has been most apparent in those countries where population ageing is already boosting the size of the retired population, such as Italy and Japan. The share of social welfare payments in income is now slightly higher than at comparable points of earlier cycles in several countries, including the United States.

... and lower taxes

Household income has benefited not only from higher welfare payments but also from falling taxes. Relative to compensation of employees, personal income and wealth taxes paid declined in the late 1990s. Although this ratio has begun to pick up in some countries more recently, both as the expansion matures and as capital gains are realised and taxed, it generally remains lower than at the start of the decade.

Hidden fiscal liabilities ...

The fiscal liabilities associated with the ageing of the population raise serious doubts as to whether these two trends can continue. Within the next 10–15 years a dwindling share of workers will have to start supporting a ballooning share of dependants in all major industrial countries. In order to maintain current levels of pension, health care and other welfare benefits,

Projected impact of ageing populations on public expenditure

	Total age-related spending		Pensions		Health care		Long-term care		Education	
	Level 2005[1]	Change 2005–50[2]	Level 2005[1, 3]	Change 2005–50[2]	Level 2005[1]	Change 2005–50[2]	Level 2005[1]	Change 2005–50[2]	Level 2005[1]	Change 2005–50[2]
European Union	22.4	3.8	10.6	2.2	6.4	1.5	0.9	0.6	4.5	–0.5
Japan	19.6	7.1	9.2	0.6[4]	6.0	4.3	0.9	2.2	3.5	…
United States	16.7	6.0	4.4	1.8[4]	6.3	3.4	0.9	1.8	5.1	–1.0[4, 5]

[1] As a percentage of GDP. [2] In percentage points of GDP. [3] For Japan, fiscal year 2006; for the United States, 2000. [4] Change from 2000. [5] Including child and family benefits.

Sources: European Commission; OECD. Table II.7

total age-related spending would need to increase significantly over the next four decades (Table II.7). Clearly, taxes would have to be raised substantially to finance this spending increase. Alternatively, if the additional spending were to be debt-financed, then government debt ratios could spiral well above current ceilings, such as the euro area's 60% of GDP.

… might at some point affect household saving

Empirical studies indicate that household consumption and saving might be quite sensitive to changes in the state of public finances, especially if the level of public debt is already high. One example might be the weak consumption observed in Germany since the start of this decade. This has been partly attributed to households' worries about their future pension and health care benefits. The timing of the "wake-up call" for households will depend on many factors, including their current level of saving. But probably the most important considerations will be the timing and nature of reforms to public pension and health care systems.

Prospects for changes in household consumption and saving

Unusual configuration of consumption and saving

The current configuration of record high propensities to consume and correspondingly low household saving rates in many advanced industrial countries appears unusual. Its sustainability ultimately depends on whether expectations of future permanent income underlying current spending decisions will be validated. A number of factors, including strong global growth, rising employment in many economies and still low interest rates, seem supportive to favourable income expectations and asset valuations in the near term. At the same time, the expansion of household balance sheets raises important longer-term issues, some of which could also be relevant over shorter horizons.

Different character of equity …

A first issue is whether rises in asset prices genuinely imply increases in the household sector's wealth. Increases in the value of equity holdings represent greater aggregate wealth to the extent that they reflect correct expectations of future output growth. This could include participation in productivity gains in rapidly growing emerging economies by households in advanced economies, via international portfolio diversification.

… and housing wealth

In the case of residential property, rising prices of a given stock of houses imply a redistribution of wealth, from current and future users of housing

services to existing house owners, rather than a net increase in wealth for the household sector as a whole. The current higher consumption levels resulting from this redistribution might in future be offset by higher saving on the part of future users of housing services. However, the consumption responses of this latter group could well be some way off.

Increased borrowing might continue for a while ...

A second issue concerns the impact of higher leverage on household spending. It is not clear whether the apparent boost to consumption from households' borrowing behaviour will persist. On the one hand, increased capacity of households to borrow against rising asset values, and enhanced credit supply to households more generally, might support consumption growth for a while, especially in an environment of ongoing financial innovation and heightened competition in the financial sector.

... but the sensitivity of household balance sheets might have increased

On the other hand, rising debt levels might have increased the sensitivity of household balance sheets to financial and macroeconomic shocks. At the aggregate level, debt/asset ratios still appear relatively low, notwithstanding the increase during the past couple of years in the English-speaking countries. One key question is what would happen if long-term interest rates were to rise from the current historically low levels (see Chapter VI). Much would arguably depend on the factors behind such a rise. If it reflected expectations of stronger growth, equity prices might also rise because of improved profit expectations. In contrast, higher interest rates due to increasing risk premia or higher inflation would probably bring down the net present value of asset classes across the board. This could also reduce the capacity of households to manage financial risks and smooth consumption over time.

Hidden fiscal liabilities as risk

Finally, as mentioned above, hidden fiscal liabilities pose a hard to quantify risk for the sustainability of strong household spending. While the drawn-out nature of demographic trends and the political economy of major welfare reforms suggest that shifts in household saving and consumption behaviour are not likely to be abrupt, surprises along the path towards less generous but more sustainable welfare systems cannot be excluded. Financial problems surrounding unfunded pension schemes or public health care systems could affect households' expectations and increase their propensity to save in a relatively short period of time.

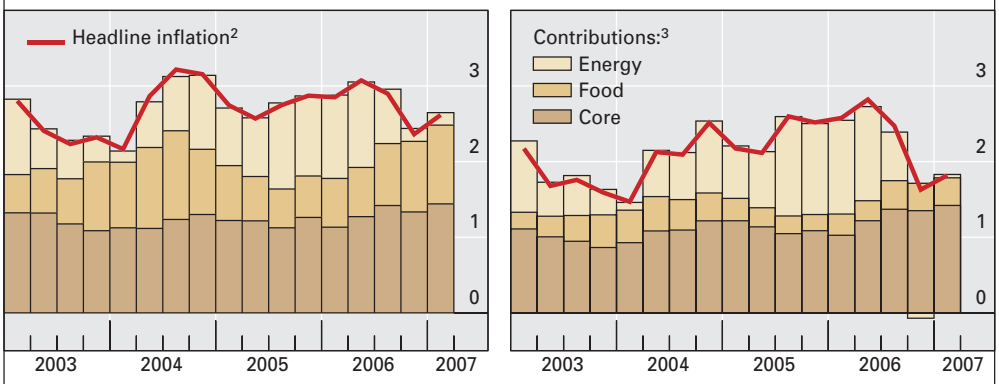
Inflation developments

Headline inflation fell as energy price pressures receded

Effects of oil prices lowered headline inflation ...

Global headline inflation closely tracked movements in energy prices in the period under review. On the back of rising oil prices, global headline consumer price inflation rose above 3% in the first half of 2006 before dropping sharply as energy prices declined towards the end of the year (Graph II.8). In the second quarter of 2006, headline CPI inflation in the United States exceeded 4%, the highest reading since the early 1990s, before falling back to 2% towards the end of the year. Energy prices also raised headline inflation in the euro area to 2½% before it receded to a level below 2% by end-2006. The decline in energy prices caused Japan's headline inflation to dip into negative

Headline inflation and food and energy prices[1]



[1] Changes in consumer prices over four quarters. [2] In per cent. [3] In percentage points.

Sources: OECD; CEIC; Datastream; national data. Graph II.8

territory at the beginning of 2007. Emerging market economies experienced similar fluctuations in annual changes in headline CPI, although the impact of oil price movements was still dampened by administrative measures in some Asian economies (see Chapter III).

... but were partly offset by rising food prices ...

In the second half of 2006, the restraining effect of lower energy prices was partly offset by accelerating food price inflation. This was especially visible in emerging market economies, where food typically accounts for more than 30% of the consumption basket, compared to about 15% in advanced industrial countries. Food prices increased by about 7% in emerging market economies, primarily due to a drop in supply. For instance, despite easing in early 2007, wheat prices remained about 25% higher in dollar terms than one year previously because drought reduced the crop in major producer countries such as Australia.

... which might be maintained over time

To some extent, however, the increase in food prices might herald another more secular change in relative prices, similar to the observed rise in the prices of oil and base metal commodities vis-à-vis manufactured consumption goods. Prices of maize and soybeans have risen sharply because of strong demand growth. One important factor behind this development seems to be policies aiming at reducing oil dependence through the production of biofuel. Another factor which could gain importance over time is that rising income in emerging economies is lifting demand for high-quality food that is relatively scarce (such as fish) or whose production requires high feed input (such as meat).

Core inflation trended higher

Inflation excluding food and energy seems to have gradually trended higher over 2006. While this seems consistent with the notion that the pass-through of commodity price increases to the prices of other products remained fairly limited, it might indicate that underlying inflationary pressures have risen. In the United States and the euro area, core inflation accelerated in the course of 2006 and remained elevated into 2007. While some of this apparently reflected one-off factors – such as the VAT increase in Germany – there were no clear signs of a reversal in either economy. Core inflation in Japan remained negative, despite a modest upward trend since mid-2006.

Persistent uncertainty about underlying inflation pressures

Further increase in resource utilisation ...

The fourth year of strong economic growth went hand in hand with a further rise in resource utilisation worldwide. Traditional indicators such as output and unemployment gaps suggest that economic slack has more or less been used up in the major advanced economies (Graph II.9). Slack is also thought to be disappearing in emerging market economies, with unemployment rates reaching multi-year lows in many cases.

... and signs of wage pressures

There are some indications that vanishing slack might have increased inflationary risks. In the United States, various measures of labour compensation displayed signs of acceleration against the backdrop of tight labour market conditions. In cyclically less advanced economies like Germany and Japan, labour unions appear to have become more aggressive in demanding pay rises. Actual wage increases in the euro area, however, remained subdued. Similarly, the growth rate of wages in Japan was still negative in spite of falling unemployment.

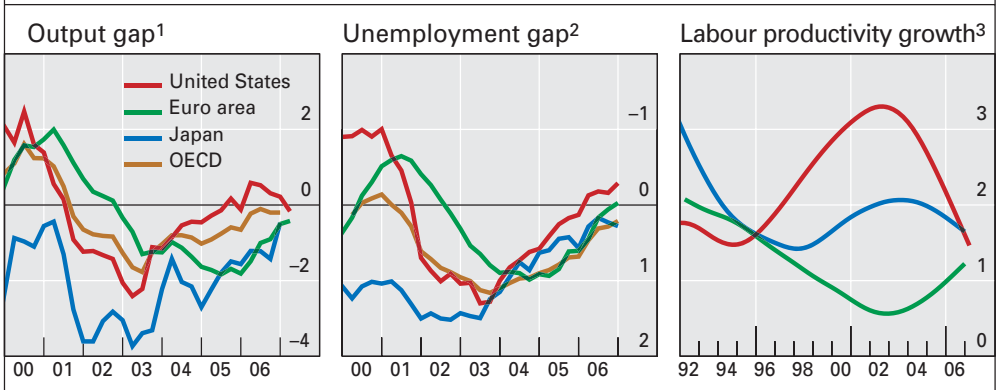
Rising wage shares might also indicate inflation risks ...

Diminishing slack in labour markets was also associated with an increase in the wage share of total income in some cyclically advanced economies such as the United States and the United Kingdom, against the long-term downward trend. Some researchers argue that compensation as a share of GDP can be seen as a proxy for the real marginal cost of production, which is held to be an important determinant of inflation. Indeed, together with the wedge between relatively low import and higher domestic prices, the falling wage share can explain a significant part of the disinflation experienced during recent decades (Table II.8).

... but the uncertainties are considerable

Yet it appears difficult to draw any firm conclusions about how these developments affect the inflation outlook. First, measuring levels of resource utilisation is fraught with difficulties, even in advanced economies with relatively well developed statistics. Assessing economic slack in emerging economies is even more challenging, and this makes it difficult to quantify reliably the amount of slack at the global level. There is also considerable uncertainty about the level of the unemployment rate below which inflation

Indicators of economic slack and productivity trends



[1] As a percentage of potential output. [2] Unemployment rate minus the NAIRU, in percentage points; inverted scale. [3] HP filter applied to year-on-year changes in quarterly productivity.

Sources: OECD; national data. Graph II.9

Changes in inflation and contributing factors

	Change in headline inflation[1]	Explained by changes in:		*Memo: Headline inflation*	
		Wage share[2]	Import/ domestic price difference[2]	*Average[3] 1975–89*	*Average[3] 1990–2006*
United States	–3.1	–0.8	–0.8	*5.4*	*2.3*
Japan	–3.7	–0.6	–1.4	*3.7*	*0.0*
Germany	–1.3	–0.3	–0.6	*3.1*	*1.8*
France	–6.3	–1.9	–1.3	*7.9*	*1.6*
United Kingdom	–6.0	–0.4	–3.1	*9.0*	*2.9*
Eight OECD countries[4]	–4.7	–1.2	–1.8	*6.6*	*2.0*

Contributions are calculated based on a regression of consumer price inflation on its own lags, levels and changes in wage share and import/domestic price difference (both lagged).

[1] Difference between average values for 1975–89 and 1990–2006. [2] Contribution to difference. [3] Annualised quarterly changes, in per cent. [4] Simple average for Australia, Canada, France, Germany, Japan, Sweden, the United Kingdom and the United States.

Sources: OECD; BIS calculations. Table II.8

might be expected to accelerate. Empirical studies suggest that the non-accelerating inflation rate of unemployment (NAIRU) in the United States has declined by 1 percentage point or more since the mid-1980s, owing to various institutional changes in the US labour market. Estimates of the NAIRU for the euro area have also been lowered by a similar amount in the past couple of years.

Identifying productivity trends is difficult

Second, productivity growth is difficult to assess. It tends to vary over time and there is a particularly high degree of uncertainty about the interpretation of the most recent observations, which are often subject to substantial revisions. For instance, the final revision to estimates of labour productivity growth in the United States since 2000 has amounted to about 1 percentage point per year. This is almost half of the total average rate. Moreover, it is always hard to assess to what extent the most recent changes in productivity growth reflect structural as opposed to cyclical factors.

The trend in wage shares might reflect structural factors

Third, and in a related vein, the future evolution of marginal costs of production appears uncertain. Wage shares in advanced economies have fallen by about 4 percentage points since the early 1980s. This downward trend observed across industrial countries cannot be explained by cyclical factors. Recent empirical studies support the view that technological progress and globalisation could have contributed to structurally lower wage shares in advanced industrial countries, possibly by curtailing the bargaining power of workers.

Changes in the inflation process are not well understood

Finally, there is considerable uncertainty about possible changes in the inflation process in general. For instance, the sensitivity of inflation to domestic slack – measured by either the output gap or the unemployment gap – is reported to have declined across a wide range of countries in the past two decades. Yet it is not clear how much guidance this observation provides under changing macroeconomic conditions. One interpretation is that Phillips curves have flattened and that unemployment might have to rise more than in the past

to reduce inflation. Another possibility is that these estimates might unduly (and spuriously) reflect recent periods of high growth which failed to ignite higher inflation. If the reason were unaccounted-for positive supply shocks which were expected to continue, this would make inflation control easier, not harder.

Will firms pass on higher labour costs?

Against this general backdrop, it is difficult to assess to what extent firms might pass on higher labour costs to their output prices. High corporate profits suggest that firms have scope to absorb rising labour costs by margin compression. This seems to have happened during the cyclical run-ups in wage shares in the early 1990s and around 2000, as a result of which inflation remained low and stable. However, a steadily rising number of surveyed firms in the euro area and the United Kingdom expect to increase output prices. This might be an indication of an increasing capacity to pass on rising costs to consumers in an environment of strong demand growth.

Is Japanese deflation now less dangerous?

Stubbornly low inflation in Japan could be seen as an example of how the combination of structural and cyclical factors complicates the assessment of the inflation outlook and the associated risks. Service prices have barely changed since 1999 – compared to annual service price inflation of 1½–4½% in the United States and the euro area. This appears closely related to weak wage developments, which have supported high profits and corporate debt reduction at stable prices. In addition, deregulation has had non-negligible effects in markets for specific goods (eg mobile telephone charges) and in labour markets. Lower prices for both imports and import-competing goods have also been significant. More generally, notwithstanding inflation remaining close to zero, economic growth and restored financial stability imply that the potential for a downward deflationary spiral in Japan is much smaller than might have been the case five years ago.

The role of inflation expectations

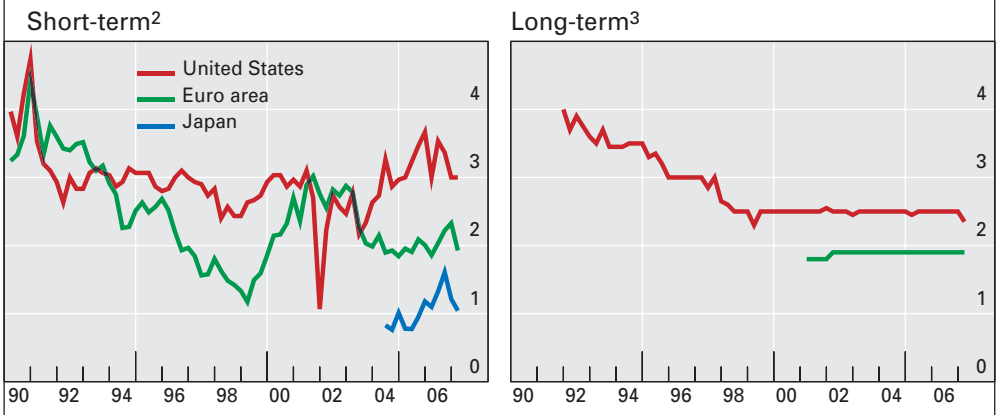
Stable long-term inflation expectations are encouraging ...

The relative stability of long-run inflation expectations might indicate that economic agents view current uncertainties as unlikely to jeopardise price stability. While survey measures of the short-term inflation expectations of the household sector have fluctuated with energy price developments, those of long-term inflation expectations have remained remarkably stable in recent years. In the United States, 10-year-ahead expectations for CPI inflation, taken from the Survey of Professional Forecasters, have remained virtually constant at 2½% since 1998. In the euro area, five-year-ahead inflation expectations based on a similar survey have also remained very stable at 1.9% during the last few years (Graph II.10). A high degree of stability is also found in market-based measures of inflation expectations, such as break-even inflation rates derived from long-term index-linked bonds.

... but might create a false sense of security

However, the reliability of inflation expectations indicators is sometimes challenged. One line of criticism is related to the quality of surveys, or the existence of time-varying risk premia and insufficient market liquidity that limit the information content of market-based indicators. Another, more fundamental, criticism concerns the limited understanding of the process of expectations formation. The fact that long-term inflation expectations have apparently remained well anchored over the past few years might not provide

Inflation expectations[1]



[1] Changes in consumer prices, in per cent. [2] Based on consumer surveys for one-year-ahead inflation; for the euro area, figures are derived from qualitative survey results using the approach described in M Forsells and G Kenny, "Survey expectations, rationality and the dynamics of euro area inflation", *Journal of Business Cycle Measurement and Analysis*, 2004; for Japan, figures are calculated from shares of ranges in the questionnaire. [3] Based on professional forecasters' surveys; 10-year-ahead inflation for the United States, five-year-ahead for the euro area.

Sources: Cabinet Office, Government of Japan; European Commission; ECB; Federal Reserve Bank of Philadelphia; University of Michigan; BIS calculations. Graph II.10

an indication as to whether, and if so how strongly, these expectations might eventually be revised. For instance, if expectations are based on past experience, as argued by some observers, they might still rise quickly if trend inflation changed appreciably or inflation rates exceeded a certain threshold.

Outlook: a welcome moderation of growth and inflation?

The benign consensus forecast ...

The consensus view for the current year is for a moderation of global output growth to a sustainable level. The broad-based economic expansion is forecast to continue in 2007, and into 2008, at a slightly slower pace than in 2006 (Table II.9). Inflation is expected to ease as growth moderates and oil prices stabilise. A further narrowing of growth differentials is also expected to contribute to gradually receding current account imbalances.

... is supported by broad-based economic strength

In many respects, the macroeconomic environment appears favourable. Financing conditions remain generally supportive to growth. Unemployment has fallen in major advanced and emerging economies. Perhaps more fundamentally, the seemingly smooth shift in the balance of growth across regions during the past few quarters might support the view that the global economy has become more flexible and resilient.

Yet near-term risks to growth ...

Nonetheless, the baseline scenario is subject to significant near-term risks. The full impact of the US housing market downturn might not yet have been felt. The recent difficulties in the subprime mortgage market could well deepen the housing market downturn through forced sales of homes and adverse effects on credit supply. While Europe and Asia appear somewhat less dependent on US growth than a few years ago, questions persist about the robustness of consumption growth in some large economies. Moreover, the exposures to contagion associated with rapidly evolving global trade and

Growth and inflation

Average annual changes, in per cent

	Real GDP			Consumer prices[1]		
	2005	2006	2007[2]	2005	2006	2007[2]
Total[3]	4.3	4.8	4.3	3.2	3.2	2.9
Advanced industrial economies[3]	2.4	2.9	2.3	2.3	2.4	1.9
United States	3.2	3.3	2.1	3.4	3.2	2.4
Euro area	1.5	2.8	2.5	2.2	2.2	1.9
Japan	1.9	2.2	2.2	–0.3	0.2	0.1
United Kingdom	1.9	2.8	2.7	2.0	2.3	2.3
Other[4]	2.8	2.9	2.8	2.0	2.3	1.8
Emerging market economies[3]	7.0	7.6	7.1	4.5	4.4	4.3

[1] For the euro area and the United Kingdom, harmonised index. [2] Consensus forecasts published in May. [3] Average of major countries available in Consensus Economics. [4] Australia, Canada, Denmark, New Zealand, Norway, Sweden and Switzerland.

Sources: Eurostat; © Consensus Economics; national data. Table II.9

financial linkages are not well understood. Finally, and in a related vein, an economic downturn might give rise to protectionism.

... and inflation persist ...

The inflation outlook also remains uncertain. Energy and other commodity prices have rebounded since the beginning of 2007. Moreover, underlying inflationary pressures are still visible in major economies, and it is not clear whether the projected moderation of growth would be sufficient to significantly reduce resource pressures. At the same time, capacity utilisation rates also seem to be rising in major emerging economies. Assessing the impact of rising wages on inflation might be a particular challenge for central banks in advanced industrial economies, especially after such a long period of subdued wage growth.

... and might at some point affect financial markets

Macroeconomic outcomes might also depend on how financial markets adjust to news. A deeper than expected US slowdown, and concerns about the sustainability of strong growth elsewhere, could lead to rising risk premia. Equally, any perception that inflation risks are not under control could also lead to a repricing of risks. The two episodes of heightened financial market volatility in May–June 2006 and February 2007 are a reminder that negative surprises with respect to both inflation and growth can unsettle markets. While on those occasions there was no pass-through to the real economy, such an impact cannot be ruled out in the future.

III. Emerging market economies

Highlights

Emerging market economies (EMEs) continued to record strong growth, moderate inflation and current account surpluses in 2006 and into the first quarter of 2007. Yet inflation pressures raised concerns in some countries, in part because of robust demand and in part due to uncertainties about the price of commodities. Despite moderate monetary tightening, credit growth has remained significant in a number of EMEs. At the same time, fiscal consolidation and improved debt management have enhanced economies' resilience.

Following a brief overview of recent developments and a discussion of inflation risks and fiscal developments, this chapter addresses two important topics. First, it explores the implications of a balance of payments shift towards large current account surpluses that exceed net capital inflows. Foreign investors' influence on domestic asset markets could be larger than implied by net capital flows, in part because these investors have boosted their holdings of emerging market assets. Furthermore, position-taking in emerging market assets via derivatives transactions might not be fully recorded. Asset prices in EMEs have surged, but it is not yet clear whether foreign influences have added to asset price volatility.

A second topic is the emergence of China in world trade. China's role at the centre of an integrated production network in East Asia has altered trading patterns. A significant amount of China's imports are intermediate goods to be processed by its export sector; imports of final goods for domestic demand are much smaller. Commodity exporters have tended to benefit from increased demand from China. However, the gains to its neighbours and other emerging market trading partners are not as clear-cut; some countries have lost market share to China in third markets but have been able to expand their exports of intermediate and capital goods to the country for use in its export sector. A rise in the relatively low level of China's demand for imports to satisfy domestic final demand would provide further opportunities to its trading partners, and would also increase the extent to which Chinese growth could offset any potential slowdown in US demand. Finally, China's emergence also has mixed implications for the exchange rate policies of its neighbours.

Economic developments

Strong growth and current account surpluses ...

Growth in EMEs continued to surprise on the upside, rising to 7.4% in 2006 from 6.8% in 2003–05 (Table III.1), and remained strong in the first quarter of 2007. The latest consensus forecast is for growth to slow moderately in 2007 compared to 2006. A limited slowdown is also expected in some of the fastest-growing economies (eg China, India and Argentina). In Brazil, where persistently slow growth has been a medium-term concern, growth picked up

last year to exceed its 2003–05 average, and is expected to rise further in 2007. Recent revisions to the national accounts revealed a larger contribution by the services sector, and consequently faster growth than previously estimated. Current account surpluses increased in Africa, Asia, Latin America, the Middle East and Russia. In contrast, current account deficits grew in India, Turkey and South Africa, and remained large in central Europe.

Turning to the components of aggregate demand, net exports continued to make positive contributions to growth in China and the rest of Asia. On the other hand, their contribution has fallen (although it remains positive) in central Europe and has been slightly negative in Latin America over the past two years. As in previous years, domestic demand once again played a key role in supporting growth. Consumption demand was important in most emerging market regions, while investment spending also drove growth in central Europe, China and Latin America.

Output growth, inflation and current account balance

	Real GDP[1]			Consumer prices[1]			Current account balance[2]		
	2003–05	2006	2007	2003–05	2006	2007	2003–05	2006	2007
Asia	7.9	8.8	8.2	3.4	3.4	3.5	193	357	355
China	9.6	10.7	10.3	2.3	1.5	2.8	92	239	243
India[3]	8.2	9.2	8.1	5.5	5.4	5.1	–1	–14	–19
Indonesia	5.1	5.5	6.0	7.7	13.1	6.7	3	10	8
Korea	4.0	5.0	4.5	3.3	2.2	2.4	19	6	3
Thailand	6.0	5.0	4.0	3.0	4.6	2.4	0	3	5
Other Asia[4]	5.3	5.6	5.0	2.0	2.7	2.2	80	114	114
Latin America	4.3	5.4	4.8	6.6	4.9	5.0	25	51	26
Argentina	9.0	8.5	7.6	7.3	9.8	9.1	6	8	7
Brazil	3.3	3.7	4.2	7.5	3.1	3.6	10	14	10
Chile	5.4	4.0	5.7	2.4	2.6	3.0	0	5	4
Mexico	2.8	4.8	3.1	4.2	4.1	3.6	–7	–1	–9
Venezuela	6.3	10.6	7.0	20.1	17.0	18.9	17	27	16
Other Latin America[5]	4.8	7.2	6.1	4.6	3.4	3.9	–1	–1	–2
Central Europe	4.3	5.5	5.1	2.5	1.9	3.2	–20	–20	–23
Czech Republic	4.6	6.1	5.2	1.6	2.5	2.5	–5	–6	–6
Hungary	4.4	3.9	2.5	5.0	3.9	7.2	–8	–7	–6
Poland	4.2	5.8	6.0	2.1	1.0	2.2	–7	–7	–11
Russia	6.9	6.7	6.6	12.4	9.8	7.8	59	96	71
Turkey	7.4	6.1	4.7	12.6	9.6	8.9	–16	–31	–31
Africa[6]	5.4	5.5	6.2	9.0	9.5	10.7	4	20	1
South Africa	4.3	5.0	5.0	3.5	4.6	5.3	–6	–16	–15
Middle East[6]	5.8	5.7	5.5	6.8	7.9	10.6	116	212	153
Total	6.8	7.4	7.0	5.3	4.8	5.0	362	685	551
Memo: G7	*2.4*	*2.8*	*2.2*	*2.0*	*2.3*	*1.9*	*–457*	*–675*	*–583*

2007 and some 2006 data are based on May consensus forecasts and estimates and IMF.

[1] Annual changes, in per cent. Regional figures are weighted averages based on 2000 GDP and PPP exchange rates. Average of period; for Latin American inflation, end of period. [2] In billions of US dollars. Regional figures are the sum of the economies listed. [3] Fiscal years beginning in April; inflation numbers refer to wholesale prices. [4] Hong Kong SAR, Malaysia, the Philippines, Singapore and Taiwan (China). [5] Colombia and Peru. [6] IMF *World Economic Outlook* regional grouping.

Sources: IMF, *World Economic Outlook*; © Consensus Economics; national data. Table III.1

Median inflation in EMEs rose to 3.7% in 2006, up from 3.5% in 2005, and thus remained close to the median for the period 1999–2005. There was, however, significant regional variation. In Asia, median inflation was still well below that in other regions in 2006, but was clearly up from the near zero rates observed in 2002. It also picked up sharply in other EMEs, although it has tended to fall in Latin America. While inflation trends are hard to read, as discussed below, there are some significant upside inflation risks.

... and somewhat higher inflation

Outlook and policy challenges

There are two broad risks to the outlook for EMEs. One is that a marked slowdown in the US economy could significantly reduce growth. However, the present discussion will not focus on this risk except to note that the outlook is mixed. On the one hand, as discussed in Chapter II, the risk of a US slowdown cannot be entirely discounted, because the full effects of weakness in US housing markets remain unclear. On the other hand, consensus forecasts are for continued moderate growth in the United States in 2007. Furthermore, the risks to EMEs would be mitigated if other economies, including China, Japan and the European Union, were able to offset any slowdown in US demand with increases in their own domestic demand.

The focus of this section is rather on another risk, that of higher inflation. During the past year, concerns were expressed in a number of instances about elevated or rising inflation. In some countries (eg Argentina, Russia and Venezuela), the issue was the level of inflation. In other cases (including Mexico), inflation above the target range was the main concern. Finally, rising inflation was an issue in a number of countries. For example, in India, after falling in 2005 inflation rose significantly in 2006 (and now exceeds the Reserve Bank's medium-term comfort zone), and there were concerns about further increases in 2007. In China, headline inflation, which is low compared to other countries, has recently also picked up noticeably. Moreover, there is some uncertainty as to whether available measures of inflation in China accurately reflect underlying inflationary pressures. In contrast, inflation performance has improved in a number of cases, notably in Brazil, Indonesia, the Philippines and also in Thailand, where inflation last year was an important concern. Inflation has also fallen in Russia, although it remains high.

Inflation risks vary ...

How likely is it that inflation pressures will persist or even intensify in some countries? Output gaps, relative price changes and inflation expectations could all play a role.

Output gaps. Some recent estimates suggest that output gaps in EMEs have nearly closed or are positive. For example, in Brazil, which has recently experienced disinflation, capacity utilisation rates in manufacturing have been comparatively high, in the neighbourhood of 82%. In India, capacity utilisation is reportedly close to 100%. Moreover, in several countries, growth appears to be above potential. In part, the strong demand reflects positive terms-of-trade shocks (among commodity exporters) and favourable global conditions. In this setting, relatively easy monetary policies (see below) could raise the risks of future inflation in a number of EMEs.

... but are accentuated by closing output gaps ...

... and higher oil prices

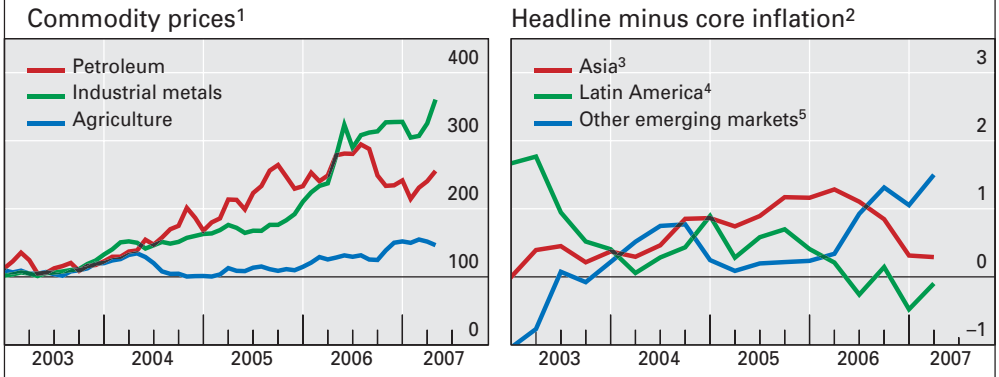
Relative price changes. Oil and non-oil commodity prices have risen sharply in the last few years (Graph III.1). The oil sector illustrates some of the issues and potential inflation risks. While oil prices had fallen from their peaks ($77 per barrel for West Texas Intermediate) of mid-July 2006, they have rebounded since January 2007 (to reach $63 per barrel by mid-May). Although the growth in global demand for oil slowed from about 4% in 2004 to about 1% in 2006, the recent rebound in prices has partly reflected strong demand from non-OECD economies. More recently, and looking forward, supply side issues assume greater importance. For example, OPEC's decision to cut back production starting in November 2006 appears to have contributed to the recent buoyancy of oil prices.

The impact of oil price increases could be significant; a recent analysis estimates that a supply-induced doubling of prices would boost inflation in emerging Asia by as much as 1.4 percentage points above baseline. The inflation effects would be larger if oil importers had difficulty financing the resulting current account deficits, and also if subsidies that have hitherto limited energy price increases were assumed to be further reduced or eliminated. Subsidies have already been cut back to varying degrees in a number of Asian countries (eg India, Indonesia and Thailand).

Oil sector investment has lagged

Over the medium term, oil reserves are expected to be adequate to meet the strong demand anticipated from EMEs, as long as major producers maintain sufficient investment. However, investment to date has not eased production capacity constraints in some countries. This has added to concerns that non-OPEC oil production could soon peak, which would concentrate production in fewer countries. In the meantime, the short-run risks of sharp increases in oil prices remain substantial. OPEC spare capacity falls to low levels from time to time, and sudden shocks to supply or demand have therefore tended to have a large – and at times persistent – impact on prices.

Commodity prices and consumer price inflation



[1] 2002 = 100; Goldman Sachs Commodity Indices. [2] Headline minus core consumer price inflation; median of the economies in each group; annual changes, in percentage points. [3] China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand. [4] Argentina, Brazil, Chile, Colombia, Mexico and Peru. [5] The Czech Republic, Hungary, Poland, Russia, South Africa and Turkey.

Sources: IMF; CEIC; Datastream; BIS calculations. Graph III.1

Over the past year, such shocks have included disruptions to Nigerian oil production and to US refinery capacity and the onset of unusually cold weather in the United States in February 2007, which significantly depleted US inventories. Continuing geopolitical risks, involving oil producers such as Iran and Iraq, accentuate the risk of price volatility.

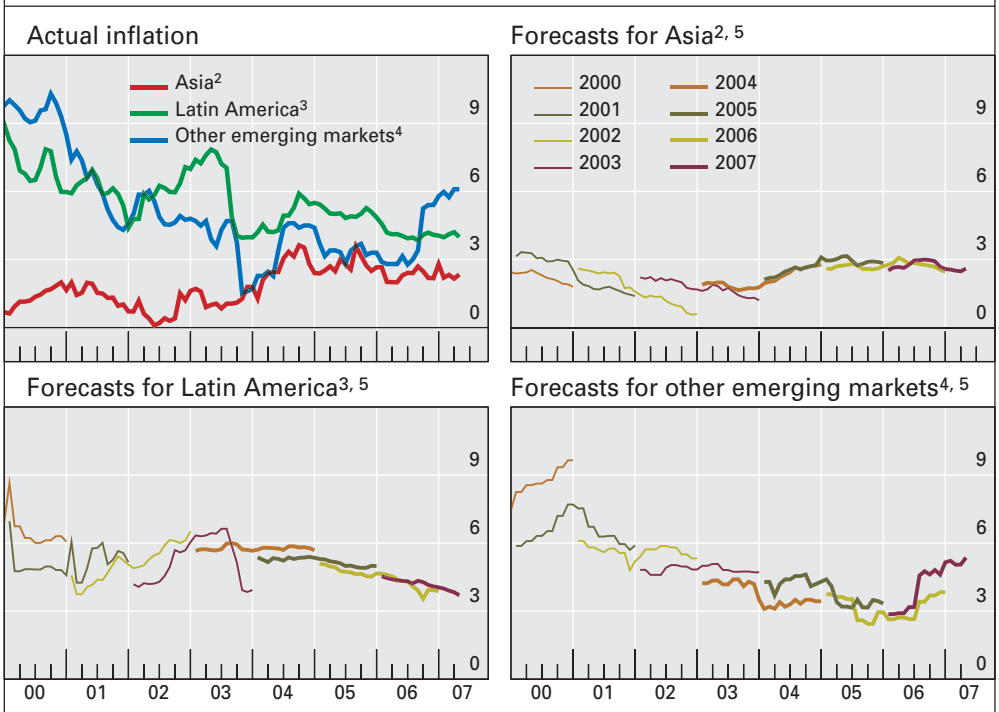
Two additional points can be made regarding commodity prices. First, because of long lead times in building mining capacity, supply constraints in the metals sector will continue in the face of strong demand from China and other EMEs. Second, in a number of countries, such as China, Mexico and South Africa, higher agricultural goods prices have also played an important role in raising headline inflation. Such price increases have shown a certain degree of persistence, and there is particular concern in some of these countries that they could influence inflation expectations.

Inflation forecasts point to a mixed picture ...

Inflation expectations. Using consensus forecasts as a proxy for expectations, Graph III.2 illustrates that Asian inflation in 2007 is expected to stay at less than 3%, still relatively low. Moreover, forecasts of inflation have recently been stable in Asia. In contrast, inflation forecasts have risen significantly in other emerging markets after an extended period of decline, while in Latin America forecasts have fallen in recent years.

Consumer price inflation

Annual changes, in per cent[1]



[1] Median of economies in group. [2] China, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand. [3] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. [4] The Czech Republic, Hungary, Poland, Russia, Saudi Arabia, South Africa and Turkey. [5] Consensus forecasts for year-average or year-end inflation; observations are positioned in the month in which the forecast was made.

Sources: IMF; © Consensus Economics; national data. Graph III.2

... but expectations could influence wage setting

One reason why inflation expectations are relevant is that they can lead to higher wage demands. It is generally believed that wage increases have been dampened due to large additions to the global labour force resulting from the growing integration of China and, increasingly, India into the global economy. This effect could be reinforced in countries with large supplies of labour from their own rural sectors. However, recent analysis finds that, while the wages of unskilled workers have indeed not risen in some major EMEs (Brazil, China and India), wages of skilled or non-production workers (white-collar and other workers involved in supervision or services often perceived as requiring more skills) have increased rapidly. For example, since the beginning of this decade, real manufacturing wages have grown at a compound annual rate of over 11% in China and Russia. Real wages of non-production workers also rose in India earlier this decade (by about 3.8% a year). The possibility that higher inflation expectations could feed into wage demands has been a particular concern in countries where food prices have risen significantly.

Expectations could change suddenly

Could inflation expectations shift suddenly? An important lesson from the May–June 2006 episode of market volatility (see Chapter VI) and from recent run-ups in agricultural prices is that both inflation and inflation forecasts can suddenly spike upwards and breach targets; Turkey and Mexico are cases in point. In Turkey, market volatility in May–June 2006 triggered a sharp depreciation that is estimated to have added 3.5 percentage points to actual inflation and caused private sector forecasts to jump for both 2006 (to 10% from just over 7%) and 2007 (to 7.8% from 5.6%). In the case of Mexico, inflation at the end of 2006 unexpectedly breached the 4% ceiling of the inflation target (3% ±1%), in part because of a sharp increase in the price of maize. Global maize prices in US dollars rose 58% between July 2006 and April 2007, in part due to maize being diverted to the production of ethanol, a biofuel. Subsequently, inflation and inflation forecasts for Mexico remained close to or above the target ceiling.

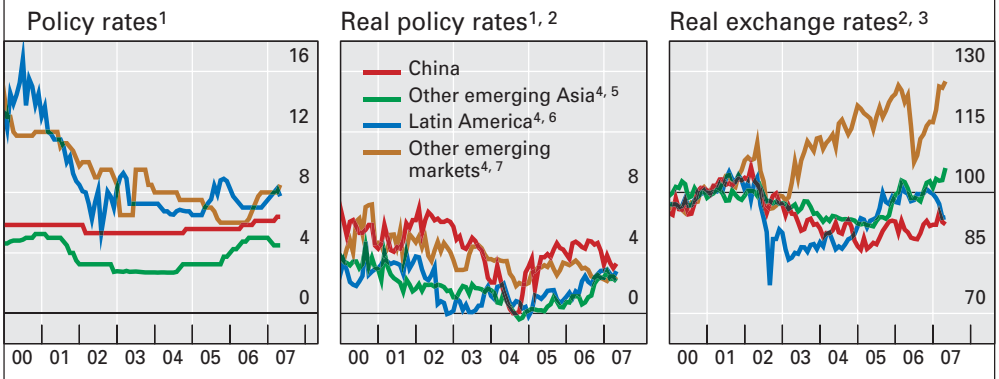
To sum up, notwithstanding generally moderate inflation in EMEs at this time, there appear to be a number of risks. Capacity constraints are potentially an issue in a number of countries, and sharp increases in commodity prices are possible. Accordingly, sudden upward revisions in inflation and inflation expectations cannot be ruled out.

Monetary policy

Moderate monetary tightening ...

Against this backdrop, monetary policy has tended to tighten since 2004. However, there has been considerable cross-country variation, and in some EMEs the pace of tightening has slowed since the second half of 2006 (Graph III.3). A steady raising of policy rates has been observed in India (175 basis points since December 2004) and in China (81 basis points), supplemented by other tightening measures (see below). In other Asian countries, however, since around mid-2006 policy rates have either stopped increasing or fallen. In some cases, notably Indonesia, the Philippines and Thailand, this was in response to emerging signs of disinflation. Similar mixed policy outcomes are apparent in Latin America and other EMEs. Disinflation has led to falling rates in Brazil and, for a time, in Mexico. In contrast, three

Monetary conditions



[1] In per cent. For China, one-year lending rate; for Singapore and Venezuela, money market rates. [2] In terms of consumer prices. [3] In effective terms; 2000–01 = 100; an increase indicates an appreciation. [4] Median of the economies in each group. [5] Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand. [6] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. [7] The Czech Republic, Hungary, Poland, Russia, Saudi Arabia, South Africa and Turkey.

Sources: IMF; Bloomberg; BIS. Graph III.3

countries with current account deficits that experienced depreciation pressures during the May–June 2006 episode of market volatility had to raise interest rates significantly: Turkey by 425 basis points, and Hungary and South Africa by 200 basis points each. In the case of Hungary, however, the interest rate rise also reflected concerns about fiscal deficits.

... but expansionary outcomes

The implications of these policy actions for some common measures of monetary conditions have varied (Graph III.3, centre and right-hand panels). Real policy rates began to rise in China and other emerging markets a few years ago. Median real policy rates have converged to over 2% in other Asian EMEs and Latin America, and over 3% in China and other emerging markets. It should be noted that, in China, the real interest rate would be negative if an interbank rate rather than the bank lending rate were used as the proxy for monetary conditions. These real interest rates are much lower than the brisk rates of potential growth in many EMEs, suggesting that underlying monetary conditions have remained relatively expansionary.

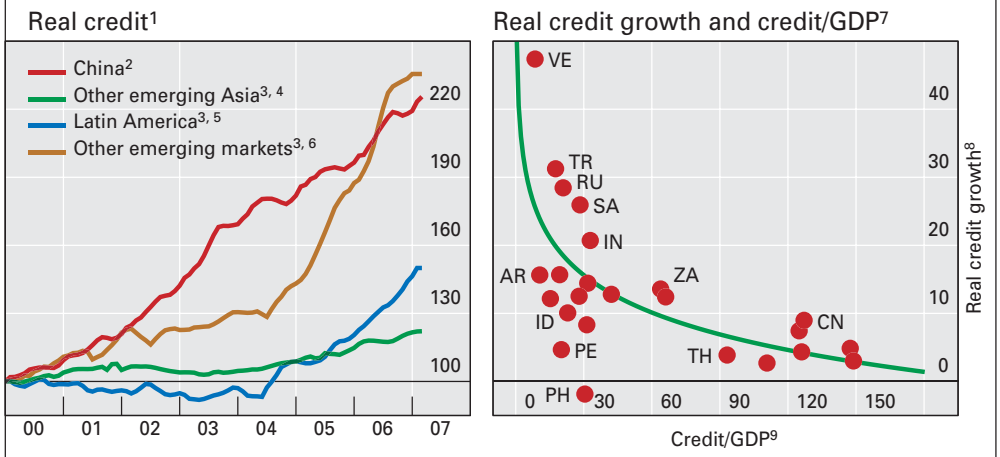
Rapid growth in real private credit ...

Rapid real private credit growth in a number of EMEs reinforces the impression of easy monetary conditions (Graph III.4). Since the end of 2003, when distinct increases in real private credit became apparent in all regions, the compound annual rate of growth in bank credit to the private sector has been nearly 9% in China, 5% in other Asian EMEs, 15% in Latin America and 21% in other emerging markets. The fastest rates of credit growth have been observed in Venezuela (47%) and in India, Russia, Saudi Arabia and Turkey (in ascending order, ranging from 21 to 31%). In some central and eastern European countries, rapid credit growth raises special concerns because household borrowing is in large part denominated in foreign currency.

... reflects structural and short-run factors

Credit growth reflects both structural and short-run factors. Among the structural factors, financial deepening appears to be particularly important. Indeed, the more rapid rates of real private credit growth have been observed in countries with lower credit/GDP ratios (Graph III.4, right-hand panel). In

Private credit



AR = Argentina; CN = China; ID = Indonesia; IN = India; PE = Peru; PH = the Philippines; RU = Russia; SA = Saudi Arabia; TH = Thailand; TR = Turkey; VE = Venezuela; ZA = South Africa.

[1] Deflated by consumer prices; end-1999 = 100. [2] Credit to non-central government. [3] Median of the economies in each group. [4] Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand. [5] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. [6] The Czech Republic, Hungary, Poland, Russia, Saudi Arabia, South Africa and Turkey. [7] Of the economies shown in the left-hand panel; in per cent. [8] Compound annual growth, 2004–06. [9] In 2003.

Sources: IMF; national data. Graph III.4

some regions, such as central Europe, increased competition in banking and financial integration have also played major roles in boosting credit growth. Short-run factors include strong economic performance and, as discussed below, efforts to contain appreciation pressures.

Appreciation restrains demand ...

While policy rates and credit growth indicate relatively easy monetary conditions, significant real exchange rate appreciation in some countries suggests some complementary restraining of demand. Between December 2004 and March 2007, real appreciation was over 10% in Korea, Malaysia and Thailand and exceeded 20% in Indonesia. Outside Asia, cumulative real exchange rate appreciation over the same period reached 34% in Brazil. By contributing to disinflation and lowering aggregate demand, real exchange rate appreciation may have provided scope for a number of countries to lower policy rates or take other easing measures. In some countries these pressures appear to have been such as to induce the authorities to reduce interest rates to stem "unwanted" capital inflows.

While contributing to disinflation, however, appreciation pressures have raised concerns for at least three reasons. One is their adverse impact on competitiveness and the tradable goods sector. Another is that, by dampening interest rate increases, they can encourage non-tradable prices to rise, especially those related to housing. Finally, appreciation pressures can easily reverse, which can then require hikes in the policy rate. It is noteworthy that some of the largest nominal increases in policy rates since the beginning of 2006 were observed in Turkey and South Africa. These countries experienced significant depreciation pressures during the episode of market volatility in May–June 2006.

... but results in heavy intervention

In addition to allowing policy rates to be set at lower levels than otherwise, appreciation pressures have been met by heavy intervention in foreign exchange

markets. This has resulted in very large and persistent foreign reserve accumulation (see Chapter V) and the concomitant need to sterilise the reserves thus created. In a number of countries, including China, sterilisation through increases in reserve requirements and sales of central bank securities has proved increasingly difficult or subject to unwanted side effects. Reserve requirements paying less than the market rate are effectively a tax on banks. In less than fully integrated markets, moreover, the sale of sterilisation instruments can actually push up their rate of return to levels that attract still more capital inflows.

Prudential measures also used ...

A number of countries have also used prudential measures to dampen rapid credit growth and address sectoral or financial stability concerns. For example, in India risk weights were raised for housing loans (from 50% to 75%, subsequently reversed), commercial real estate (from 100% to 150%) and consumer credit (from 100% to 125%). The general provisioning requirement for loans in specific sectors was also raised.

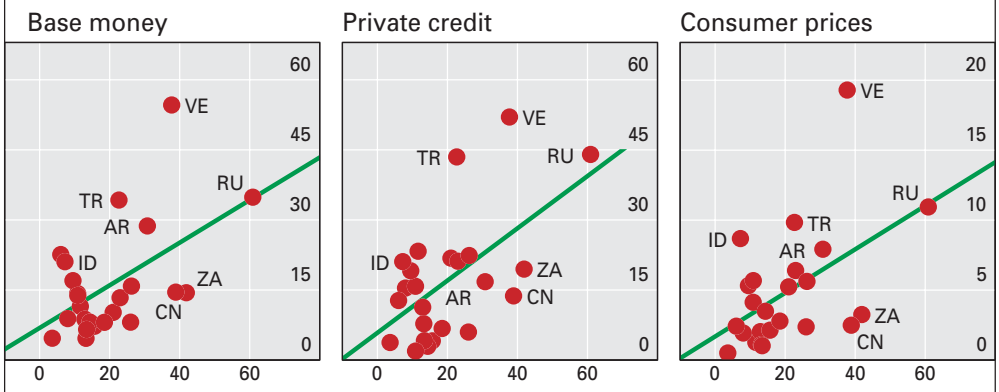
... as well as measures to encourage outflows ...

Countries have also sought to lessen the effect of capital inflows by encouraging capital outflows and by making it easier for domestic residents to acquire or hold foreign currency. Restrictions on foreign investment or foreign currency asset holdings were liberalised last year in China, India, Korea and Thailand. The measures taken included increasing the allowable foreign currency deposits of corporate residents (Thailand) or permitting larger purchases of foreign currency (China), providing incentives for residents to invest in foreign securities and real estate assets (Korea) and allowing more portfolio investment abroad (China and India). However, the extent to which these measures have dampened appreciation pressures to date remains unclear.

... or capital controls

Difficulties in dealing with persistent appreciation pressures prompted Thailand to try to restrict capital inflows. Initially, this involved limits on non-resident holdings of securities and non-resident loans to domestic financial

Foreign reserve accumulation and monetary outcomes[1]



AR = Argentina; CN = China; ID = Indonesia; RU = Russia; TR = Turkey; VE = Venezuela; ZA = South Africa.

[1] Average growth from 2003 to 2006, in per cent. Horizontal axis: average growth of foreign exchange reserves; vertical axis: average growth of base money, private credit and consumer prices respectively. The economies shown are Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Saudi Arabia, Singapore, South Africa, Taiwan (China), Thailand, Turkey and Venezuela.

Sources: IMF; Datastream; national data. Graph III.5

institutions that had no underlying trade or investment function. In December 2006, unremunerated reserve requirements were imposed on short-term inflows along the lines seen earlier in Chile. While a number of these controls have since been reduced, in response to a strongly negative reaction in affected markets, the underlying upward pressure on the Thai baht apparently eased. More recently, Colombia imposed similar capital controls.

Is reserve accumulation expansionary?

Judging by central bank and market commentary, sterilisation and the supplementary measures cited above have not been fully effective in curbing the liquidity associated with the inflows of foreign currency. Indeed, in a cross section of countries since 2003, reserve accumulation seems to have been associated with rapid base money and credit growth, and higher inflation (Graph III.5). While such simple correlations need to be interpreted with caution, they reinforce the impression that relatively easy monetary conditions associated with upward pressure on the currency could still lead to higher inflation.

Medium-term fiscal adjustment and debt management

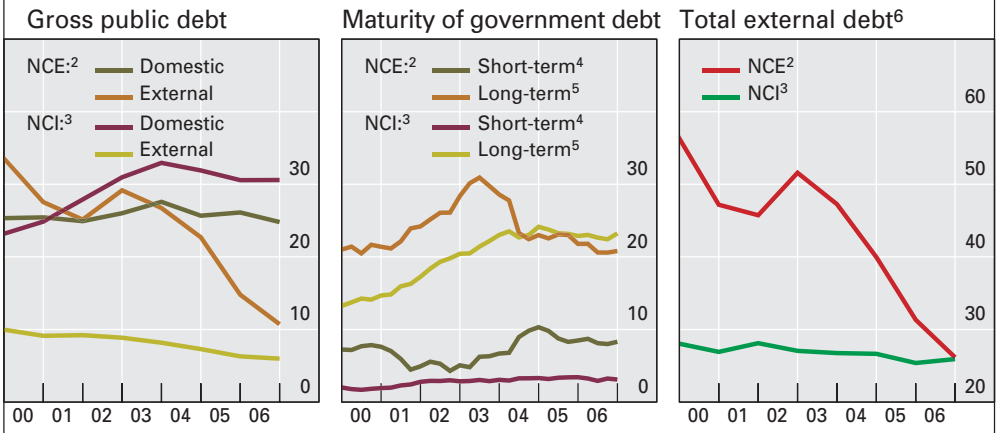
Debt stabilisation and reduction

The resilience of EMEs and their attractiveness to investors depend to a great extent on the government balance sheet position and the commitment to fiscal adjustment. Policymakers have actively sought to enhance macroeconomic stability through the stabilisation or reduction of public debt, and a variety of debt management operations geared towards improving financing conditions.

Gross public debt fell ...

Gross public debt (Graph III.6, left-hand panel, the sum of domestic and external) has fallen not only in EMEs that are net commodity exporters but also

Debt developments[1]



[1] As a percentage of GDP. Weighted average of the economies listed, based on 2000 GDP and PPP exchange rates. [2] Net commodity exporters: Argentina, Brazil, Chile, Colombia, Indonesia, Malaysia, Mexico, Peru, Russia, South Africa and Venezuela. [3] Net commodity importers: China, the Czech Republic, Hong Kong SAR, Hungary, India, Korea, the Philippines, Poland, Singapore, Taiwan (China), Thailand and Turkey. [4] Debt securities with remaining maturity up to one year. [5] Debt securities with remaining maturity above one year. [6] Gross public and private external debt.

Sources: IMF; OECD; JPMorgan Chase. Graph III.6

in those that are net commodity importers. The median debt/GDP ratio for all EMEs fell around 14 percentage points to 33% between 2003 and 2006, with Brazil, Chile, Colombia, Indonesia, Peru, the Philippines, Russia, Thailand, Turkey and Venezuela showing particularly large debt reductions (exceeding 10% of GDP).

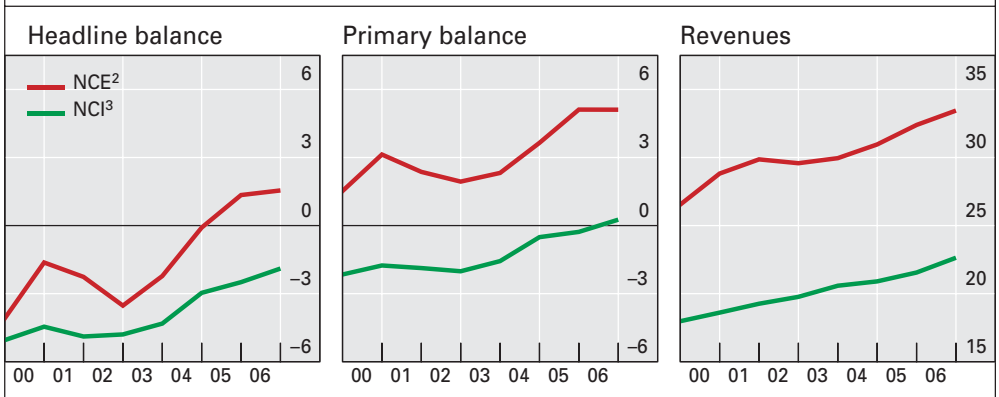
... with fiscal effort playing a role

The reductions in gross public debt ratios reflect in part the dynamics of robust growth and low interest rates and, in countries with significant debt denominated in foreign currency, the effects of domestic currency appreciation. However, a more sustainable foundation for the debt reduction is an underlying improvement in government fiscal balances. As illustrated in Graph III.7, budget deficits have fallen and public revenues have increased, particularly among net commodity exporters. These outcomes reflect marked improvements in fiscal discipline; primary balances (which exclude interest payments on debt) have risen considerably in recent years (Graph III.7, centre panel) and have played a role in debt reduction since 2000.

Fiscal improvements may be sustained

Primary balances are estimated to have increased moderately in 2006, and there are some grounds for confidence that the fiscal improvements seen to date can be sustained. For countries with large receipts from commodity exports or robust growth, the principal concern has been to ensure that cyclical expenditures do not rise commensurately. In a closely related vein, a number of countries have created stabilisation funds that would allow smoothing of government spending during bad times, using revenues accumulated during good times. Some countries have gone beyond the concept of a cyclical stabilisation fund to introduce wealth funds designed to support future generations when the country's non-renewable resources run out. For example, starting in February 2008, Russia's current oil stabilisation fund will be split into a reserve fund and a fund for future generations. In addition to taxes on crude oil (which are currently accumulating in the oil stabilisation fund), the two funds will receive the bulk of revenues from the mineral resource extraction tax for oil and gas, and export duties for oil, gas and oil

Public finance developments[1]



[1] As a percentage of GDP. Weighted average of the economies listed, based on 2000 GDP and PPP exchange rates. [2] Net commodity exporters: Argentina, Brazil, Chile, Colombia, Indonesia, Malaysia, Mexico, Peru, Russia, South Africa and Venezuela. [3] Net commodity importers: China, the Czech Republic, Hong Kong SAR, Hungary, India, Korea, the Philippines, Poland, Singapore, Taiwan (China), Thailand and Turkey.

Sources: Eurostat; IMF; OECD; CEIC. Graph III.7

products. The reserve fund will be maintained at a level equivalent to 10% of GDP. In Singapore, even in the absence of mineral resources, the Government Investment Corporation has for many years managed the equivalent of a wealth fund on behalf of the state. It invests accumulated surpluses from the government and from workers' contributions to a state-run Central Provident Fund.

Fiscal positions still raise concerns

Nevertheless, there are still concerns about fiscal positions. A number of countries have public debt exceeding 50% of GDP even though current conditions are unusually favourable. In the past, countries with such high debt ratios tended to fail tests of debt sustainability (that is, primary balances do not rise to counter rising debt levels). Even countries which currently pass such sustainability tests might fail them if economic growth or commodity prices were to fall sharply, or if interest rates were to rise significantly for an extended period.

Debt management

Debt sustainability depends on the composition as well as the size of debt. Short-duration debt exposes borrowers to interest rate and refinancing risks. A large share of foreign currency denominated debt creates exposures to currency depreciation.

Debt management operations to improve resilience ...

To reduce such risks, and to increase resilience to shocks, a number of EMEs have undertaken debt management operations. These operations, which are sometimes embodied in formal debt management principles (eg in Mexico), are aimed at improving the terms of financing, extending maturities, reducing currency mismatches and making greater use of domestic rather than international capital markets. For example, in September 2006 Turkey engaged in a maturity-extending transaction, launching a 10-year global bond in exchange for short-dated higher-coupon bonds and cash. Other transactions have focused on replacing external debt with domestic debt denominated in local currency. While such operations can raise the immediate interest costs of financing (domestic currency debt typically bears a higher rate than foreign currency debt), they reduce vulnerability to exchange rate depreciation. To this end, in August 2006 Mexico bought back $12 billion in external loans and bonds for peso liabilities. At the same time, EMEs have sought to increase the issuance of fixed rate debt at longer maturities.

... lengthen maturities and lower foreign debt

Overall, these operations have served, first, to lengthen the average maturity of public debt, other than that used in sterilisation operations. This is reflected in the rise in longer-term debt compared to short-term debt among net commodity importers (Graph III.6, centre panel). Moreover, the classification shown does not capture lengthening maturities past one year, which have been observed in some countries, notably Mexico. Second, the share of foreign currency debt has fallen, reducing exposure to exchange rate fluctuations. In Brazil, the share of external or foreign currency-linked debt, net of reserves, fell from nearly 39% of GDP in 2002 to less than 10% in 2006. In Turkey, the corresponding ratios fell from 56% to 36%. Aggregate currency mismatches, a major cause of the crises in the 1980s and 1990s, have been reduced. With many EMEs running surpluses, both public and total external debt has

fallen (Graph III.6, left- and right-hand panels), increasing the resilience of these economies.

Foreign currency flows and asset prices in EMEs

One of the lessons of the 1990s crises is that capital flows can matter a great deal for macroeconomic outcomes. The Asian crisis of 1997 was preceded by appreciation pressures associated with capital inflows, and easy money which led in turn to higher asset prices. "Sudden stops" or reversals in capital inflows were then linked with sharp currency depreciation, collapsing asset prices and severe downturns. Previous current account deficits and losses associated with currency mismatches aggravated these problems, sometimes leading to banking crises.

Some similarities to pre-1997 crisis conditions are apparent in EMEs today, including appreciation pressures, easy money and higher asset prices. There are, however, also important differences compared with the earlier period. With some notable exceptions, appreciation pressures have been associated with current account surpluses. Moreover, foreign exchange reserves have reached record levels, exceeding conventional thresholds of reserve adequacy in most EMEs.

Stylised facts

EMEs are flush with foreign liquidity ...

Emerging markets are currently flush with foreign liquidity. One indicator of this is the sharp exchange rate appreciation in some countries; another is large foreign reserve accumulation. Foreign reserves in a set of EMEs have grown rapidly in recent years, to reach $3 trillion, or about 27% of GDP in these economies by the end of 2006. China's reserve accumulation accounted for a large proportion of the increase last year (nearly 44%), although the shares of Russia (21%), India, Korea and Brazil (5–7% each) have also been significant (Table III.2; see also Chapter V).

... from current account surpluses

In contrast to the 1990s, the main source of foreign currency inflows in recent years has been current account surpluses rather than capital flows. The aggregate current account surplus of the EMEs rose to over $600 billion in 2006. Net private capital inflows have amounted to less than half the value of current account surpluses on aggregate. Indeed, while net private capital flows to EMEs in US dollar terms are close to all-time highs, and above the peaks observed in the mid-1990s, as a proportion of GDP they have fallen considerably in some major regions. Foreign direct investment (FDI) and banking flows are now larger than portfolio investment flows (Graph III.8). Nevertheless, capital flows to some regions (eg the Commonwealth of Independent States, central and eastern Europe) have been particularly significant. Capital inflows have also continued to finance current account deficits in Hungary, India, South Africa and Turkey.

Less vulnerability to "sudden stops"

This pattern of international balances has three implications. First, large current account surpluses imply that EMEs are less vulnerable to shocks and "sudden stops" in capital flows than in the past. During the 2006 episode of emerging financial market volatility, it was those countries with large current account deficits which proved most vulnerable to financial stress. In addition,

the large share of rather stable FDI in capital flows makes capital flow reversals less likely.

Policies reinforce appreciation pressures

Second, government policies in a number of countries imply that current account surpluses could lead to persistent appreciation pressures. Some EMEs still impose foreign currency surrender requirements on exporters while restricting capital outflows. This implies that large foreign currency inflows from current account surpluses, as well as from capital flows, enter the foreign exchange market. Many countries continue to resist the ensuing appreciation pressures, with the implications cited earlier.

Balance of payments

In billions of US dollars

	Annual average 1996–97	Annual average 1998–2003	2004	2005	2006
Emerging market economies[1]					
Current account balance	–83	93	300	512	638
Private capital flows, net	208	88	239	257	256
Official flows, net	10	–1	–58	–123	–144
Change in reserves[2]	–95	–156	–508	–590	–738
Asia					
Current account balance	–12	109	172	245	340
Private capital flows, net	82	11	143	70	54
Official flows, net	–1	–1	–7	–3	–10
Change in reserves[2]	–41	–112	–339	–284	–366
Latin America					
Current account balance	–53	–43	20	35	49
Private capital flows, net	86	41	13	34	10
Official flows, net	1	10	–9	–30	–18
Change in reserves[2]	–22	–3	–23	–33	–47
Central and eastern Europe					
Current account balance	–20	–25	–59	–63	–89
Private capital flows, net	28	37	75	118	121
Official flows, net	–1	–1	–7	–8	–5
Change in reserves[2]	–9	–10	–14	–48	–21
Commonwealth of Independent States					
Current account balance	–1	27	63	88	99
Private capital flows, net	–4	–1	8	38	66
Official flows, net	–2	–5	–7	–22	–33
Change in reserves[2]	1	–13	–54	–76	–127
Middle East					
Current account balance	13	31	99	189	212
Private capital flows, net	9	–4	–7	–11	–6
Official flows, net	1	–11	–34	–61	–81
Change in reserves[2]	–10	–11	–45	–105	–126

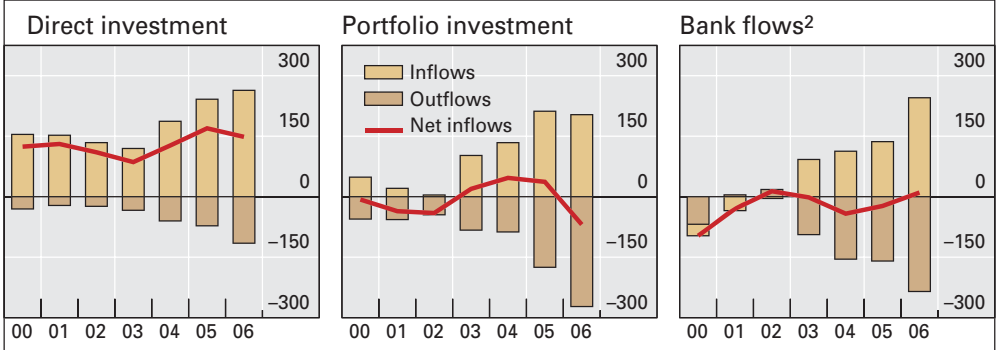
Current account balances may differ from those in Table III.1 because of differences in geographical coverage.

[1] Also includes Africa. [2] A minus sign indicates an increase.

Source: IMF, *World Economic Outlook*. Table III.2

Capital flows in emerging markets[1]

In billions of US dollars



[1] Comprises 22 major emerging economies but excludes Hong Kong SAR and Singapore. [2] Estimated as the change in the assets and liabilities of BIS reporting banks vis-à-vis EMEs.

Sources: IMF; BIS. Graph III.8

Significant gross inflows

Third, net capital flows may understate the degree of foreign participation in EMEs, particularly as reflected in gross inflows and growing foreign holdings of emerging market assets. Gross portfolio investment inflows have been significant in recent years in a number of countries (Graph III.8). For example, according to one recent estimate, gross capital inflows to emerging Asian economies, at around 5–6% of GDP in 2006, were close to their mid-1990s highs (prior to the Asian and Russian crises). As a result, foreign holdings of local currency debt instruments have risen sharply in a set of EMEs (Brazil, the Czech Republic, Hungary, Indonesia, Malaysia, Mexico, Russia, South Africa and Turkey), although outside central Europe the foreign shares are still comparatively small. Furthermore, the share of emerging equity markets that is open to foreign investors, based on market capitalisation, is comparatively high, at around 34% of the total in December 2006 (based on the IFC index). However, it is hard to detect a trend in foreign access because of the volatility of equity market indices and the investable (to foreigners) components.

Foreign participation in emerging asset markets has risen …

Large funds and institutional investors from developed markets, as well as hedge funds, account for the bulk of gross portfolio inflows into EMEs. Pension funds and fixed income funds are gradually diversifying their portfolios internationally to include emerging markets, while the assets under management of hedge funds that follow an emerging markets strategy are estimated to have risen sharply in recent years (see Chapter VI). Moreover, foreign investors can increasingly take positions in emerging market assets without this necessarily being reflected in the capital flow data. One way is through the active use of derivatives, specifically non-deliverable forward contracts in emerging market currencies.

… reflecting both push and pull factors

A number of economic factors appear to be driving increased foreign participation in the asset markets of EMEs. These include push factors such as greater risk appetite, continuing low relative returns in developed financial markets and the recycling of petrodollars to non-oil-producing EMEs. At the same time, pull factors, such as improved fundamentals, have played a major role. For example, reduced external or public debt (see above) has been

reflected in higher sovereign ratings, which have attracted foreign investors. Technological developments have also encouraged investment in emerging financial markets by making it much easier to monitor developments there.

Outflows have masked inflows

Growing capital inflows have been masked by large capital outflows, reflecting the rising stock of private financial assets in EMEs, government liberalisation of outward investment, and foreign investment by government entities (including the commodity stabilisation funds or wealth funds cited earlier). Over the past two years, gross portfolio outflows have been comparatively high (relative to other EMEs) in China, Korea, Malaysia, Russia and Saudi Arabia.

Implications for asset markets in EMEs

Returns on emerging market assets have risen

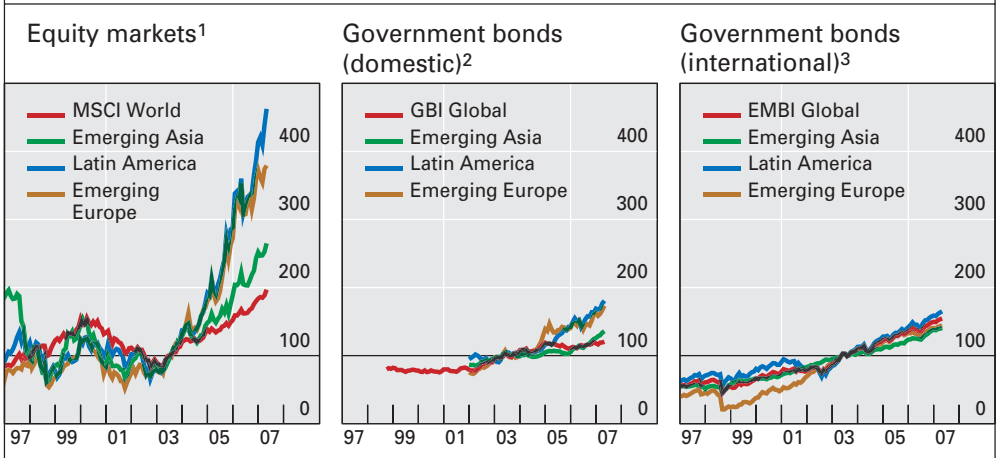
Growing integration with global financial markets appears to have been associated with a substantial increase in returns on emerging market assets (Graph III.9). Returns in emerging equity markets have been particularly high and, in spite of occasional episodes of volatility, they have significantly exceeded the return on bonds, whether domestic (centre panel) or international (right-hand panel). The extent to which equities are more volatile than bonds appears to be greater (Graph III.10). This can have macroeconomic implications. At the same time, rising asset prices have brought corresponding increases in financial wealth, raising the possibility that asset price fluctuations could have a bigger impact on aggregate demand than before.

Stock market capitalisation has also increased

To illustrate some orders of magnitude, stock market capitalisation ratios in EMEs have increased significantly in the course of this decade, and now average 79% of GDP in Asia (excluding Hong Kong SAR and Singapore), 47% in Latin America and 38% in central Europe. Even so, they remain below the percentages observed in the United States (124%) or Japan (108%). Recent research suggests that the long-run marginal propensity to consume out of a

Asset prices

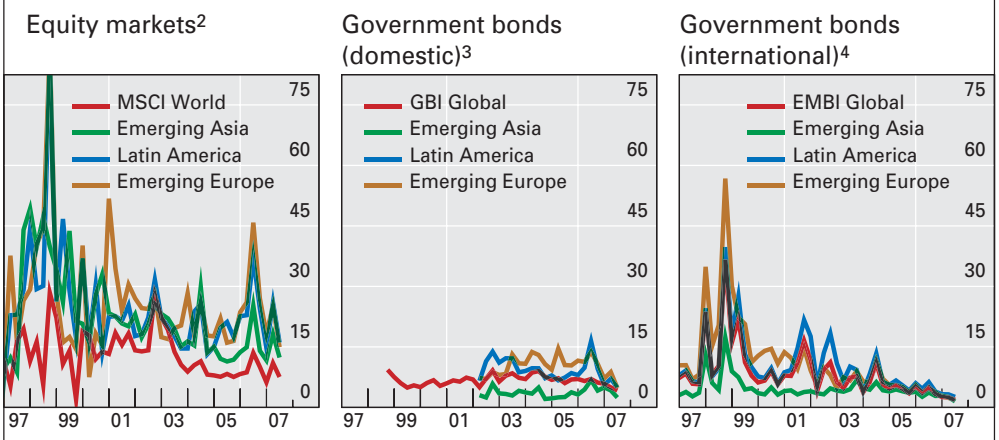
Total return indices in US dollars; end-month data, 2003 = 100



[1] Morgan Stanley Capital International equity indices. [2] JPMorgan GBI-EM Global indices. [3] JPMorgan EMBI Global.

Sources: Datastream; JPMorgan Chase. Graph III.9

Volatility across asset classes[1]



[1] Calculated as the annualised standard deviation of daily returns, in per cent, of unhedged US dollar total return indices during calendar quarters. [2] Morgan Stanley Capital International equity indices. [3] JPMorgan GBI-EM Global indices. [4] JPMorgan EMBI Global.

Sources: Datastream; JPMorgan Chase. Graph III.10

change in the value of equity wealth is still relatively small in the United States: about 1 cent on the dollar in the short run and 4 cents in the long run (by way of comparison, the corresponding estimates are from 2 to 9 cents on the dollar for housing wealth).

Wealth effects in EMEs might, however, be smaller to the extent that equity market holdings are held mainly by the wealthier segments of the population and foreigners (rather than more broadly by households, as in the United States or Japan).

Property markets matter ...

As noted above, wealth effects associated with other assets, notably real property, might also be important. The experience of the 1990s Asian crisis suggests that the creation of liquidity associated with foreign exchange market intervention can contribute to a sharp run-up in property prices and a "boom-bust" cycle capable of producing considerable economic and financial sector disruption. Today, this could apply to countries where credit to the private sector has grown rapidly. Data limitations make it difficult to evaluate risks, but in 2006 property prices rose significantly (eg at near double digit rates or higher) in Korea and South Africa as well as in the cities of Manila and Mumbai. Rapid credit growth suggests that there could also have been price increases in other markets for which property price data are not available. In some cases, there has been concern that foreign investors contribute directly to volatility in domestic property markets through their investments. In China this has prompted the government to restrict such investments, while in India the government has recently restricted foreign borrowing in the real estate sector.

... but EMEs appear resilient

There are, however, also reasons to believe that EMEs could be more resilient to property market shocks than before. First, as noted earlier, the most rapid growth in credit has been in countries with relatively low credit/GDP ratios. Second, property price increases in some cases are not widespread. For example, in Korea the fastest price rises appear to be confined to certain wealthy neighbourhoods, affecting a limited segment of the population. Third,

many countries have absorbed the lessons of the crises of the 1990s and have strengthened their financial sectors with a view to containing risks.

Growing foreign participation raises concerns

Growing foreign participation in emerging financial markets contributes to greater financial market depth and efficiency. Nevertheless, two concerns have sometimes been raised. One is that a powerful foreign presence could increase volatility in small markets, by driving prices away from domestic fundamentals. The second is that domestic markets might become more exposed to spillovers or contagion from shocks abroad. As to the first concern, there is some evidence of "returns chasing" (investment in assets with already high returns) in Asian equity markets. This could mean that the high returns observed in those markets have been amplified by the participation of foreign investors. Furthermore, certain investment strategies, such as carry trades seeking to exploit higher EME asset yields, have implied persistently favourable excess returns, in apparent violation of the arbitrage or interest rate parity conditions implied by efficient markets. Either of these situations could pave the way for overshooting and prospective volatility. Moreover, and perhaps even more dangerous, foreign investors might possibly be more inclined to "cut and run" than domestic residents, introducing greater volatility in asset markets.

Rising equity return correlations ...

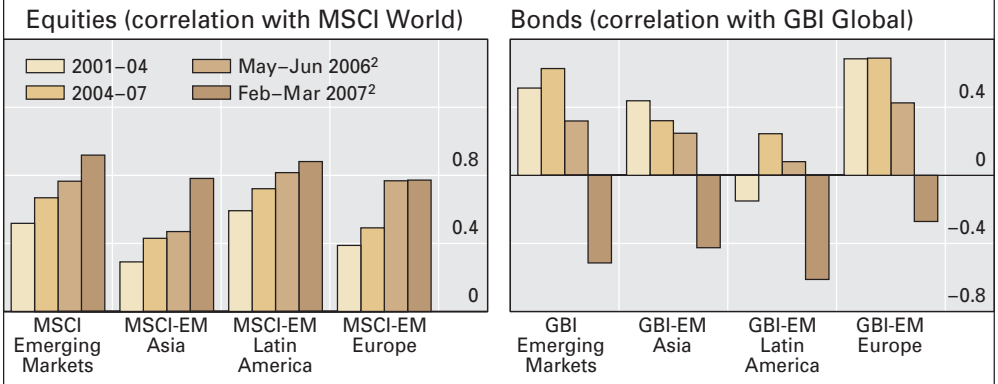
As for increased exposure to foreign shocks, the correlation between global and emerging market equity returns appears to have risen since mid-2004 (when the Federal Reserve began a cycle of tightening) compared to the 2001–04 period (Graph III.11).

Furthermore, this correlation rose even higher during the most recent periods of global market volatility (May–June 2006 and February–March 2007). Although such correlations need to be interpreted with caution, they could indicate that emerging equity markets might now be more exposed to external shocks than in the past, particularly during periods of high market volatility.

... but volatility remains moderate

Nevertheless, there is also some evidence supporting the view that greater integration with global markets has not been associated with higher

Correlations in asset markets[1]



[1] Calculated on daily returns in US dollars. [2] Period of increased global market volatility.

Sources: Datastream; JPMorgan Chase; MSCI Barra. Graph III.11

volatility in emerging market financial asset prices. First, higher correlations between world and emerging market indices apply to equities but are less apparent for domestic bonds (Graph III.11). Second, price/earnings ratios in many EMEs do not appear high compared to developed markets. The median trailing price/earnings ratio in EMEs was recently around 15, about the same as in the euro area, but less than the US ratio of 18. It should be noted, however, that the cross-country dispersion in emerging market price/earnings ratios has recently risen considerably, nearly tripling since mid-2006. As a result, ratios are much higher in some EMEs, including China, where they rose to 34 by mid-May 2007. Third, as illustrated in Graph III.10, market volatility has generally fallen since the late 1990s, when foreign participation was smaller. While prima facie this might indicate that foreign participation has not heightened volatility, this conclusion must be tempered by the fact that lower volatility has also been seen in many other markets. This implies that an increase in global risk aversion might still have significant effects on EMEs.

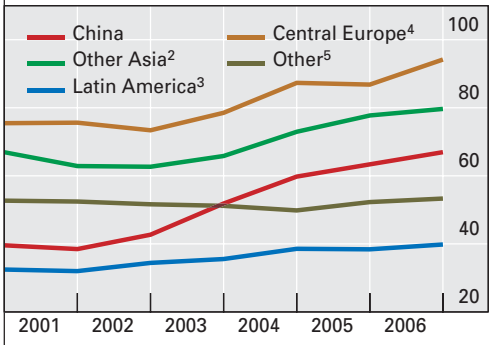
China's international trade: stylised facts and implications

Since its accession to the WTO in December 2001, China's share in world exports has doubled to 8% (Graph III.12). At the same time, it has also become one of the top five destinations for emerging Asia's exports. Underlying these changes is the country's emergence as a global manufacturing hub that produces final goods by importing intermediate and capital goods. These developments raise three questions. First, how are the trade opportunities for China's trading partners being affected? Second, how has the exposure of these partners to external shocks changed? Third, what are the implications for regional exchange rate policies?

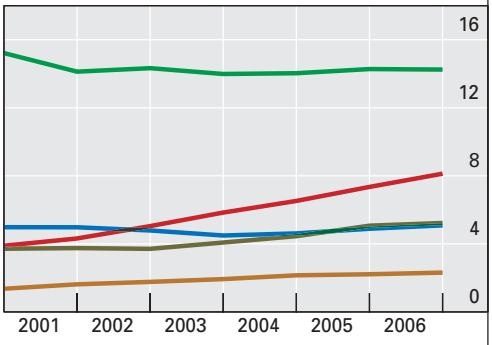
Trade

In per cent

Trade openness[1]



Share in world exports[6]



[1] Ratio of exports plus imports to GDP. Regional aggregates are weighted averages based on 2000 GDP and PPP exchange rates. [2] Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand. [3] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. [4] The Czech Republic, Hungary and Poland. [5] Russia, Saudi Arabia, South Africa and Turkey. [6] Regional aggregates are the sum of the member economy shares.

Sources: IMF; national data. Graph III.12

Changing trade patterns

China is an important market for Asia ...

China's emergence in global trade has been characterised by three features. First, it has displaced some other Asian EMEs in the markets of advanced industrial countries, but has also provided an important market for their goods. The share of advanced industrial economies (the United States, the European Union and Japan) in the exports of emerging Asia has tended to fall (Table III.3), while the share of China's exports to advanced industrial economies has tended to rise (with Japan a striking exception). China's share in the exports of emerging Asia has risen, from 13% in 1996–2001 to 22% in 2005–06. Over these periods, the share of emerging Asia in China's imports rose from 31% to 35%.

... importing mainly production inputs ...

Second, a significant proportion of China's imports is accounted for by production inputs, particularly for the export sector. About 70% of Chinese imports consist of intermediate goods, and 57% of these goods come from emerging Asia and Japan (Graph III.13, left-hand panel). At the same time, consumption and capital goods make up 72% of Chinese exports to the United States and 68% of those to the European Union. This illustrates a growing

Asian trade shares

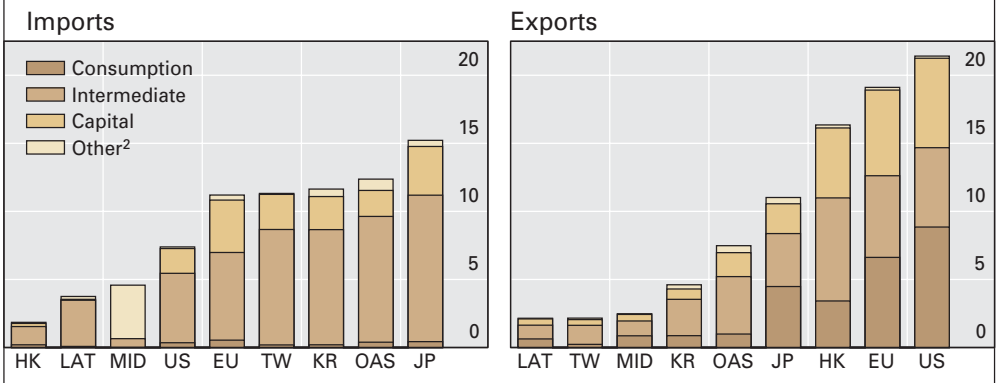
Averages, as a percentage of total exports and imports respectively

	Exports		Imports	
	1996–2001	2005–06	1996–2001	2005–06
Emerging Asia excluding China[1]				
United States	21.0	14.6	14.3	9.4
European Union	15.9	13.6	12.9	10.3
Japan	10.1	8.0	17.9	13.9
China	12.9	21.8	13.7	18.4
Emerging Asia excluding China internal trade[1]	25.2	26.4	24.4	26.5
Latin America[2]	1.8	1.8	1.2	1.3
Middle East[3]	2.7	3.4	6.3	9.2
Africa[3]	1.3	1.6	1.4	1.1
China				
United States	19.9	21.4	11.3	7.5
European Union	15.6	19.3	14.6	11.3
Japan	17.4	10.2	19.7	14.9
Hong Kong SAR	20.2	16.0	4.6	1.6
Emerging Asia excluding China and Hong Kong SAR	12.7	14.5	30.9	34.8
Latin America[2]	1.7	2.4	2.2	3.9
Middle East[3]	2.6	3.3	3.0	5.3
Africa[3]	1.7	2.3	1.6	3.2
Memo:				
European Union internal trade	*66.9*	*67.5*	*63.4*	*62.6*

[1] Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand. [2] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. [3] IMF Direction of Trade regional grouping.

Sources: IMF; BIS calculations. Table III.3

China's trade by trading partner and goods type[1]



EU = European Union; HK = Hong Kong SAR; JP = Japan; KR = Korea; LAT = Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela; MID = Iran, Iraq, Kuwait, Libya, Oman, Saudi Arabia, Syria, the United Arab Emirates and Yemen; OAS = India, Indonesia, Malaysia, the Philippines, Singapore and Thailand; TW = Taiwan (China); US = United States.

[1] Data refer to 2005. As a percentage of total exports and imports respectively. [2] Fuels and lubricants, passenger motor vehicles and goods not included elsewhere.

Sources: UN Comtrade database; BIS. Graph III.13

vertical integration in the production process in Asia, responding to the fact that certain countries seem to have a comparative advantage in one or other stage of production. Chinese exports, therefore, have a comparatively high import content and China's value added is correspondingly low. Moreover, distribution margins often account for an even larger proportion of the final retail price for Chinese exports. As a result, a doll that sells for $20 in the United States is estimated to contain only 35 cents of value added by Chinese labour.

... and playing a large role in commodities markets

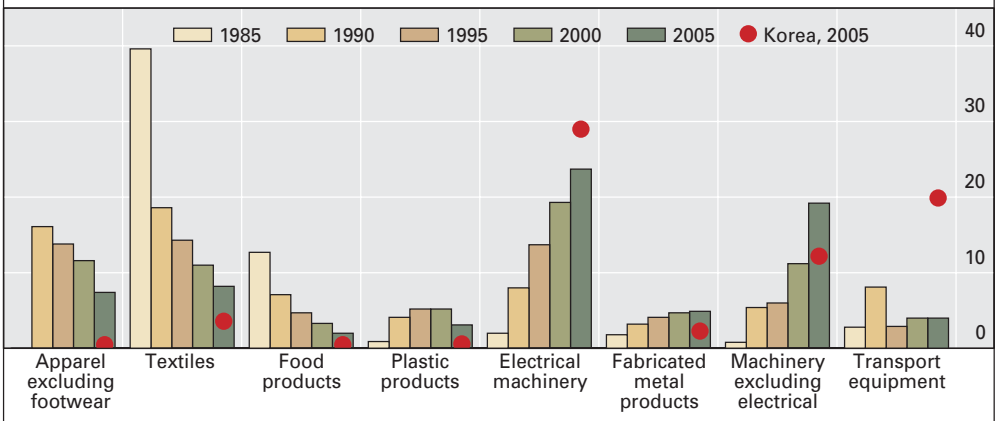
As is also apparent in Graph III.13, China's trading relationships extend well beyond production networks in Asia. In particular, its imports have contributed significantly to the demand for raw materials from the Middle East and Latin America, recently accounting for about 5% and 3.3% respectively of total exports from those regions. In Africa, the corresponding figure is 7%. Moreover, a substantial proportion of incremental demand for major commodities can be attributed to China. For example, between 2004 and 2006, it accounted on average for about 37% of the annual increase in world demand for oil. China is now the second largest oil importer in Asia after Japan, and demand is expected to increase by 5–7% a year. The country is also the world's largest consumer of commodities such as copper, nickel and zinc and, given its high demand for such products, has been instrumental in causing these prices to rise. This demand is likely to continue for some time as China is still in the early stages of industrialisation, when infrastructure investment is of particular importance.

Moving up the technology ladder

Third, China is gradually shifting from exports of labour-intensive and less advanced manufactured goods to more technology-intensive goods. Between 1998 and 2005, the share of consumption goods in exports of final goods fell from 48% to 32%, while the share of capital goods rose from 15% to 26% (the remainder are largely intermediate goods). The share of manufacturing exports in total exports has also risen, with a growing share for more sophisticated

China's trade by level of sophistication of goods[1]

As a percentage of manufacturing exports



[1] Sophistication of goods increases from left to right. The data are transformed following N Alessandro and M Olarreaga, *CD1: a dataset on trade and production, 1976–1999*, World Bank, 2001.

Sources: UN Comtrade database; BIS. Graph III.14

goods such as machinery (Graph III.14). The incentive to climb the technology ladder was boosted by an announcement in September 2006 that tax rebates would be abolished or reduced for certain export products with low value added, or which contribute to high pollution or high consumption of resources. The government has also invested heavily to foster research and development in China, although the lack of adequate intellectual property protection there remains a potential deterrent to high-tech commercial operations.

Medium-term implications: how has China affected trade opportunities?

China's entry into global trade benefits some ...

The preceding discussion suggests that China's impact on trade opportunities for other emerging markets is mixed because it is potentially both a competitor and a new market for goods and services. For some commodity exporters in Latin America and Africa which do not compete with China, its entry into the world trading system offers clear benefits from terms-of-trade gains, although there could also be some offset to the extent that these countries import oil. Net benefits might also be expected for countries that have been displaced by China in low value added or assembly operations, but which now supply it with production inputs. For example, while Chinese competition might displace PCs assembled in Korea for sale in developed countries, such effects could be largely offset by increased Chinese demand for Korean PC components such as semiconductors.

... but may be a challenge to others

In contrast, countries competing with China in final goods, with no offsetting sales of production inputs to the latter, will find their trade opportunities reduced. China has displaced Mexico and Central America as a supplier of textiles and garments to the US market, and is an emerging competitor for goods embodying intermediate technology (electronics and electrical goods, computers and automobile industry parts). Some other countries have been affected in part because of their own domestic policies. To illustrate: China is a world leader in sales of apparel in world markets, in direct

competition with India. Chinese imports of high-quality textiles to produce these goods have grown, but are sourced mainly from Japan and the newly industrialised economies. China does not import these textiles from India, even though India is the world's second largest producer. In part, this has been due to export restrictions on India's textile industry imposed by the Indian government.

China imports little for domestic consumption

The medium-term trade opportunities created by China's global integration would be considerably greater if its import demand began to reflect its own final domestic demand, as well as the derived demand from those to whom it exports. This is not yet the case. Final consumption goods constitute only 4% of China's total imports and calculations suggest that the elasticity of demand for its ordinary imports (ie those not used for processing in the export sector) with respect to domestic spending is insignificant. In line with this, China also appears to be engaged in large-scale import substitution; for example, it has recently become self-sufficient in steel.

A related medium-term question is whether China's rapid growth and demand for commodities and intermediate imports are themselves sustainable. Its very high rates of investment run the risk of supporting projects with low or even negative returns. High rates of investment were also observed in East Asia in the 1980s and early 1990s, culminating in the 1997–98 crisis.

Overinvestment threatens growth …

Recent evidence suggests that the easier access to the formal financial system enjoyed by China's state-owned enterprises (SOEs) encourages overinvestment and lowers the marginal return on capital. Indeed, productivity levels at SOEs are roughly 30% lower than in private firms. It is estimated that by allocating resources more efficiently, China could reduce its investment levels by 5% of GDP and raise consumption without sacrificing economic growth. At present, the authorities are seeking to contain unproductive investments through a variety of administrative measures, by reducing credit growth (at times selectively) and by tightening monetary policy. But such public sector measures need to be supported by market forces that also operate effectively and quickly to contain unproductive investments. Evidently, the longer these resource misallocations are allowed to continue, the greater the eventual fallout.

… and exposes banks

A related implication of easy access to credit has been a heavy concentration of bank exposure on less profitable SOEs. According to government figures, roughly 40% of industrial SOEs make losses. The bulk of recorded aggregate profits are earned by relatively few enterprises, which fund themselves primarily from retained earnings rather than borrowing from banks. This implies that a substantial proportion of lending by China's banks could turn into non-performing loans should the country's economy slow significantly. Presumably, this would also have sizeable fiscal implications unless Chinese banks were to become considerably more profitable in the interim.

Hollowing-out effects not seen

An additional medium-term concern for more technologically advanced competitors, such as Korea, is the possibility of their being "hollowed out" due to an increasing tendency to shift manufacturing jobs to China. There is some room for optimism in this regard. Although China has attracted the bulk of FDI flows to emerging markets, its share has fallen, from a peak of 39% in 2003 to

26% in 2006. Furthermore, with the notable exceptions of Japan, Hong Kong SAR and Taiwan (China), the share of manufacturing production in GDP has not declined in other emerging Asian economies since 1993. However, this does not rule out the possibility that employment in the manufacturing sector could still fall in response to increases in productivity, as appears to have occurred in the United States and a number of other advanced industrial countries.

Exposure and resilience of emerging Asia (excluding China) to shocks

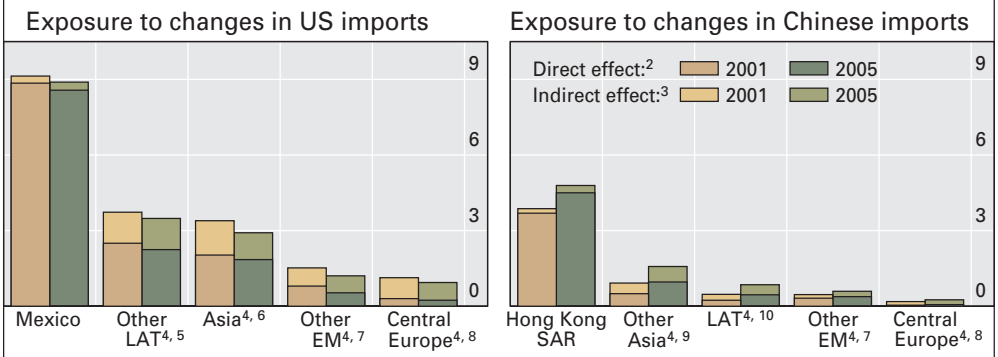
Large impact from a US slowdown ...

China's growing prominence in world trade has changed the channels through which external demand shocks are transmitted to EMEs, and has also influenced the pattern of co-movement in trade flows. A US slowdown affects emerging Asia by lowering demand for its exports to the United States (direct demand effect), but it also has indirect effects coming through the slower US demand for Chinese exports. For instance, a 10% slowdown in US imports directly lowers Korea's exports by 1.5%. However, the same shock also reduces China's exports by 2.1%, which causes a further drop in imports from Korea. Under certain assumptions, these indirect effects lower Korean exports by another 1.3% (Graph III.15). A US slowdown could also cause the US dollar to depreciate against Asian currencies, which would further amplify both the direct and the indirect effects.

... or smaller impact from a Chinese slowdown

The lack of response of China's imports of final products to changes in domestic demand, cited earlier, indicates that a Chinese slowdown would have smaller effects on Asian economies than would a US slowdown. However, this also suggests that the extent to which China could provide a cushion to the Asian economies in the event of an adverse global demand shock would also be more limited.

Trade linkages[1]



[1] Impact on total exports of a 10% decline in exports to the United States (left-hand panel) and to China (right-hand panel) from the respective economies. [2] Ten per cent multiplied by the share of exports to the United States (left-hand panel) or to China (right-hand panel) in the respective economies. [3] Direct effects on third countries, multiplied by their respective shares in the exports of the country of interest. [4] Weighted average of the economies listed, based on 2000 GDP and PPP exchange rates. [5] Argentina, Brazil, Chile, Colombia, Peru and Venezuela. [6] China, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. [7] Russia, South Africa and Turkey. [8] The Czech Republic, Hungary and Poland. [9] Economies listed in footnote 6, excluding China and Hong Kong SAR. [10] Economies listed in footnote 5 plus Mexico.

Sources: CEIC; national data. Graph III.15

Implications for exchange rate policies

Given a renminbi appreciation against the US dollar ...

The development of trade networks is likely to affect exchange rate policies, but the precise effects will depend on the extent of direct trade competition, trade through production networks and the resulting business cycle synchronisation. For example, an increase in US demand for China's exports in equilibrium would require a renminbi appreciation against the dollar. The exchange rate response of China's Asian neighbours would then depend on the extent to which they compete with China or form part of a (vertically integrated) production network with it.

... China's competitors would prefer to devalue against the renminbi ...

On the one hand, to the extent that its neighbours compete with China in third markets, they would wish to see their currencies fall against the renminbi. One indicator of this is the overlap in goods exported: between China and Thailand, for instance, this measure grew from 50% in 1998 to 55% in 2005; between China and Korea, it increased from 44% to 56% during the same period. In contrast, China does not compete at all with most Latin American countries (except Mexico).

... while stronger synchronisation might encourage linking to the renminbi

On the other hand, to the extent that its Asian neighbours are linked to China through production networks, as discussed earlier, demand for their exports to China is set to grow. To avoid external imbalances or overheating, these economies therefore have an incentive to allow their currencies to appreciate along with the renminbi. Thus, the increased synchronisation of business cycles resulting from production networks would tend to link East Asian currencies more closely to China's. This effect may be dampened, however, to the extent that trade flows are not sensitive to exchange rate changes.

China's emergence as a major trading country has already had a substantial impact on the global economy. How it succeeds in achieving substainable growth will have major consequences for the rest of the world in the years ahead.

IV. Monetary policy in the advanced industrial countries

Highlights

During the period under review, the stance of monetary policy generally tightened as central banks in the advanced industrial countries raised policy rates. The shift largely reflected rising resource utilisation in the context of expanding global demand and the concomitant threat of inflation pressures. Elevated commodity prices, especially very high crude oil prices early in the period, added to concerns that short-term inflation momentum could spill over to longer-term inflation expectations.

In the United States, the Federal Reserve kept rates on hold for most of the period, as economic activity moderated and inflation pressures for the most part were expected to recede. Concerns grew, however, that a desired moderation of US core inflation would not materialise. The ECB tightened policy appreciably, basing its decisions on, amongst other things, diminishing economic slack and rapid growth of money and credit. The Bank of Japan found itself in a different set of circumstances. With previous structural impediments to growth largely behind it, the Japanese economy showed more promising signs of a sustained recovery. The Bank of Japan used its new "two-perspective" framework for monetary policy to explain two increases in the policy rate, which nonetheless left it very low at the end of the period.

Other advanced industrial countries generally tightened monetary policy in the face of a diverse mix of external and domestic forces. The Bank of Canada, the Bank of England, the Reserve Bank of Australia and the Reserve Bank of New Zealand tightened in the context of already relatively high policy rates, but with inflation running in the middle or on the high side of policymakers' preferences. The Central Bank of Norway, Sveriges Riksbank and the Swiss National Bank made further progress towards normalising policy rates from a comparatively low starting point.

Although policy interest rates were raised, and inflation on the whole was kept low, concerns have been expressed in some quarters about rapid money and credit growth. These concerns have been shaped in part by the evolving views about the appropriate role of monetary and credit aggregates in the conduct of monetary policy. To clarify the debate, the final section of this chapter assesses the range of views against the backdrop of central bank experiences over the past 35 years.

Review of developments

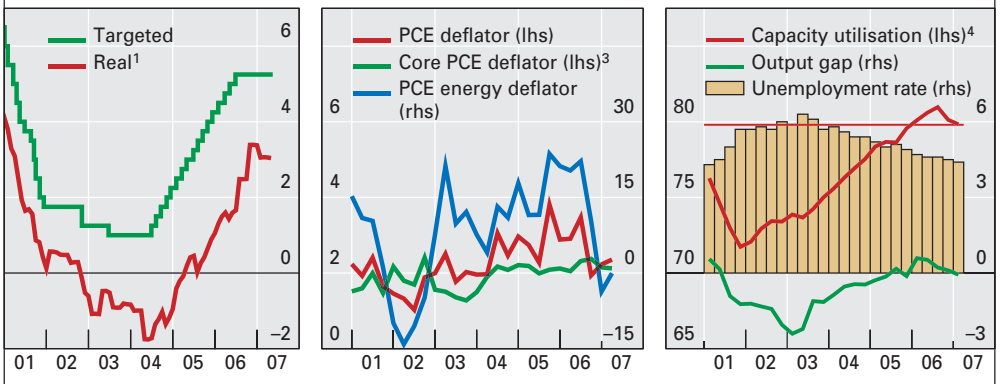
United States

US monetary policy tightened further before a long pause

During the period under review, the Federal Reserve initially further reduced the degree of policy accommodation. It raised the federal funds target rate to

Economic indicators for the United States

In per cent



[1] Federal funds rate less annual change in the personal consumption expenditure (PCE) deflator. [2] Annual changes. [3] PCE excluding food and energy deflator. [4] In manufacturing; the horizontal line represents historical average manufacturing capacity utilisation for 1972–2006.

Sources: OECD; Bloomberg; national data. Graph IV.1

5.25% in June 2006, the 17th consecutive 25 basis point increase, and then held the target rate stable (Graph IV.1). However, this stability belied the shifting risks that policymakers had to balance as economic and inflation outlooks evolved. For most of the period, the central question for the Federal Reserve was whether additional moves, largely oriented towards tightening, would be necessary to ensure a gradual decline in core inflation and sustainable economic growth. But, as the year wore on, concerns that output might significantly overshoot its sustainable path began to wane as economic activity moderated. Subsequent economic performance proved to be largely consistent with the Federal Reserve's view that, in a lagged response to higher interest rates, the economy, and in particular the housing market, would decelerate.

Economic activity moderated ...

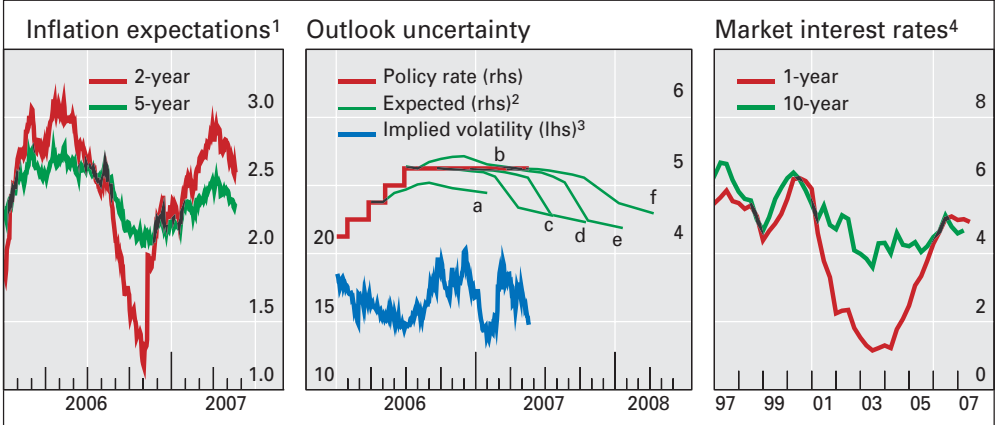
Incoming data in late 2006 and early 2007 weighed particularly heavily on the Federal Reserve's assessment of the prospects for growth. Several countervailing forces were at work, raising uncertainties about the appropriate policy setting. While the ongoing adjustments in the interest-sensitive sectors contributed to a welcome moderation in economic activity, growing troubles in the subprime mortgage market led to concerns about a deeper and more pronounced softening in the housing sector (see Chapter II). Evidence of only modest knock-on effects on other markets, and on consumers' willingness to spend, provided some confidence that the potential fallout would be limited in the near term. However, against this backdrop, the somewhat atypical sluggishness in business fixed investment (despite low credit spreads, healthy profits and moderate expansion of aggregate demand) took on increased significance in assessing the downside risks to growth.

... but core inflation was elevated

At the same time, the Federal Reserve expressed concern about the elevated level of core inflation and the possibility of a pickup in inflation expectations. While high energy and non-energy commodity prices contributed

Policy outlook for the United States

In per cent



a = 28 February 2006; b = 29 June 2006; c = 20 September 2006; d = 12 December 2006; e = 21 March 2007; f = 9 May 2007.

[1] TIPS (Treasury inflation-protected securities) implied break-even inflation. [2] Inferred from one-month federal funds and three-month eurodollar futures. [3] Implied by options on 18-month eurodollar futures. [4] Yields on Treasury notes.

Sources: Bloomberg; national data. Graph IV.2

to the slowing of economic activity, they also put upward pressure on headline inflation. Moreover, there appeared to be a gradual pass-through to core inflation, especially during 2006. Even though energy price pressures were subsiding by the end of the year, the Federal Open Market Committee (FOMC) became increasingly worried that core inflation might be running near or above the upper end of the range most conducive to achieving sustainable growth and price stability over the medium term. While the FOMC expected core inflation to moderate, it also attached significant weight to the possibility that inflation might not decline as much as expected, as a result of which inflation expectations might become entrenched at too high a rate (Graph IV.2). This possibility was heightened by labour markets becoming increasingly tight and wage pressures in some sectors picking up. And, in the light of evidence implying some flattening of the short-run Phillips curve, reducing inflation could entail greater output costs than in the past.

Policy outlook more uncertain and data-dependent ...

The Federal Reserve's communication with the public also evolved during the period under review. As the policy outlook became increasingly data-dependent, the FOMC noted that the public would generally find it harder to fully anticipate future policy decisions owing to the more contingent nature of its policy statements. Although this development did not signal a change in the FOMC's transparency, it nonetheless left an imprint on financial markets, as illustrated by swings in six-month-ahead implied policy rates from federal funds futures in 2007. However, as the implied volatility from options indicated, the general level of uncertainty remained near historical lows (Graph IV.2).

... especially with respect to inflation developments

By the end of the period, markets viewed the near-term direction of the federal funds rate as being somewhat more uncertain than it had been on average in the previous few years. On the one hand, as long as core inflation continued to run at the upper limit of, or even above, the FOMC's apparent

comfort level, the Committee left open the possibility of its needing to raise rates or extend the period over which current rates would be maintained. On the other hand, if the FOMC's expectations of moderating core inflation were realised without an adjustment in the policy rate, or if the economy decelerated more sharply than expected, rates would probably be adjusted downwards. Even so, long-term interest rates remained low, appearing to be somewhat insensitive to these short-term uncertainties, and traded in a narrow corridor around 5%.

Euro area

The ECB continued to increase rates ...

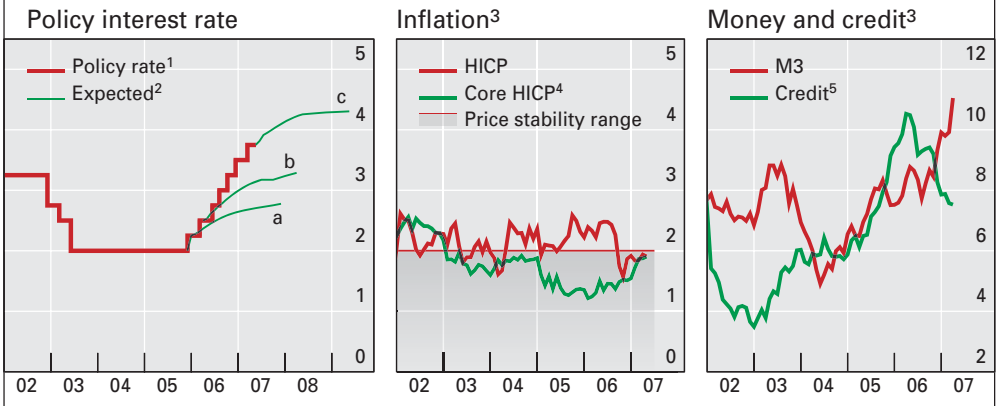
Monetary policy in the euro area was tightened appreciably during the period under review. The ECB raised its policy rate to 3.75% in five 25 basis point moves, continuing the process of interest rate normalisation begun at the end of 2005. Previously, the policy rate had been increased to 2.5% from the historically low level of 2% that had prevailed for two and a half years (Graph IV.3). The tightening was largely in response to indications of upside inflation risks drawn from both the economic and the monetary analyses of the ECB, even though realised inflation remained well contained. Despite its actions, the ECB still assessed policy to be on the accommodative side at the end of the period. Market participants also appeared to expect policy to be tightened further in 2007, to around 4¼%, about 75 basis points above where markets had expected the tightening episode to end a year before.

... as economic activity was vigorous ...

Market participants' expected path for the policy rate shifted up over the period under review, in large part because the pace of economic activity and associated momentum were more vigorous than had been expected, potentially resulting in heightened inflation pressures. Real GDP growth in 2006 exceeded the upper limit of the range forecast by ECB staff earlier in the year. Moreover, their projection for output growth in 2007 was marked up by about ½ percentage point.

Economic indicators for the euro area

In per cent



a = 30 November 2005; b = 31 March 2006; c = 18 May 2007.

[1] Main refinancing rate. [2] Calculated using EONIA swap rates and adjusted for the average premia over the policy rate. [3] Annual changes. [4] HICP excluding unprocessed food and energy. [5] Credit extended by monetary financial institutions to euro area residents.

Sources: ECB; Bloomberg; BIS estimates. Graph IV.3

... and even as inflation fell

Headline HICP inflation fell over the period to 1.9% in March 2007, consistent with the ECB's price stability objective of below but close to 2%. Core inflation remained subdued, but drifted up. The ECB projected headline inflation to be in a range centred slightly below 2% in 2007 and on 2% in 2008. Nevertheless, it considered the inflation outlook to be subject to upside risks.

The drop in unemployment ...

The robust advance in output had coincided with a drop in the unemployment rate to historically low levels, and the ECB expressed concern that wage gains could pick up as a consequence (see Chapter II). Also contributing to the assessment that risks were tilted to the upside were the potential for renewed oil price increases and the possibility of additional upward adjustments in administered prices and indirect taxes.

... and rapid money growth pointed to inflation risks

The ECB's monetary analysis confirmed the assessment that there were upside risks to the inflation outlook. Annual M3 growth picked up to 10.9% in March 2007, the highest level since the introduction of the euro. Moreover, unlike in previous years, the rapid rise in M3 did not appear to reflect shifts out of longer-term investments. Rather, it seemed primarily to reflect efforts by financial institutions to fund continued robust asset growth. Total credit extended by monetary financial institutions to euro area residents in March 2007 was 7.7% above its year-earlier level. The continued substantial increases in euro area monetary and credit aggregates reflected the generally low interest rates, solid economic expansion and strong property market developments in many parts of the euro area – a build-up of liquidity and a constellation of factors that the ECB saw as requiring especially careful monitoring.

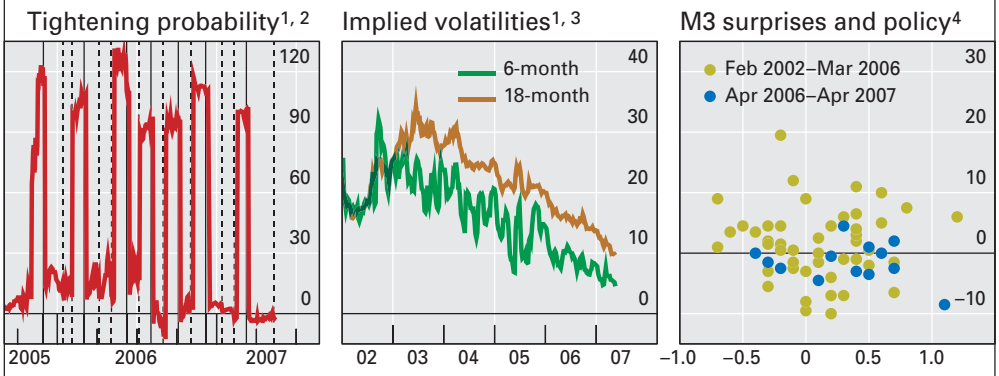
Markets anticipated policy moves accurately ...

The successes of, and challenges to, ECB communication efforts were reflected in the response of financial markets to monetary developments. The Bank sought to be reasonably predictable in its near-term policy actions, and broadly succeeded. Market participants have been able to anticipate policy moves quite accurately over the current tightening episode (Graph IV.4). The probability of a rate rise at the next monthly meeting of the Governing Council, as implied by interest rate futures, either jumped to essentially 100% or fell to virtually zero in response to the statements released after each meeting, remaining close to those values until the next policy decision, which was in each case correctly anticipated. This predictability of near-term policy actions could have contributed to the decline of Euribor implied volatilities to historically low levels. However, similar declines were also seen in a broader array of financial market measures of uncertainty (see Chapter VI).

... but still did not respond to M3 releases

On the other hand, the ECB recognises that conveying clearly how money growth is factored into policy decisions has been challenging. In fact, there is some evidence that market participants did not pay especially close attention to M3 statistical releases during the period under review, despite repeated indications from the ECB that the marked acceleration in M3 was an important contributing factor to its assessment that there were upside risks to inflation. In particular, money market interest rate futures did not respond significantly on the day of data releases pointing to higher or lower annual money growth than expected by the markets. At the same time, it remains unclear whether this reflects communication difficulties or a link that, by its nature, is too episodic

ECB communication and market uncertainty



[1] In per cent. [2] Estimate of the probability of a 25 basis point hike in the policy rate after the next meeting (inferred from futures prices); meeting dates are indicated by a solid vertical line (if rates were changed) or by a dashed line (if rates were unchanged). Values over 100 represent the possibility of a tightening of more than 25 basis points. [3] Implied by options on Euribor futures; weekly averages. [4] The horizontal axis represents monthly "surprises", defined as the difference between the actual and the median Bloomberg survey value of annual M3 growth; the vertical axis shows the changes in Euribor futures rates (two-year maturity, in basis points) on the day of the M3 release.

Sources: Bloomberg; BIS calculations. Graph IV.4

and conditioned on other developments to show up as a consistent response in interest rate futures.

Japan

The Bank of Japan maintained low rates ...

During the period under review, the Bank of Japan maintained a very low policy rate with the intention of keeping financing conditions accommodative. Nonetheless, as economic slack shrank and underlying downward price pressures subsided, it saw the need to raise the rate twice, thereby ending its zero interest rate policy. The target rate was increased to around 0.25% in July 2006 and then to around 0.50% in February 2007 (Graph IV.5). These moves, along with expectations of further gradual increases, were seen by the central bank as consistent with the goal of sustainable economic growth and price stability.

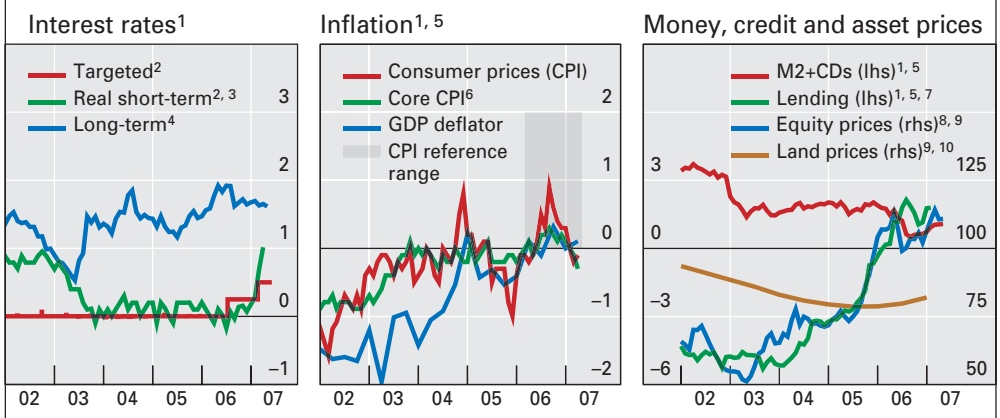
... despite ending its zero rate policy

The end of the zero interest rate policy reflected in large part an increasingly favourable macroeconomic backdrop, characterised by strengthening corporate balance sheets, structural adjustments in the financial system and a pickup in headline inflation in early 2006. The multi-year efforts of firms to shed excess production capacity, labour and debt appeared to have come to an end. The financial system had made significant progress in reducing its chronic non-performing loan burden and was showing clear signs of more normal lending practices. The Bank of Japan also interpreted the expansion of broad monetary aggregates and lending as a reflection of growing public confidence in the long-awaited return of stability to the financial system.

New policy framework applied

The decision to raise policy interest rates modestly also illustrated how the Bank of Japan was using its new two-perspective framework. The new framework was introduced in March 2006 (see the *76th Annual Report*). The first monetary policy perspective focuses on developments affecting output

Economic indicators for Japan



[1] In per cent. [2] Uncollateralised call money rate; targeted rate since March 2006. [3] Average daily rate, in terms of core CPI. [4] Ten-year government yield. [5] Annual changes. [6] Consumer prices excluding fresh food. [7] By domestic commercial banks. [8] Tokyo stock exchange. [9] 2000 = 100. [10] Residential property in six large cities.

Sources: Bank of Japan; national data. Graph IV.5

and inflation over the one- to two-year horizon. The second perspective emphasises risks, and their associated costs, over a longer horizon. This approach implies that policy might be tightened even in situations where the risks of rising inflation over the short run are judged to be negligible.

The first rate move illustrated the importance of both the first ...

The first perspective factored heavily into the July 2006 decision to raise the policy rate to 0.25%. At the time, the Bank of Japan expected a continued expansion of domestic and external demand, which would naturally lead to increased resource utilisation rates and less downward pressure on unit labour costs. Driven by surging energy prices in early 2006, measures of headline and core inflation showed both moving above zero and towards the middle of the Bank of Japan's preferred inflation range of zero to 2%.

... and the second perspective

The second perspective also played a role in the decision. The Bank's Policy Board was concerned about the possible longer-term implications of resource misallocations that might arise from holding interest rates too low for too long. Part of the concern was that firms might embark on projects under the unrealistic assumption that such accommodative financing conditions would be maintained, irrespective of the likely paths for economic activity and prices. While acknowledging that there existed little firm evidence of overinvestment, the Bank of Japan nonetheless factored this possibility into its decision. Resource misallocation, if left unchecked, poses serious risks to sustainable future economic growth. In a sense, the aim was not to cool an overheating economy per se, but to ensure that the experience of the late 1980s was not repeated.

The second move was based on the second perspective

The subsequent policy rate move in early 2007 illustrated the importance of the second perspective even more clearly. On this occasion, the Bank of Japan noted that the first perspective provided little justification for additional tightening. Economic activity was gaining traction, but core prices were losing upward momentum as the short-term deceleration in energy prices took hold. Indeed, abstracting from energy prices, consumer prices were not obviously

rising. Nevertheless, risks of a sustained deflation were no longer a major concern. In part, this was because the Policy Board continued to see an upward underlying price trend, primarily due to increased resource utilisation and the expectation of continued expansion in economic activity. But another factor was that the associated costs of a modest deflation were now judged to be much smaller because of the improved economic and financial fundamentals. In early 2007, output was growing, employee incomes were rising, asset prices were up, banks were lending, and household and corporate debt levels had subsided considerably from their 1990s peaks (Graph IV.6). Moreover, it had become increasingly clear that the recent decline in headline CPI had its origins in deregulation, globalisation and other positive supply shocks, and was thus of a different nature to demand-driven deflation.

Short-term risk of price declines ...

Instead, the Policy Board was primarily concerned that a policy rate increase was needed to forestall the build-up of unsustainable conditions – in other words, the possibility of overinvestment that would prove unprofitable. In February, the Board was nearly unanimous in its decision to raise the policy rate target to 50 basis points; still very low, but nonetheless the highest rate in 10 years. In fact, several Board members were already on record as having voted for a policy rate hike in January. Carry trade issues and some localised evidence of frothy land prices did not appear to factor prominently into the Bank of Japan's decision earlier this year.

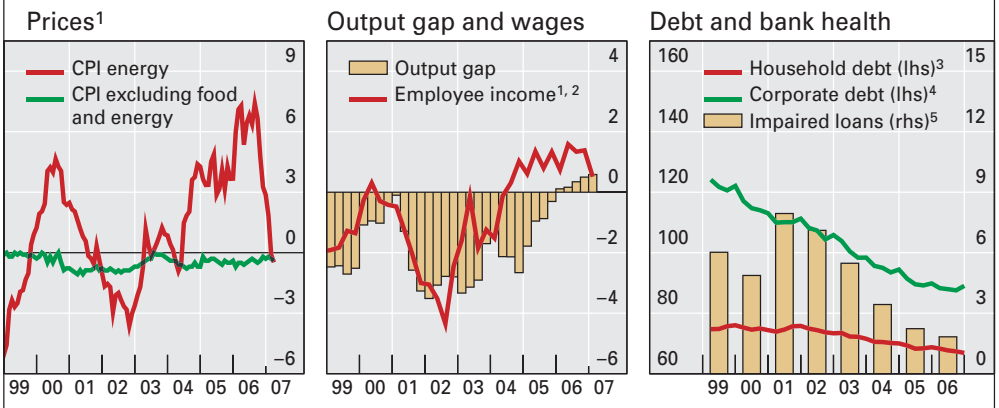
... but concerns about long-run risk of overinvestment

These two policy actions were largely anticipated, as financial markets reacted moderately and nominal long-term interest rates remained stable. The muted responses were seen by the Bank of Japan as evidence that its newly adopted monetary policy framework, and efforts to explain it to the public, were effective in communicating its policy intentions. This was so despite some short-lived market volatility in early January, when markets had incorrectly expected a policy move.

Markets anticipated actions

Deflation and recovery in Japan

In per cent



[1] Annual changes. [2] For establishments with at least five employees. [3] Ratio of gross household debt to GDP. [4] Ratio of private non-financial corporate debt to GDP. [5] Ratio of impaired loans to gross loans, weighted by individual banks' total average assets based on the 15 largest Japanese banks; fiscal years ending in March of the following year, except for 2006 (September).

Sources: Bank of Japan; OECD; Bankscope; national data. Graph IV.6

Policy accommodation expected

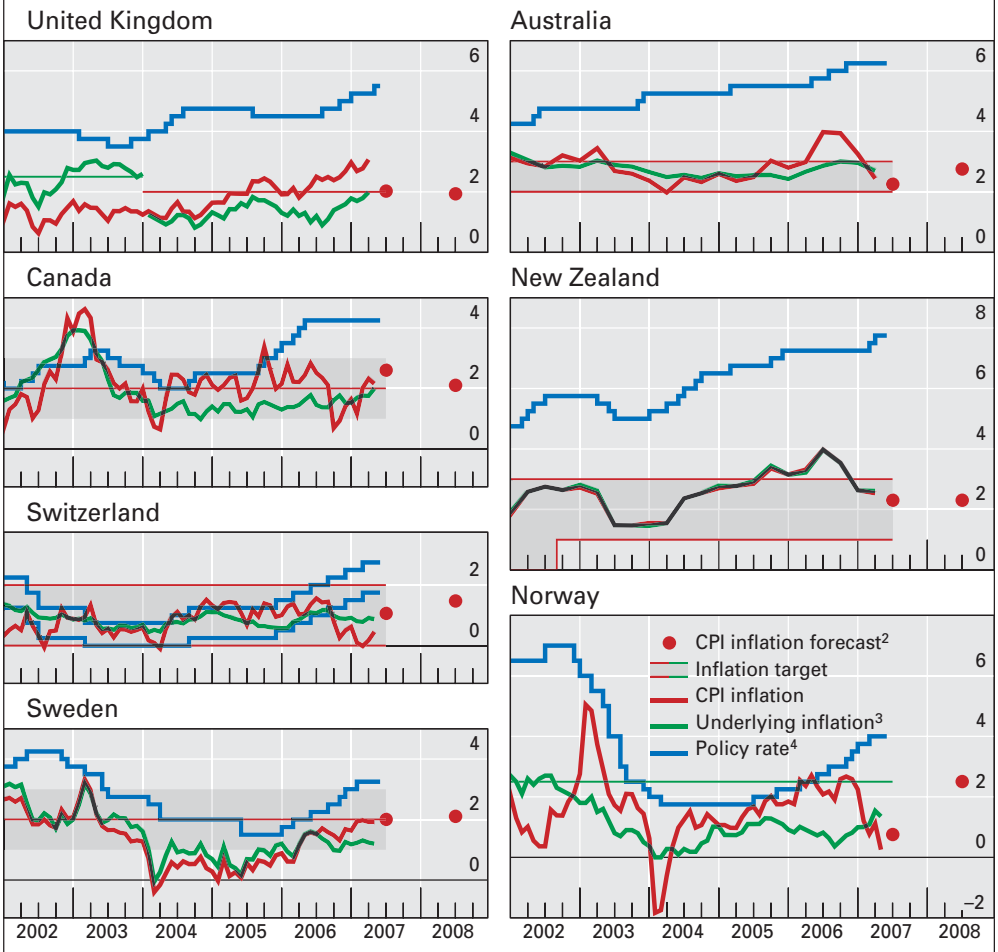
At the end of the period under review, the Bank of Japan's policy outlook indicated that the very low interest rate environment would continue so as to foster accommodative financial conditions and that, over time, policy rates would probably adjust upwards gradually as developments warranted.

Inflation targeting countries

Central banks with inflation targets raised rates

During the period under review, central banks in countries with explicit numerical targets for inflation raised their policy rates, albeit at different times and by different amounts (Graph IV.7). This tightening occurred in the context of a continued expansion of the global economy and high commodity prices.

Inflation and policy rate targets[1]



[1] Inflation rates measured as annual changes, in per cent. CPI inflation is targeted by Australia, Canada, New Zealand, Sweden and, since 10 December 2003, the United Kingdom; Norway targets underlying inflation; Switzerland does not target inflation per se, but instead uses a broad-based inflation forecasting strategy. [2] Central bank published forecast. [3] For Australia, average of weighted median CPI and trimmed mean CPI; for Canada, CPI excluding eight volatile components and the effect of changes in indirect taxes and subsidies on the remaining components; for New Zealand, CPI excluding credit services; for Norway, CPI adjusted for tax changes and excluding energy products; for Sweden, CPI excluding household mortgage interest expenditure and the effects of changes in indirect taxes and subsidies; for Switzerland, core CPI (trimmed mean method); for the United Kingdom, CPI excluding energy, food and tobacco (prior to 2004, retail price index excluding mortgage interest payments). [4] For Australia and New Zealand, cash rate; for Canada, overnight rate; for Norway, sight deposit rate; for Sweden and the United Kingdom, repo rate; for Switzerland, range for three-month Libor for Swiss franc deposits.

Source: National data. Graph IV.7

Domestic economic conditions in general were also strong, with most economies experiencing rising inflation pressures as productive capacity and labour markets became tighter. Despite this, inflation on the whole remained low, owing in part to favourable import price developments for consumer goods.

The global outlook was uncertain ...

To varying degrees, these central banks expressed four concerns. First, uncertainty about the global economic outlook remained high, even though the projected outcome was deemed largely favourable. Indeed, it was difficult to assess with confidence the full impact of rising policy rates in the major advanced industrial countries. In particular, there was uncertainty surrounding the implications of higher rates for the ongoing rotation of demand in the United States, especially as regards housing activity. Second, stronger than expected domestic demand raised concerns about higher price and cost pressures, against the backdrop of generally elevated energy and other commodity prices. Third, robust broad money and credit growth in some countries, especially when associated with buoyant equity and house prices, continued to point to two possible outturns. For the near term, strong domestic demand might increase inflation pressures. For the longer term, the risk of a sharp reversal in asset prices raised questions for some central banks about sustainable economic growth. Finally, global imbalances remained large and capital flows associated with carry trades persisted, posing the danger of disorderly adjustments affecting both exchange rates and economic activity.

... but strong domestic demand and money growth signalled inflation pressures

Against this backdrop, the central banks that started the period with relatively high policy interest rates – those of Australia, Canada, New Zealand and the United Kingdom – felt the need to tighten monetary policy further.

Canada ...

The Bank of Canada raised its policy rate by 25 basis points on two occasions early in the period under review, to 4% in April 2006 and 4.25% in May. It then kept its policy rate stable, despite an uptick in headline inflation in early 2007, as economic activity evolved in line with projections and inflation risks were seen as roughly balanced.

... New Zealand ...

The Reserve Bank of New Zealand raised its official cash rate to 7.5% in March 2007 and to 7.75% in April, after having kept it unchanged at 7.25% since December 2005. This was the highest policy rate in the economies covered in this chapter. Strengthening domestic demand was supported by a resurgence in housing markets and expansionary fiscal policy. There was a risk that inflation would be elevated over the medium term, and the Reserve Bank noted that it might need to raise rates further.

... Australia ...

The Reserve Bank of Australia raised its policy rate from 5.5% to 6.25% in three 25 basis point moves in 2006. Income and spending were buoyed by high commodity prices, spare capacity was limited, and the labour market remained tight. Both headline and underlying CPI inflation ran at or above the Bank's medium-term target for most of the period. While the former had come back into the target range at the end of the period, medium-term inflation risks were still thought to remain significant.

... and the United Kingdom raised already elevated rates a little further

The Bank of England raised its repo rate from 4.5% to 5.5% in four moves between August 2006 and May 2007. Strong domestic demand squeezed spare resource capacity further as CPI inflation swelled to just above 3%,

necessitating a letter of explanation from the Bank to the Chancellor of the Exchequer. Policymakers also became increasingly concerned that rapid growth in broad money and credit and buoyant asset prices were indications of building inflationary pressures. Nonetheless, headline inflation was projected to return slowly to target under the influence of tightening policy.

The central banks of Norway, Sweden and Switzerland began the period with relatively low policy rates compared to the other inflation targeting countries. Even though none of these central banks anticipated inflation rates exceeding their targets over the next one to two years, continued economic growth and the prospect of gradually rising inflation encouraged them to remain firmly on the path of policy normalisation.

Norway ...

Starting in May 2006, the Central Bank of Norway lifted its sight deposit rate from 2.5% to 4% in six 25 basis point increases. Even though inflation remained well below the Bank's target, the Norwegian economy had been in a clear upswing since the summer of 2003, and its limited spare capacity was dwindling further. Employment rose rapidly in the period under review and, amid signs of higher wage growth, underlying inflation was expected to pick up gradually. The central bank indicated its expectation that its policy rate would move up to 5% by the end of 2007, and still higher thereafter.

... Sweden ...

Sveriges Riksbank raised its repo rate from 2% in June 2006 to 3.25% in February 2007 in five consecutive moves, in response to brisk economic activity. However, inflation remained near the Riksbank's 2% target due to downward price pressures from abroad, including falling energy prices in the second half of 2006, and a stronger krona. Moreover, inflationary pressures were expected to remain relatively limited. Nevertheless, the Riksbank expected another potential 25 basis point hike before a possible pause on a path of generally rising rates.

... and Switzerland tightened to normalise relatively low rates

From June 2006, the Swiss National Bank raised the target range for its policy rate in four consecutive 25 basis point moves, from 0.75–1.75% to 1.75–2.75%. Switzerland continued its economic recovery, with both external and domestic demand, and especially private consumption, contributing to above potential growth. Capacity utilisation rose considerably in 2006 and unemployment was expected to fall further in 2007. After the dampening effect of the drop in oil prices in the second half of 2006 wore off, inflation was expected to begin to drift up in mid-2007 but to remain well within the Bank's inflation objective of below 2%.

Exchange rate and carry trade issues

Over the past year, many of these smaller advanced industrial economies had to factor into their policy decisions the implications of strong capital flows, in part associated with the so-called carry trade (see Chapter V). Capital generally flowed from countries with low interest rates such as Switzerland (and Japan) to those with relatively high rates such as Australia, New Zealand and the United Kingdom (and some emerging market economies). This tended to weaken the currencies of the former and to strengthen those of the latter. These developments had a variety of implications for monetary policy, not least the need to address the consequences of exchange rate movements for aggregate demand and inflationary pressures. The downward pressure on longer-term interest rates in the recipient countries also tended to offset

desired restraint imparted by higher policy rates, and the possibility of a sharp adjustment from the current situation added risk to the outlook. By way of example, the risk of a disorderly unwinding was one reason why the Reserve Bank of New Zealand was more cautious in tightening monetary policy than it might otherwise have been.

Sweden began publishing policy rate projections

In early 2007, the Riksbank began publishing its projection of the future policy rate path, following similar decisions by the Reserve Bank of New Zealand in 1998 and the Central Bank of Norway in November 2005. The interest in publishing forward-looking paths for policy rates has been growing in recent years. It is seen by some central banks as a way to be more transparent about the policy outlook, thereby improving the effectiveness of monetary policy as well as leading to more accountability.

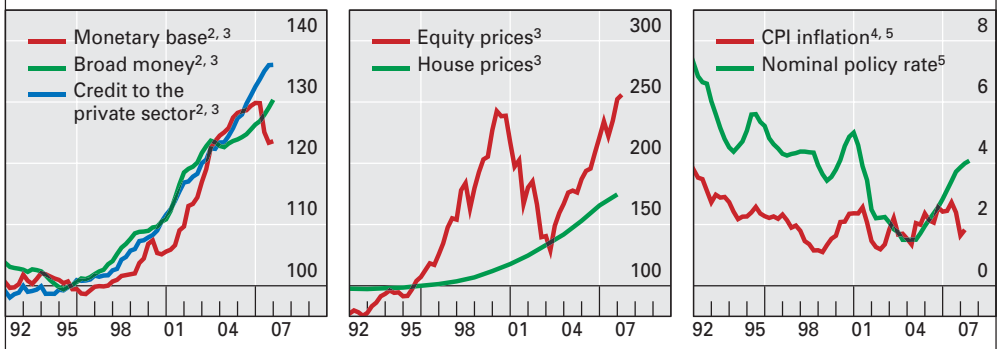
At the same time, these efforts are not without risks. Success is generally thought to depend critically on whether the public truly understands the conditional nature of the published forward-looking paths. If not, deviations from an announced path could lead to a loss of monetary policy credibility. In addition, it is important that central bank announcements of the expected future path of policy rates do not adversely affect the quality of financial market information, which central banks often use for cross-checking purposes. Such an outturn could arise, for example, if financial market participants responded to the paths by significantly reducing their own efforts to assess the consequences of macroeconomic developments for their interest rate outlooks. Finally, there is the risk that financial markets might take the published path as a foregone conclusion and make one-way bets, leading to excessive risk-taking in the financial system. The experiences of these central banks will provide valuable lessons with which to judge the effectiveness of these newer monetary policy approaches.

Monetary and credit aggregates in the conduct of monetary policy

Different views on the importance of monetary and credit aggregates

A close look at how central banks behave, and how they communicate, indicates that there are different views about the appropriate role of monetary and credit ("quantitative") aggregates in the conduct of monetary policy. These views combine, to varying degrees, three conceptual perspectives on the role of such aggregates in the economy. The first perspective reflects scepticism about the reliability of aggregates in helping to chart the course of economic activity and inflation, especially at short horizons. It would therefore not assign a prominent role to them in policy frameworks. The second stresses the central role of money as a causal driver of inflation. In particular, it emphasises the special information content that monetary aggregates can have for medium-term trends in inflation. Thus, it would assign a prominent role to these aggregates in policy frameworks. The third, more recent, perspective stresses the information content that unusually rapid increases in monetary and, particularly, credit aggregates can have, especially if observed in association with a surge in asset prices and unusual spending patterns. It regards these increases as a potential sign of the build-up of financial imbalances and hence of a prospective boom-bust cycle, with implications of significant economic

Monetary policy, global liquidity and inflation[1]



[1] Sixteen OECD countries; weighted averages based on 2000 GDP and PPP exchange rates. [2] Relative to nominal GDP. [3] 1995 = 100. [4] Annual changes. [5] In per cent.

Sources: OECD; national data; BIS calculations and estimates. Graph IV.8

costs over time. Like the second perspective, this view would assign a prominent role to quantitative aggregates in policy frameworks, but primarily as indicators of medium-term risks in the form of recession, financial instability and unwelcome disinflation.

This section provides a brief overview of past experiences and the history of economic thought which form the backdrop for these different perspectives, examines the extent to which they have been incorporated into current monetary policy frameworks, and considers the challenges ahead. The stakes in the debate at this policy juncture are high. As noted above, monetary and credit aggregates have been rising sharply even though inflation has, so far, remained quiescent (Graph IV.8). The question is: should this rapid growth be a source of policy concern or not?

Is rapid money and credit growth a cause for concern?

The changing role of money and credit prior to the 1980s

Quantity theory

Conceptually, emphasis on the key importance of money goes back to the origins of the quantity equation in the 19th century. This theory states that the quantity of money used in transactions multiplied by the number of times it turns over in a year must be equal to all nominal transactions. This approach became a key strand in modern macroeconomics, with nominal GDP being used as a substitute for transactions. The distinction between money and credit was, at least at the beginning, not clearly drawn. But, at the cost of some oversimplification, credit tended to be more immediately associated with the ability to obtain external funding to carry out transactions and to be regarded as one potential source of the "supply" of money, via bank lending.

In the highly regulated financial systems of the 1950s and early 1960s, credit growth took centre stage in policy implementation in many countries. With various types of controls on interest rates and lending, credit availability was regarded as a key channel to influence economic activity. At the same time, however, little attention was paid to either money or credit as predictors of inflation. Accumulating empirical evidence convinced many economists and policymakers that inflation was largely determined by the level of the unemployment rate. Indeed, the existence of this relationship (the Phillips

curve) was taken by many to mean that the level of output and employment could be permanently increased by simply accepting a little more inflation. In pursuit of this objective, monetary and credit aggregates were allowed to accelerate, as this was not initially treated as a source of concern.

Breakdown of the Phillips curve

The subsequent unwelcome rise in inflation, and indeed its tendency to accelerate as inflation expectations ratcheted up, was seen as a direct indictment of the prevailing wisdom. The experience illustrated just how unstable the Phillips curve could be if monetary policy actions were aiming at an unemployment rate below the natural rate. Compounding the seriousness of the charges, the monetarists, amongst many, had already challenged this view from a theoretical perspective. They had warned that the pickup in money growth would only stoke the flames of inflation, without any permanent effect on economic slack (Graph IV.9). In the light of the subsequent inflationary outturn, these views gained increasing influence within the central banking world, encouraging central banks in the 1970s to seek to enhance their control over inflation and the economy by using monetary aggregates as intermediate target variables.

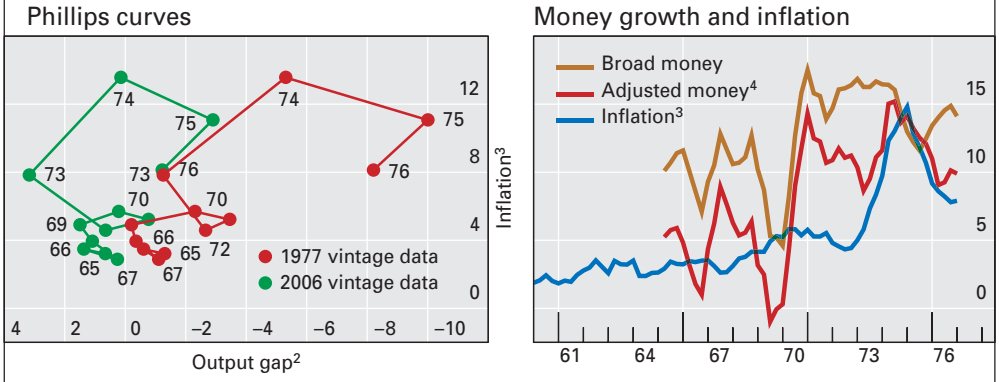
This was when the quantity equation experienced a renaissance. Postulating that the ratio of nominal GDP to money ("velocity") was stable, at least over medium-term horizons, and that money did not affect output in the long run provided the intellectual basis for central banks to control inflation through their influence on the money stock.

Monetary targeting was widely adopted in the 1970s

Industrial countries across the board adopted the new approach to monetary policy in the mid-1970s, although in differing degrees. Germany and Italy were first in 1974; Canada, Switzerland and the United States followed a year later, and Australia, France and the United Kingdom in 1976. To be sure, the practices adopted varied widely. For example, Germany and the United Kingdom chose broad measures of money as intermediate targets while the

Output gap, money growth and inflation[1]

In per cent



[1] G10 countries, excluding Belgium and Switzerland; weighted average of OECD data based on 2000 GDP and PPP exchange rates. [2] Annual averages; inverted scale. For some countries, backdated using a Hodrick-Prescott filter on real GDP. [3] Annual changes in consumer prices. [4] Broad money minus real GDP growth.

Sources: OECD, *Towards full employment and price stability*, 1977; OECD, *Economic Outlook*; national data; BIS calculations. Graph IV.9

United States and Canada chose M1. Whatever the differences in practices, however, the goal was the same: to squeeze inflation out of the system. The experiences of Germany, Switzerland and Japan in the 1970s were the first to illustrate that attention to monetary aggregates could help to tame inflation. The experience of the United States in the early 1980s, with inflation being quickly reduced from double digits to about 4%, pointed in the same direction.

The declining importance of monetary aggregates since the 1980s

Monetary targeting began to fall out of favour in the 1980s

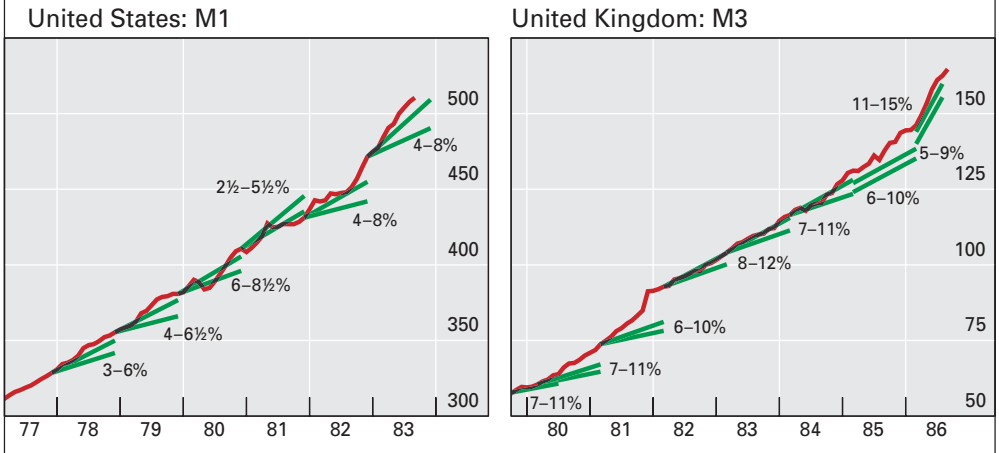
Against this backdrop, it might seem strange that monetary targeting fell out of favour. Two factors, however, undermined it. First, in part, the policy eventually became a victim of its own success. High and variable inflation is generally the result of excessive and volatile monetary stimulus. But at lower rates, inflation can, in the short run, be significantly influenced by many real factors that are less amenable to control through monetary aggregates. Second, financial deregulation and innovation over time changed the financial environment sufficiently to reduce the reliability of monetary aggregates as a guide. In the United States in the early 1980s, for example, M1 velocity veered sharply off its trend and became more unpredictable. The lifting of interest rate ceilings on transaction accounts and the introduction of a wide array of deposit accounts complicated monetary control. Rapid financial innovation had similar effects elsewhere. Even monetary targeting stalwarts such as Germany and Switzerland were not immune to such developments: more liberal capital flows across their borders became a significant complication in the tracking of the relevant aggregates.

Chronic missing of targets complicated communication

With the targets for monetary aggregates being missed, in many cases systematically, central banks faced increasing difficulties in explaining their actions (Graph IV.10). Naturally, attempts were made to "fix" the problems arising from the changing circumstances, such as by adjusting the target bands and redefining the monetary aggregates of choice. Even so, sceptics and supporters of quantitative targeting alike became increasingly concerned about

Various fixes tried

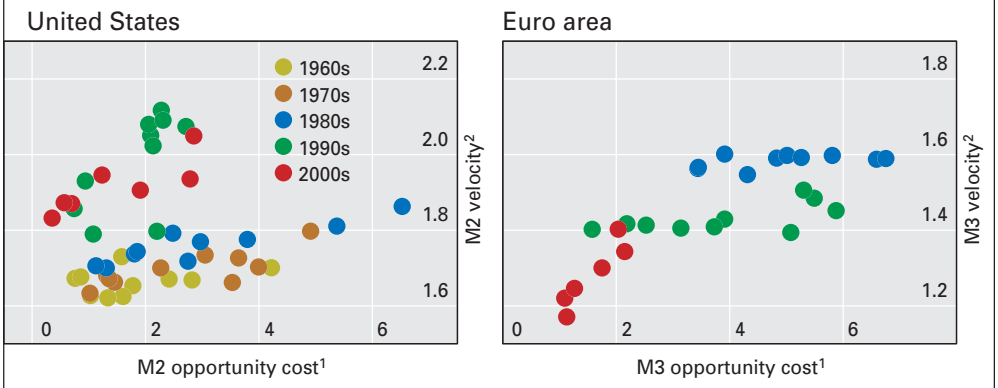
Monetary aggregate targets[1]



[1] In billions of US dollars and pounds sterling respectively. The green lines indicate the target ranges.

Source: National data. Graph IV.10

Shifting velocity



[1] Difference between the three-month money market rate and the rate of return on M2 or M3 assets. [2] Nominal GDP/broad money.

Sources: A Bruggeman, P Donati and A Warne, "Is the demand for euro area M3 stable?", *ECB Working Paper Series*, no 255, September 2003; national data. Graph IV.11

the inconsistency between the rhetoric of monetary targeting and practice, thereby raising questions about the framework as a credible medium-term nominal anchor.

Quantitative aggregates were downgraded to monitoring status in most countries

Given these difficulties, by the early 1990s short-run monetary targets had largely been abandoned in the advanced industrial countries in favour of using monetary aggregates as less prominent information variables about potential inflation, particularly over medium-term horizons. This led a number of central banks to adopt official, and sometimes unofficial, monitoring ranges for the aggregates (see the *67th Annual Report* for a chronology of such regime changes for the advanced industrial countries). For some, the ranges were for narrow and broad monetary aggregates as well as credit aggregates. But even these were not without their challenges, especially as financial developments continued to adversely affect the stability of velocity for extended periods of time (Graph IV.11).

For completeness, however, it should be noted that the change in approach was not universal. Germany continued to target the growth rate of money from year to year (switching from central bank money to M3). Moreover, in the 1990s Switzerland switched to a novel medium-term strategy based on a three- to five-year average monetary growth rate.

Inflation targeting in the ascendancy

Many central banks abandoned quantitative aggregates

Arguably, the nadir of the formal use of monetary and credit aggregates for monetary policy was reached with the adoption of inflation targeting frameworks by a number of the smaller advanced industrial economies in the late 1980s and early 1990s. These frameworks essentially involved targeting the forecast of inflation one to two years ahead, by adjusting a short-term interest rate (as the policy instrument). In making such forecasts, measures of economic slack acquired greater prominence. To be sure, in principle nothing ruled out the use of quantitative aggregates as important information variables in forecasting. However, for all practical purposes, at many of these countries'

central banks the aggregates did not play any such role. After all, many of these central banks adopted inflation targeting in the first place precisely because monetary targeting strategies had failed them.

In the subsequent decade, the importance of quantitative aggregates waned further. In practical policymaking, this reflected the rapid spread of inflation targeting frameworks to an increasing number of countries, not least in the emerging market world. In academia, the downgrading, if not outright obsolescence, of quantitative aggregates reflected the development and rise to benchmark status of new macroeconomic paradigms which effectively ignored the role of money and credit altogether, focusing exclusively on interest rates and measures of slack.

A recent revival?

The ECB has inherited the monetarist tradition

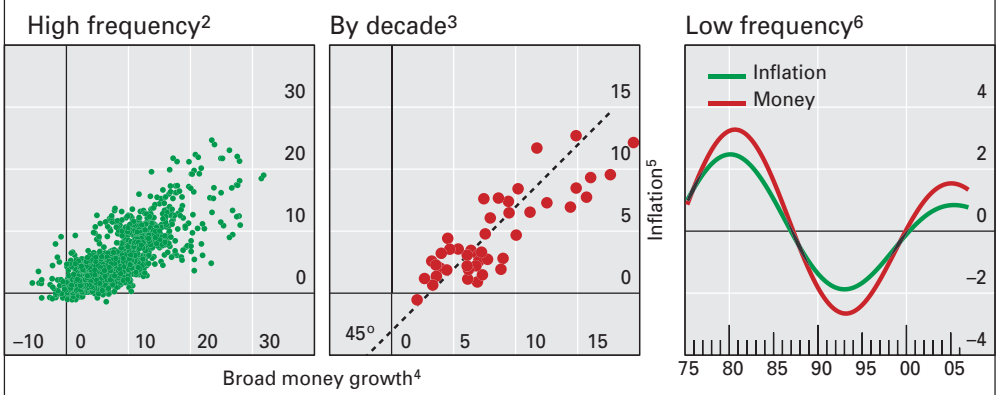
The establishment of the ECB helped breathe new life into the debate about the role of quantitative aggregates. From the start, the ECB chose to follow developments in money closely, along the lines of the monetarist tradition of the Bundesbank, making monetary analysis an important pillar in assessing developments and conducting monetary policy. The formal adoption, subsequent reaffirmation and consistent use of the two-pillar framework has been very significant. Indeed, the ECB has consistently relied on its monetary analysis as a means of cross-checking, from a medium-term perspective, the signals of inflationary pressures that emerge from a more conventional economic analysis focused on a shorter-term horizon. The Bank has also conducted extensive research that has generated considerable empirical and theoretical support for its approach.

Some empirical evidence supports this approach

The type of empirical evidence employed to support this perspective has, until recently, very much focused on the money-inflation link stressed by the quantity equation. A few examples can be noted. First, the existence of the long-run link has been argued to survive the various changes in the economic and financial environment (Graph IV.12). Second, horse races between

Money and price trends in the advanced industrial countries[1]

In per cent



[1] 1961–2006. [2] Quarterly data. [3] Decadal averages. [4] Broad money growth minus trend velocity growth. [5] Core CPI annual growth rates. [6] Band-pass filter, 20- to 40-year cycles.

Sources: IMF; OECD; BIS calculations. Graph IV.12

Money growth as a predictor of core inflation[1]				
	Constant	Lagged one year		
		Core inflation[2]	Output gap	Money growth[3]
Australia	0.4	0.7**	0.4	0.1
Canada	–0.1	0.5**	0.1	0.3**
Euro area	–0.1	0.8**	0.4**	0.2**
Japan	–0.8	0.5**	0.5**	0.3**
New Zealand	–0.3	0.6**	0.3	0.2*
Norway	0.2	0.7**	0.6**	0.1*
Sweden	0.6	0.7**	0.3**	0.1*
Switzerland	0.1	0.6**	0.6**	0.1**
United Kingdom	–0.0	0.8**	0.5**	0.2
United States	0.5	0.8**	0.5**	0.1**

[1] Results of a regression of core consumer price inflation on the indicated variables. Sample period 1971–2006, annual; * and ** indicate statistical significance at the 10% and 5% level respectively. [2] CPI inflation less food and energy. [3] Money is defined as M2 for Canada, the euro area, Sweden, Switzerland and the United States; M2+CDs for Japan; and broad money as defined by the OECD for Australia, New Zealand, Norway and the United Kingdom.

Sources: IMF; OECD; national data; BIS calculations. Table IV.1

measures of output gaps and money have sometimes found a complementary role for monetary aggregates (as illustrated in Table IV.1), pointing to their potential usefulness as additional information variables. Moreover, empirical analysis has underlined how the information content of monetary aggregates for inflation appears to rise, and that of measures of economic slack to fall, as the horizon lengthens, supporting a cross-checking role at medium-term horizons.

Credit back from the wilderness

Boom-bust experiences underscore the potential role of money and especially credit ...

At the same time, in the early 2000s another perspective emphasising the role of quantitative aggregates, and especially credit, began to emerge. This perspective had distant roots in those theories of business fluctuations from the early part of the 20th century which had stressed the self-reinforcing processes that led to occasional booms and busts. It also borrowed from the intellectual tradition that highlighted the role of credit and speculative behaviour as a cause of financial instability. Finally, it retained elements of the more recent advances in economic theory, which emphasised how credit imperfections could amplify business cycles.

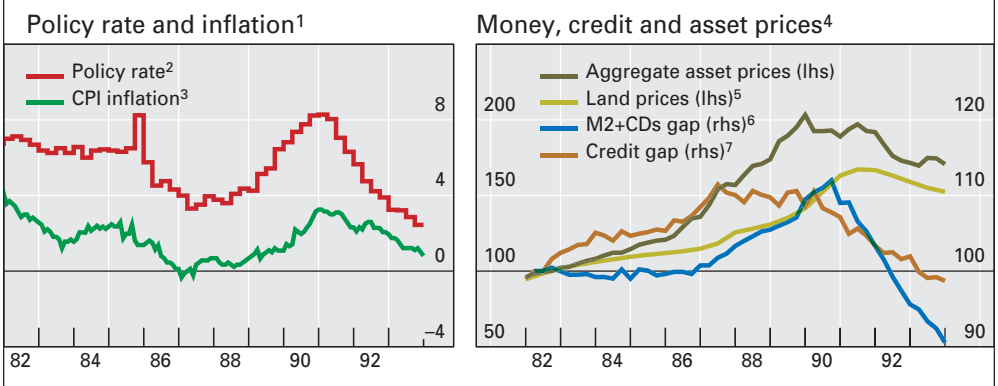
... particularly the Japanese experience

The backdrop for these evolving views was the observation of a number of recent economic and financial booms that had ended in quite severe busts with costly consequences. The Japanese downturn that had begun in the early 1990s was a dramatic example. The expansionary phase in this case was characterised by rapid credit growth, rising asset prices and unusually high levels of domestic capital formation, and, of particular significance, overt inflation during the boom was not a problem at all, probably because of favourable supply side developments (Graph IV.13).

"Credit booms gone wrong" also seen elsewhere

Moreover, research increasingly revealed that these types of "credit booms gone wrong" had been seen in other advanced industrial countries and

Japanese boom-bust experience, 1982–93



[1] In per cent. [2] Uncollateralised call money rate. [3] Excluding the effect of a tax increase in 1989. [4] 1982 = 100. [5] Nationwide residential property. [6] Difference between actual growth and long-run equilibrium growth (calculated using the average inflation rate during 1982–90 and average output and velocity growth during 1976–90). [7] Deviation of credit/GDP from its recursive Hodrick-Prescott filtered trend.

Sources: OECD; national data; BIS calculations. Graph IV.13

emerging market economies and in other time periods. While the performance of inflation had not always been uniform across episodes, inflation had not generally been a particularly worrisome consideration. Examples include the banking crises in the Nordic countries in the late 1980s to early 1990s, the Southeast Asian crisis of 1997–98 and, to a certain extent, aspects of the business cycles in the United Kingdom and United States which had ended in recessions during the early 1990s. Others looked back further in history to note that the run-up to the Great Depression had exhibited similar non-inflationary characteristics. This suggested that the economic mechanisms and human behaviour which contributed to this type of cycle had persisted in the face of major changes in the structure of economies, their level of openness and regulatory regimes.

This perspective found some support in more formal statistical work which indicated that real-time measures of the coexistence of unusually rapid credit and asset price increases could help to provide information about financial distress, output weakness and disinflation beyond the traditional one- to two-year horizon normally used in policy frameworks. More generally, econometric work began to find a significant role for quantitative aggregates, both money and credit, in boom-bust economic fluctuations of this kind, with property prices playing a key role.

Policy implication

The main policy implication of this perspective was that it might be desirable for monetary policy frameworks to allow for the option to lean against a perceived build-up of financial imbalances even if the near-term inflation outlook is benign. This would act as a form of insurance, limiting the risk and costs of a potentially disruptive unwinding of the imbalances further down the road, either because they collapse under their own weight, or because delayed inflationary pressures eventually emerge, forcing the central bank to tighten. In fact, in the context of the low-inflation environment, the disinflationary consequences of a bust could translate into deflation risks, along with the

complications arising from real debt burdens and the zero lower bound for nominal policy rates. Operationally, a pre-emptive tightening would call for an extension of policy horizons beyond the usual one to two years, thereby allowing for a more structured assessment of tail risks to the outlook.

Factoring monetary and credit developments into policy decisions

Central banks have adopted various perspectives on the role of quantitative aggregates in current policy frameworks.

Some central banks are still reluctant to assign a prominent role to money ...

Many central banks have found it hard to extract sufficiently reliable information from monetary aggregates as indicators of inflation and, as a consequence, have been reluctant to assign them a prominent role in controlling it. The Federal Reserve and the bulk of inflation targeters fall into this category. Some of these central banks, however, have begun to question whether a benign neglect approach to the monetary aggregates is justified, particularly in economies where the quantitative aggregates have been rising fast. The Bank of England and, to a greater extent, the Swiss National Bank are two such examples. By way of contrast, from its inception, the ECB has consistently emphasised the role of monetary aggregates in cross-checking the evidence from short-run determinants of inflation.

... but others are more willing

Greater readiness to see credit as contributing to financial imbalances

In recent years, the intellectual climate among central banks has become somewhat more receptive to the perspective which highlights the potential role of quantitative aggregates in signalling financial imbalances. For example, the ECB has extended and nuanced the interpretation of the monetary analysis pillar to reflect the role of credit and asset prices. Similarly, the second (medium-term) perspective of the Bank of Japan's new monetary policy framework can accommodate these factors. And several inflation targeting central banks now allow for the possibility of extending the normal policy horizon in the light of the potential build-up of financial imbalances, as is consistent with this perspective (eg the Bank of England, Sveriges Riksbank and the Central Bank of Norway), or else have stressed the importance of a medium-term horizon to start with, as in the case of the Reserve Bank of Australia.

Two-way risks

The years ahead are likely to see a further intensification of the debate over the extent to which monetary and credit aggregates should be given prominence in policy frameworks. Indeed, the current rapid expansion of these aggregates in various parts of the world may lead some central banks to ask soul-searching questions about the appropriate policy response. As noted above, the stakes are high. Attaching too much weight to the aggregates runs the risk of overreaction and of possibly confusing the public concerning central bank strategies and priorities, especially in economies where near-term inflation pressures remain subdued. Discounting their signals runs the risk of reacting too little and too late. Either way, ultimately, the credibility of central banks lies in the balance.

V. Foreign exchange markets

Highlights

Over most of 2006 and the first four months of 2007, the US dollar depreciated gradually on a nominal trade-weighted basis while the euro appreciated. The yen depreciated to a greater extent than the US dollar. Many other European currencies, including the Czech koruna, the Swedish krona and sterling, also appreciated over 2006, both in trade-weighted terms and against the euro, but have weakened somewhat since. The main exception has been the Swiss franc, which broadly depreciated throughout the period under review. Some currencies in the Asian region, most notably the Thai baht, appreciated in trade-weighted terms. The appreciation of the renminbi against the US dollar picked up pace in the second half of 2006, but was considerably more moderate when measured in trade-weighted terms.

Overall, foreign exchange markets were characterised by high levels of trading activity and historically low volatility. There were, however, two episodes of higher volatility. The first was in May and June 2006: in this episode, the most significant consequences were generally felt by emerging market currencies, such as the Brazilian real, and the currencies of countries experiencing a combination of high interest rates and large current account deficits, such as the Australian and New Zealand dollars. The second episode started at the end of February 2007: a broad range of currencies experienced an increase in volatility, which began to recede in mid-March.

Three main factors influenced exchange rate developments during the period under review. First, reflecting the macroeconomic outlook and its implications for monetary policy, interest rate differentials continued to affect movements in a number of currency pairs. Against the background of low exchange rate volatility, the continuing build-up of carry trades was an important mechanism through which interest rate differentials played a role. Second, consistent with a trend that started in the late 1990s, the accumulation of official foreign exchange reserves increased significantly in 2006, limiting the effects of upward pressure on currencies in the Asian region and in a number of oil-exporting countries. In some cases, notably China, Korea, Malaysia and Thailand, changes in capital controls were also introduced with a view to easing this upward pressure. Third, global imbalances remained a feature of the environment in which exchange rates were being determined. Large fiscal or current account deficits may have affected the extent to which some currencies responded to episodes of increased volatility across financial markets. At the same time, the US current account deficit seemed to attract less attention from market participants as an explanation of developments in the US dollar than in previous periods.

The final section of this chapter explores some trends in reserve management practices which potentially have significant implications for financial markets, including foreign exchange markets. A number of factors underlying these trends are discussed, including the large accumulation of reserves by some countries, advances in financial technology and the development of financial markets, and changes in the external governance environment in which central banks operate. The section then discusses some of the challenges posed by these changes.

Developments in foreign exchange markets

Over 2006 and the first four months of 2007, most currencies followed broadly unbroken trends. However, there was evidence of a distinct break in the prevailing trend for some currencies at the beginning of 2007.

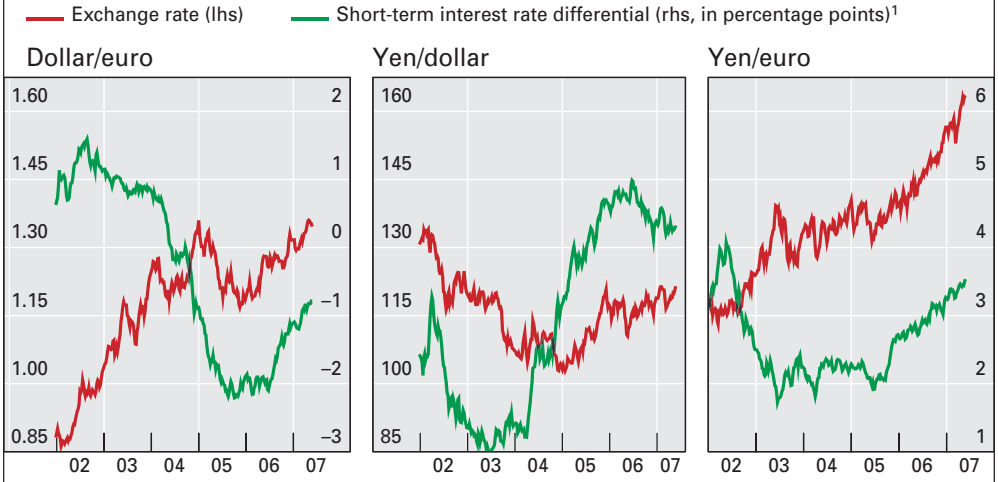
The US dollar broadly depreciated

In 2006 and the first four months of 2007, the US dollar broadly depreciated, falling almost 6% in nominal effective terms. Against the euro, it depreciated by around 15%, losing most of the ground it had gained over the course of 2005 (Graph V.1). During 2006, the US dollar also depreciated against several other European currencies (most notably sterling), the Australian dollar and the currencies of a number of emerging economies in Asia. In contrast, following a sharp depreciation in May 2006, the US dollar appreciated against the yen over the remainder of the year. In general, there appears to have been a break around the beginning of 2007 in the behaviour of US dollar exchange rates: in some cases the earlier trend appears to have reversed, while in others the US dollar appears to have stabilised somewhat.

Most European currencies appreciated

European currencies generally appreciated in nominal effective terms over 2006. The euro gained almost 5%; the Czech koruna, the Swedish krona and sterling also posted strong gains (Graph V.2). In addition, the Hungarian

Exchange rates and interest rate differentials

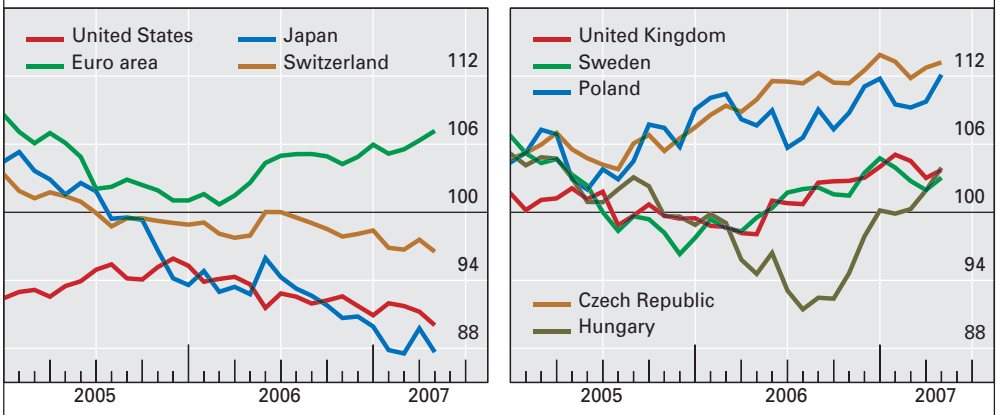


[1] In the left-hand panel, euro area minus US rates; in the centre and right-hand panels, calculated as US and euro area rates respectively minus Japanese rates. Using three-month forward rates six months ahead.

Source: National data. Graph V.1

Nominal effective exchange rates[1]

Monthly averages, 2002–05 = 100



[1] Based on the BIS "broad" basket covering 52 economies.

Source: BIS. Graph V.2

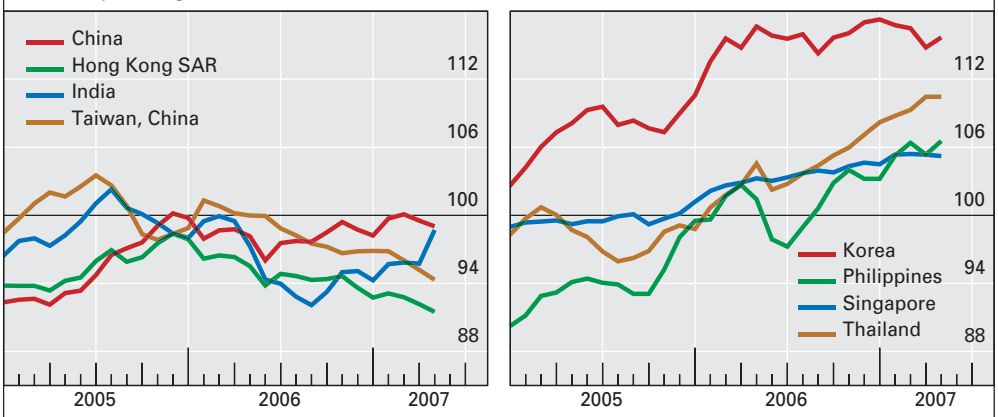
forint and the Polish zloty appreciated in the second half of 2006. However, in early 2007, some of these trends reversed. The Swiss franc was a notable exception, as it remained relatively stable in nominal effective terms in the first half of 2006 but depreciated over the remainder of the period under review.

Asian currencies followed diverging trends

Currencies in the Asian region followed divergent paths and tended to move less synchronously against the US dollar and in effective terms than in previous years. The yen depreciated in nominal effective terms over 2006 and into 2007, as did the Hong Kong and New Taiwan dollars, although the yen appreciated somewhat in May 2006 and March 2007. In contrast, the Philippine peso and the Thai baht appreciated significantly (Graph V.3). Although the Korean won did not appreciate to the same extent as some other Asian currencies in 2006, it remained at a high level following an appreciation of

Nominal effective exchange rates in emerging Asia[1]

Monthly averages, 2002–05 = 100

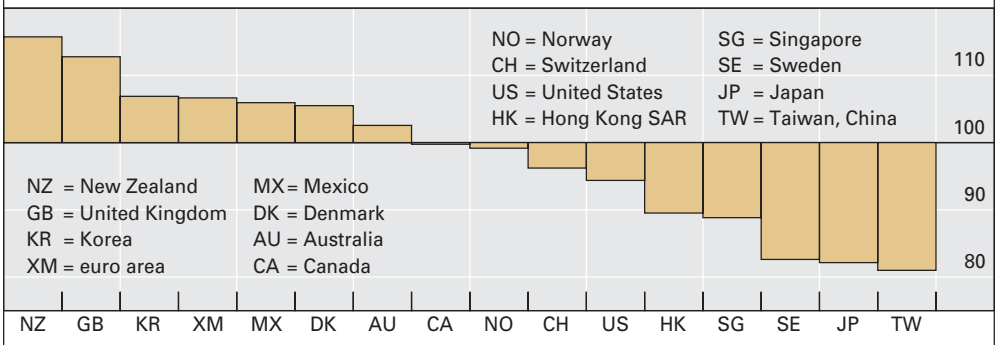


[1] Based on the BIS "broad" basket covering 52 economies.

Source: BIS. Graph V.3

Current real effective exchange rates in a long-term perspective[1]

Average January–April 2007; January 1973–April 2007 = 100



[1] In terms of relative consumer prices. Based on the BIS "narrow" basket covering 27 economies.

Source: BIS. Graph V.4

15% in nominal effective terms over the previous 18 months. In the first four months of 2007, however, the won depreciated by a little over 1%. The pace of appreciation of the renminbi against the US dollar roughly doubled between the first half of 2006 and the period end-June 2006 to end-February 2007, to an annualised rate of almost 5%, but was more muted in trade-weighted terms. In March and April 2007, the renminbi was broadly stable against the US dollar, but depreciated by over 1% in trade-weighted terms.

Exchange rate levels from a longer-term perspective

Some currencies at levels significantly different from their long-term averages

One way of assessing the prevailing levels of exchange rates in a longer-term context is to compare real effective exchange rates with their long-term averages. Over the period under review, the position of most currencies against this benchmark did not change substantially. On average over the first four months of 2007, the real effective exchange rates of the US dollar and euro were within 7% of their long-run averages (Graph V.4). Several currencies in Asia, most notably the New Taiwan dollar and the yen, were more than 10% below. The same was true for the Swedish krona. At the other end of the spectrum, the New Zealand dollar and sterling were significantly higher.

Conditions in foreign exchange markets

High turnover and low volatility

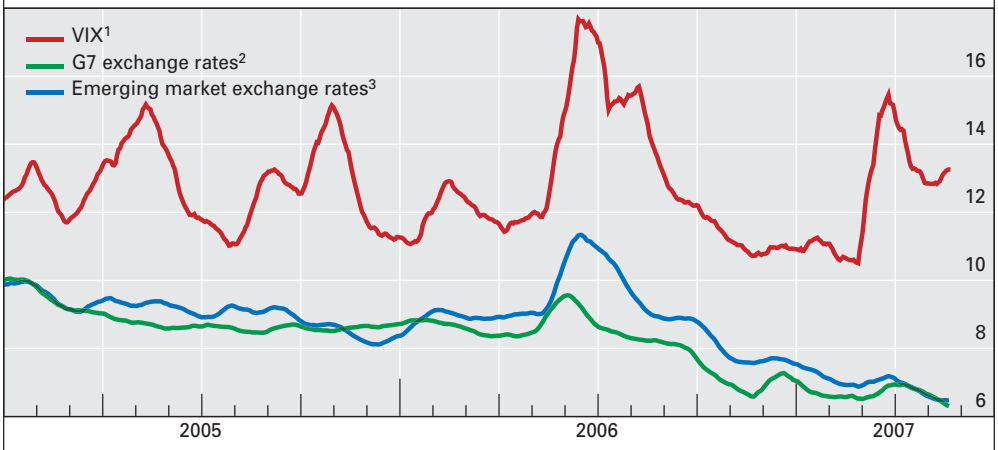
Overall, foreign exchange markets were characterised by high levels of turnover and historically low volatility, consistent with a broad downward trend in volatility across all financial markets (Graph V.5; see also Chapter VI). There were two episodes of higher volatility in foreign exchange markets, which also coincided with more general increases across financial markets. The increase in volatility during these episodes was, however, modest in size and not widespread.

Two episodes of higher volatility

During the first episode in May and June 2006, both implied and realised volatility in the yen/dollar and yen/euro markets picked up briefly. Volatility displayed a particularly pronounced spike for some emerging market currencies, such as the Brazilian real and the South African rand, and increased, though to a lesser extent, for currencies of countries with high

Implied volatilities

Twenty-day moving averages



[1] The Chicago Board Options Exchange Volatility Index (VIX) is a measure of market expectations of near-term volatility conveyed by S&P 500 stock index option prices. [2] JPMorgan benchmark index for the level of G7 currencies' implied volatility. [3] JPMorgan benchmark index for the level of emerging market currencies' implied volatility.

Sources: Bloomberg; JPMorgan Chase. Graph V.5

interest rates and large current account deficits, such as the Australian and New Zealand dollars. The prevailing trends of exchange rate appreciation were interrupted temporarily. The second episode occurred in late February and early March 2007. The volatility of a number of currency pairs rose as volatility again picked up markedly across financial markets more generally, and foreign exchange market turnover increased.

Determinants of exchange rate movements

There have been three main drivers of exchange rate developments over the past year or so: the macroeconomic outlook, with its implications for monetary policy and interest rate differentials; exchange rate policies and associated intervention, particularly in emerging market countries in Asia; and global external imbalances. In addition, commodity price movements have influenced the dynamics of specific currencies.

Interest rate differentials and the role of carry trades

Interest rate differentials were an important driver of exchange rate movements

As in previous years, changes in actual and expected interest rate differentials reflecting market participants' assessment of macroeconomic conditions and their implications for monetary policy appear to have had a major influence on exchange rate movements. The behaviour of the dollar/euro rate is an important example. Evidence from implied forward rates, derived from interest rate forward contracts, suggests that markets expected the ECB to continue normalising interest rates throughout the period under review but considered the Federal Reserve to be close to the peak of its tightening cycle (Graph V.1). This is consistent with the trend appreciation of the euro against the dollar over 2006 and early 2007.

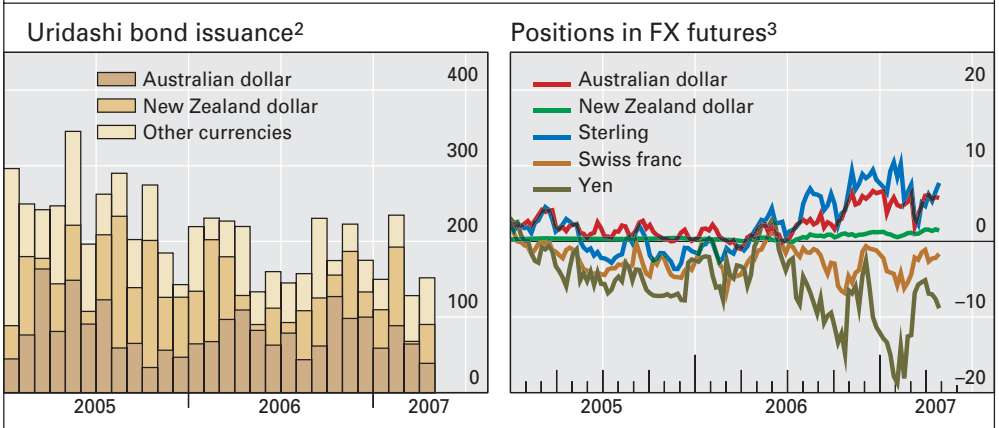
In addition, low volatility and large interest rate differentials underpinned significant cross-currency flows in the form of carry trades. Conventionally, the label "carry trade" is used to describe speculative activities by financial players such as hedge funds and commodity trading advisers. These trades involve simultaneously going short the funding currency and long the target currency, typically through the derivatives market. They are profitable as long as the gains from interest rate differentials are not offset by exchange rate movements. Consequently, they are sensitive to increases in exchange rate volatility or sudden changes in interest rate expectations. The investors involved are often highly leveraged, and could be forced to unwind positions very quickly in response to changing market conditions. This might have a large impact on exchange rates, especially in smaller markets. The sudden collapse of the dollar against the yen in October 1998 suggests that even large market segments can be affected by a sudden unwinding of carry trade positions.

Significant role for carry trades

In order to assess the role of carry trades, it is useful to distinguish them from two other types of cross-currency flows that present some similarities. One such flow is generated by domestic retail investors purchasing higher-yielding assets denominated in foreign currency. An example that has attracted much attention is the purchase of foreign currency bonds by retail investors in Japan, which has arguably been supported by a growing tolerance for risk accompanying faster domestic output growth. Given that Japanese retail investors hold the bulk of their wealth in yen, they are not as sensitive to the risk of a sudden rise in the value of the yen as leveraged investors who short the currency. They are therefore less likely to unwind their foreign currency investments during episodes of exchange rate volatility. Indeed, market commentary suggests that Japanese retail investors took advantage of the yen appreciation associated with the most recent rise in volatility to increase their exposure to high-yielding overseas assets. However, even

Retail investor activity also of importance

Uridashi bond issuance and FX futures positions[1]



[1] Derived using average exchange rates in January 2006. [2] Debt issued outside Japan and registered under Japanese securities laws for sale to Japanese investors; in billions of yen. [3] Net non-commercial long positions; in billions of US dollars.

Sources: Bloomberg; CFTC. Graph V.6

changes in these exposures can potentially have a significant impact on exchange rates, if they occur on a sufficiently large scale.

Indirect evidence suggests that, over the period under review, retail investors' purchases of foreign currency assets were substantial. Data on foreign currency bonds purchased by Japanese individual investors reveal ongoing outflows from Japanese yen to high-yielding currencies over 2006, particularly to the Australian and New Zealand dollars (Graph V.6). Market reports pointed to official but informal estimates for Japan suggesting that Japanese retail investors' exposure to foreign securities could be around $150 billion.

A second cross-currency flow with similarities to the carry trade involves residents of a high interest rate country borrowing in a low-yielding currency to purchase domestic assets. Market commentary over the period under review focused on households in central and eastern Europe funding mortgages in euros and Swiss francs. The resulting currency mismatches can make the domestic currency vulnerable if they are large enough, as the Asian crisis of 1997–98 highlighted. However, the available evidence suggests that these investments are not that large and, unlike leveraged carry trade activity, are not likely to be unwound quickly. Moreover, most lending in central and eastern Europe is, in any event, carried out by banks from western Europe with diversified exposures.

Interest rate differentials, external imbalances and exchange rate volatility

	Interest rate differential[1]	Current account[2]	Exchange rate[3, 4]		Implied volatility[4, 5]	
	2006	2006	Episode 1[6]	Episode 2[7]	Episode 1[6]	Episode 2[7]
Brazil	9.8	1.3	–8.7	–1.7	7.2	4.3
New Zealand	2.7	–8.8	–1.7	–2.4	–0.1	1.9
South Africa	2.5	–6.4	–10.9	–4.1	10.5	2.5
Mexico	2.4	–0.2	–4.1	–2.1	4.5	0.6
Hungary	2.1	–6.9	–2.8	0.0	0.8	0.4
Australia	1.1	–5.4	–2.3	–0.7	0.2	1.1
Chile	0.1	3.8	–4.8	0.4	4.3	0.7
United Kingdom	–0.0	–2.9	0.7	–2.0	0.4	0.3
Korea	–0.4	0.7	–2.2	–1.4	–0.7	0.6
Poland	–0.7	–2.1	–4.2	0.1	1.7	–0.0
Canada	–0.8	1.7	1.3	–0.6	1.0	0.0
Norway	–1.7	16.7	–0.2	–0.6	–0.0	0.2
Euro area	–1.8	–0.3	–0.0	0.4	–0.1	0.5
Sweden	–2.6	7.4	0.8	–1.5	0.0	0.6
Taiwan, China	–3.1	7.1	–2.6	0.2	–0.1	0.7
Switzerland	–3.4	18.5	0.8	1.7	0.0	1.2
Japan	–4.5	3.9	–0.9	4.8	–0.7	2.4
Memo: VIX	.	.	.	.	*9.1*	*11.7*

[1] Three-month interest rate relative to US rate. [2] Current account balance as a percentage of GDP. [3] Changes, in per cent. An increase denotes an appreciation against the US dollar. [4] Between the average level in the month before the volatility episode began and the level when VIX volatility peaked. [5] Percentage point difference. One-month implied volatility against the US dollar. [6] Beginning 17 May 2006 with a peak on 13 June 2006. [7] Beginning 27 February 2007 with a peak on 5 March 2007.

Sources: IMF; Bloomberg; Datastream; JPMorgan Chase; national data. Table V.1

Carry trades important for some currencies ...

During the period under review, market commentary pointed to the yen and Swiss franc as the main funding currencies for carry trades, and the Australian and New Zealand dollars, sterling and some emerging market currencies – including the Brazilian real, Hungarian forint and South African rand – as the main target currencies. Carry trades arguably supported appreciating trends of the target currencies. In May–June 2006 and February 2007, however, an unwinding of these strategies might have contributed to the weakening of the target currencies and the strengthening of the funding ones (Table V.1). Given that the increase in volatility was fairly modest and short-lived, this effect was small and temporary, and did not spread to other currency markets.

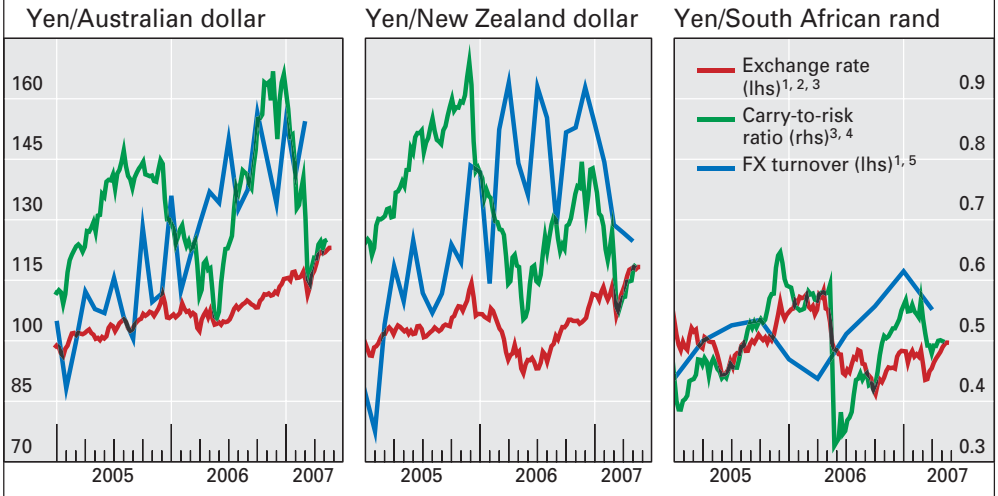
... and profitable

Measures designed to capture the ex ante or ex post performance of carry trades highlight that, for most of 2006 and early 2007, these strategies were generally profitable on a risk-adjusted basis. Carry-to-risk ratios, for example, which measure interest rate differentials adjusted for the expected risks implied by currency options, suggest that carry trades funded by the yen were particularly attractive in 2006, benefiting from sustained interest rate differentials and low exchange rate volatility (Graph V.7). Profitability fell in May–June 2006 and February 2007, however, in reaction to a rise in the perceived risk of carry trades during periods of heightened financial market volatility.

Alternative approaches to measuring carry trades:

Estimating the size of carry trades and assessing their impact on exchange rates is notoriously difficult. In the absence of publicly available data on positions in foreign exchange markets, several alternative indirect measures are typically used. These include: data on the open interest of speculators in currency futures; different variables capturing trading activity in foreign exchange markets; style analysis of hedge fund returns; and the BIS international banking statistics. Overall, when matched with measures of carry

Exchange rates, carry-to-risk ratios and FX turnover



[1] 2005 Q1 = 100. [2] An increase indicates an appreciation of the currency shown against the yen. [3] Weekly averages. [4] Defined as three-month interest rate differentials divided by the implied volatility of the exchange rates. [5] Sum of spot, forward and swap transactions in the corresponding countries; for Australia, against the Australian dollar; for New Zealand, against the New Zealand dollar; for South Africa, against all currencies.

Sources: Datastream; JPMorgan Chase; national data. Graph V.7

trade profitability, they all suggest that these strategies could have played a significant role in exchange rate developments during the period under review.

open interest in futures markets ...

A widely used measure is derived from data on open positions in foreign exchange futures traded on the Chicago Mercantile Exchange. These distinguish between commercial and non-commercial (speculative) traders, as well as long and short positions. Data on net non-commercial open interest – particularly net short open interest in the yen and net long open interest in sterling and the Australian dollar – are consistent with carry trade volumes rising sharply in 2005 and 2006 but falling at the end of February 2007, at a time when exchange rate volatility increased (Graph V.6). There is less evidence of an increase in speculative net short positions in the Swiss franc in the course of 2006. At the same time, these conclusions should be treated with caution for a number of reasons. First, data from the BIS Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity suggest that only a small fraction of foreign exchange trading goes through futures markets. Second, the classification of currency trades into commercial and non-commercial is somewhat arbitrary. Third, some of the trades identified as speculative might not result from carry trades.

... turnover in foreign exchange markets ...

Data on turnover in foreign exchange markets support the conclusions derived from an analysis of futures markets. The strong growth in foreign exchange turnover in the Australian and New Zealand dollars, as well as a number of emerging market currencies, is consistent with the growth of carry trade activity targeting these currencies over the course of 2006 (Graph V.7). The high levels of aggregate turnover following a sharp contraction in the carry-to-risk ratios appear to be a reflection of the unwinding of carry trades in response to a rise in exchange rate volatility. At the same time, these turnover data can provide only indirect evidence since they do not identify the nature of the trades or the counterparties involved. OTC derivatives market surveys conducted semiannually, which suffer similar limitations, also provide some evidence on the rising activity in several carry trade target currencies, as well as funding currencies such as the yen and Swiss franc.

... style analysis of hedge funds ...

An alternative approach to assessing the role of carry trades, based on a style analysis of a large set of hedge fund returns, also broadly confirms the importance of carry trade strategies for a number of currencies. Style analysis is based on regressions of returns from a panel of hedge funds on measures of the payoffs from specific carry trade strategies, controlling for the performance of broad market indices. Applying this technique to the past two years of data for a few hundred hedge funds helps to assess whether returns were sensitive to such payoffs. The results indicate that carry trade strategies involving currencies such as the Australian dollar or the Brazilian real have some statistically significant, albeit modest, explanatory power for the performance of different types of hedge funds. While this style analysis may be useful in highlighting the broad significance of carry trade strategies for hedge funds in the medium term, it is difficult to infer with any precision what happened to these investments during episodes of heightened volatility.

... and the BIS banking statistics

BIS international banking statistics provide more mixed evidence on the importance of carry trades. These statistics can be useful to the extent that

carry trades are implemented, at least in part, through outright borrowing and lending. A change in claims on residents in financial centres as opposed to other locations could be interpreted as indicating a change in carry trade activity, given that many hedge funds or proprietary trading desks are located in those centres. These data actually show a fall in the stock of outstanding yen-denominated claims in 2006, including a drop in credit to residents of the United Kingdom and offshore centres. This finding seems consistent with a decline in carry trade activity involving the yen as funding currency. By contrast, Swiss franc claims grew in the first half of 2006, suggesting an increasing role of the franc as a funding currency, although claims on borrowers in the United Kingdom and offshore financial centres remained relatively small. These results also have to be interpreted with caution, since global claim flows respond to a variety of influences other than carry trade activity.

Exchange rate policy

Significant increase in official foreign exchange reserves

As in previous years, a sizeable accumulation of foreign exchange reserves indicates that intervention was an important factor in foreign exchange markets in 2006. Official foreign exchange reserves held by monetary authorities increased by around $850 billion, double the amount recorded in 2005 (Table V.2). The accumulation mainly, but not entirely, reflected intervention in foreign exchange markets in response to upward pressure on exchange rates due to strong inflows into domestic capital markets, often combined with large current account surpluses. Valuation effects arising from significant exchange rate movements together with income flows are also likely to have boosted reserves measured in US dollars.

In addition to the growth in official foreign exchange reserves on central banks' balance sheets, there has been significant growth in the foreign exchange reserves managed by sovereign wealth funds. In some cases, these funds have been set up to neutralise the effects of volatile commodity prices on the domestic economy, and have therefore increased with high and rising commodity prices. For example, the Government Pension Fund in Norway, which is one of the most transparent sovereign wealth funds, has tripled in size since 2002 with the increase in oil prices. Other sovereign wealth funds are an alternative destination for current account surpluses in economies with managed exchange rates. The ongoing accumulation of official reserves, and the recent announcement that some of China's official foreign reserves would be used to create a separate investment-oriented fund, suggest that reserves managed by sovereign wealth funds will grow further.

China continued to show the largest accumulation of foreign exchange reserves in absolute terms, despite moving to a more flexible exchange rate regime in 2005. Russia registered the second largest increase, double that of 2005. Brazil and India also recorded large increases in foreign exchange reserve accumulation, mainly as a result of exchange rate intervention.

Changes in capital controls also affected exchange rates

Foreign exchange intervention was not sufficient to offset upward pressure on exchange rates in a number of Asian countries, with the result that some exchange rates still appreciated significantly (Graph V.3). In many cases, including China, India, Korea, Malaysia and the Philippines, intervention was supplemented by a liberalisation of capital outflows. For example, Korea eased

Annual changes in official foreign exchange reserves

In billions of US dollars

	2001	2002	2003	2004	2005	2006	*Memo: Amounts outstanding (Dec 2006)*
	At current exchange rates						
Total	113.2	358.7	616.8	723.2	426.1	859.8	*5,034.2*
Industrial countries	6.3	116.1	215.5	197.3	–23.3	99.9	*1,394.9*
United States	–2.3	4.8	5.9	3.0	–4.9	3.1	*40.9*
Euro area	–10.8	8.0	–27.6	–7.0	–14.0	16.9	*184.0*
Japan	40.5	63.7	201.3	171.5	4.5	46.1	*874.9*
Asia	76.2	174.0	263.8	363.8	250.0	396.3	*2,217.5*
China	46.6	74.2	116.8	206.7	208.9	247.5	*1,066.3*
Hong Kong SAR	3.6	0.7	6.5	5.2	0.7	8.9	*133.2*
India	8.0	21.7	30.6	27.5	5.9	39.2	*170.2*
Indonesia	–1.2	3.7	4.0	–0.0	–1.9	7.9	*40.7*
Korea	6.6	18.3	33.7	43.7	11.8	28.4	*238.4*
Malaysia	1.2	3.8	10.4	22.1	4.5	12.4	*81.7*
Philippines	0.4	–0.2	0.3	–0.5	2.8	4.1	*19.9*
Singapore	–4.8	6.5	13.6	16.5	3.8	20.5	*135.8*
Taiwan, China	15.5	39.4	45.0	35.1	11.6	12.9	*266.1*
Thailand	0.4	5.7	2.9	7.5	2.0	14.6	*65.1*
Latin America[1]	–0.3	4.2	30.6	21.1	25.4	53.7	*271.0*
Argentina	–9.9	–4.1	2.7	4.9	4.7	7.7	*30.4*
Brazil	3.2	1.7	11.7	3.6	0.8	32.0	*85.6*
Chile	–0.6	0.8	0.4	0.3	1.2	2.5	*19.2*
Mexico	9.2	5.5	7.8	5.0	10.2	2.4	*75.4*
Venezuela	–3.8	–0.8	7.5	2.3	5.6	5.5	*28.9*
CEE[2]	4.0	24.2	21.1	21.4	15.3	26.0	*181.3*
Middle East[3]	1.9	0.7	5.7	12.8	17.0	26.2	*101.4*
Russia	8.3	11.5	29.1	47.6	54.9	119.6	*295.3*
Memo:							
net oil exporters[4]	*17.6*	*27.7*	*67.0*	*100.0*	*114.8*	*219.0*	*706.5*

[1] Countries shown plus Colombia and Peru. [2] Central and eastern Europe: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. [3] Kuwait, Libya, Qatar and Saudi Arabia. For Saudi Arabia, excluding investment in foreign securities. [4] Algeria, Angola, Kazakhstan, Mexico, Nigeria, Norway, Russia, Venezuela and the Middle East. For Nigeria, 2006 data to November.

Sources: IMF; Datastream; national data. Table V.2

restrictions on overseas investment and provided incentives to invest in foreign securities and real estate assets. In China, further measures to encourage capital outflows included raising limits on corporate and individual purchases of foreign currency, allowing banks and insurance companies to invest in offshore fixed income assets, and permitting qualified managers to accumulate foreign currency funds and invest offshore. In contrast, to meet the same objective, the Bank of Thailand increased controls on capital inflows, following several other attempts to curb the appreciation of the baht (see Chapter III).

Changes in currency composition did not have a large effect

In addition to the rapid accumulation of reserves, changes in their currency composition and their potential impact on exchange rates also received some attention. However, it is hard to detect any firm evidence for them having any effect. There were several announcements about actual or

possible changes in the currency denomination of foreign exchange reserves throughout 2006. They mostly pointed to a switch towards euro- and sterling-denominated reserves and out of the US dollar. To the extent that these announcements had an effect on exchange rates, it was short-lived, possibly because the size of the reserves involved was generally not large. This explanation is supported by aggregate data from the IMF. While partial, these data indicate that the shares of official foreign exchange reserves denominated in US dollars and euros remained more or less stable between 2005 and 2006, at two thirds and one quarter of the total, respectively. The only trend change in composition of any significance has been an increase in the share of sterling and a decline in the share of the yen. It should be noted, however, that the currency composition of reserves is not available for all countries, most importantly China, which limits the usefulness of these statistics. In addition, these data do not cover sovereign wealth funds, and little is known about the currency composition of their assets.

Global imbalances

Global imbalances stabilised

The trends in global current account imbalances stabilised somewhat over 2006, but there were no strong indications that they would reverse substantially in the near future (see Chapter II). While the US current account deficit widened further over the course of 2006, it narrowed marginally in early 2007 relative to GDP. Overall, the current account surplus for the Asian region edged up relative to GDP, while the surpluses in net oil-exporting countries stabilised as oil prices fell in the second half of 2006. The region that experienced the most pronounced deterioration in its current account position was central and eastern Europe.

No major effect on G3 exchange rates ...

External imbalances did not appear to have a first-order effect on G3 exchange rate movements. While it could be argued that the trend depreciation of the US dollar reflects markets' underlying concern about the large US current account deficit, the substantial depreciation of the yen is not consistent with the Japanese current account position. This suggests that interest differentials have been more important than longer-term considerations over the period under review, as discussed above.

... but some on less traded currencies

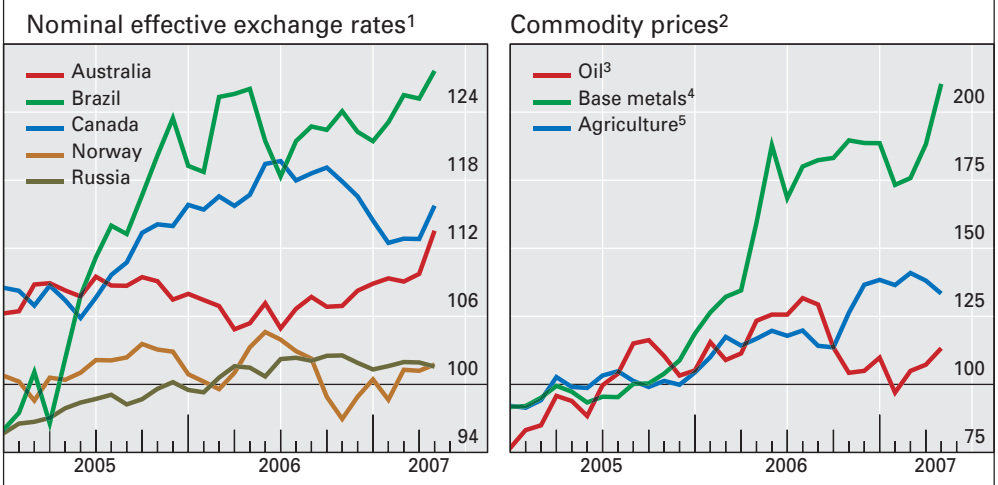
Large current account deficits did appear to make the currencies of some smaller economies vulnerable to an increase in risk aversion, particularly during the episode of volatility in May and June 2006. At the same time, there is a strong negative correlation between the ratios of current account balances to GDP and the levels of domestic interest rates (Table V.1). In particular, a number of carry trade target economies have large current account deficits. Regressions of exchange rate volatility on both these factors over the past six years indicate that interest rates have been more important. If so, this could suggest that vulnerability to a reversal of speculative flows, rather than structural imbalances, has been more relevant over the period under review.

Recent experience may not be a good guide to future events

Whether recent experience is a reliable guide to what may happen to exchange rates if external imbalances persist is an open question. Financial market volatility has been very low by historical standards: even in episodes where volatility has increased, the peaks have been modest. This suggests the possibility

Nominal effective exchange rates of commodity exporters and commodity prices

Monthly averages



[1] Based on the BIS "broad" basket covering 52 economies; 2002–05 = 100. [2] 2005 = 100. [3] West Texas Intermediate crude oil. [4] London Metal Exchange index composed of aluminium, copper, lead, nickel, tin and zinc. [5] Goldman Sachs Commodity Index.

Sources: Bloomberg; Datastream; Goldman Sachs; BIS. Graph V.8

of more pronounced exchange rate movements for the currencies of countries with large current account deficits if volatility increases more significantly.

Commodity prices

Exchange rates of commodity exporters followed diverging trends

Over the period under review, the exchange rates of commodity-exporting countries in nearly all cases reflected developments in the relevant commodity prices, which were less synchronised than they had been in the recent past. The exchange rates of energy exporters such as Canada and Norway closely mirrored developments in crude oil prices, appreciating in the first half of 2006 and depreciating in the second (Graph V.8). Both countries' currencies appreciated again over the first four months of 2007, following the recovery of oil prices. The exchange rates of a number of other commodity exporters depreciated following the dip in most non-oil commodity prices during the market turbulence of May 2006. However, the exchange rates of diversified commodity exporters such as Australia and Brazil recovered relatively quickly. Moreover, they remained around historically high levels as the confluence of tightness of supply and strong demand conditions led many commodity prices to rebound, in some cases to new peaks. The Russian rouble benefited both from the strength of oil prices in the first half of 2006 and from Russia being a diversified commodity exporter in the second.

Reserve accumulation and reserve management practices

Changes in reserve management practices potentially affect financial markets ...

The size and concentration of official foreign exchange reserves after years of continued expansion, especially since the Asian crisis, have led to renewed interest in the way reserve management decisions are taken and in their possible impact on financial markets. For example, a heated debate has been

taking place surrounding the effect of official purchases of US dollar debt in holding down US government bond yields (see Chapter VI). Looking forward, questions can also be asked about the possible market implications of any further significant changes in the asset composition of reserves, perhaps as part of broader efforts to increase returns.

... and have evolved significantly in recent years

Foreign exchange reserve management practices have evolved substantially over the past decade or so, reflecting changes in both the economic and the broader institutional environment. These changes have affected the foreign exchange reserve management practices of a wide range of central banks, the entities primarily charged with performing this function, well beyond those managing the largest portfolios of official reserves. While some of these changes have been remarked upon, others have attracted less attention.

Against this background, this section documents some of the main changes in foreign exchange reserve management practices, considers the main drivers behind them and explores some of the challenges ahead, with a particular eye to those that could have a more significant impact on financial markets. For present purposes, the reasons for the accumulation of net reserves are taken as given, as they relate to broader policy decisions.

Main trends in foreign exchange reserve management

Three main trends:

When considering the evolution of reserve management practices, at least three trends deserve particular attention. Similarly to what has happened for monetary and supervisory policy, these trends pertain to the objectives, instruments and accountability of central banks. While admittedly varying across economies in terms of intensity and timing, their incidence has been quite general. The trends are: an increased focus on returns; the adoption of a more structured approach, underpinned by a strengthening of internal governance and risk management; and a greater degree of public disclosure.

an increased focus on returns ...

The increased focus on returns has perhaps been the most visible trend, and has been manifested in a variety of ways. In some cases, separate sovereign wealth funds with a stronger mandate to focus on returns have been created. In a number of central banks, existing reserves have been subdivided into separate tranches, such as a liquidity and an investment portfolio, or mandated to external managers so as to permit a more specialised type of management. More generally, central banks have broadened the range of instruments they invest in to include assets, such as "spread products", which promise a yield pickup over more traditional ones, either because of their liquidity characteristics or due to lower credit quality.

... a more structured approach to decision-making and risk management ...

The more structured approach to reserve management decisions has taken three highly complementary forms. They relate to the degree of vertical tiering and horizontal separation in the management processes and to the supporting risk management functions.

The first way of imposing structure has been the adoption of a more top-down, vertically-tiered framework to ensure the appropriate design of the portfolio and its effective implementation. At the strategic level, much effort has been devoted to determining the appropriate risk-return trade-off for the

portfolio ("strategic asset allocation"). This has been seen as part of a broader decision about the acceptable risk-return trade-off for the institution in the light of the other functions it performs (see below). In most central banks, the definition of this strategic trade-off has formally become the responsibility of the executive level. The decision is then articulated by selecting a benchmark portfolio and defining the tolerance ranges within which the actual allocation is allowed to vary. In many central banks, a tactical asset allocation layer has been introduced between the strategic asset allocation and the portfolio managers' position-taking, with a view to centralising decisions aimed at taking advantage of shorter-term market developments.

The second way has been to introduce a greater degree of horizontal separation in the organisation of the activities involved in reserve management. The objective has been to strengthen the integrity of the process, not least by limiting potential internal conflicts of interest. In particular, different activities, such as asset management, performance measurement, compliance with investment guidelines and settlement functions, have generally become more segregated, in terms of both their functional organisation and their reporting lines.

The third way has been to strengthen risk management processes. This has been seen as a necessary step to support an expansion in the investable universe and to implement a more disciplined approach to investing. As regards financial risks, a greater use of risk measurement and management tools has helped to design the benchmark portfolio, measure and evaluate performance, limit execution risks and ensure compliance. There has also been a trend towards greater centralisation in the management of operational risk, while its prominence within the organisation has been raised by assigning responsibility for it to higher management levels.

... and a greater degree of external disclosure

A greater degree of external disclosure has affected several aspects of foreign exchange reserve management activities. An increasing number of central banks are now publishing more information about the institutional framework, the assets in the investable universe and performance. Some central banks also report on the currency composition of their reserves, although those that have done so have not generally held sizeable shares of world reserves. The main exception is Russia's central bank.

Main factors behind the trends

Three main driving forces:

The trends in central bank foreign exchange reserve management identified above have been underpinned by several key developments in the economic and institutional environment. The most important among these are: the large accumulation of reserves by some countries; advances in financial technology and the development of financial markets; and changes in the external governance environment within which central banks operate.

the large accumulation of foreign exchange reserves ...

The large accumulation of foreign exchange reserves in several countries in recent years has naturally shifted the balance towards more return-oriented strategies while at the same time putting a premium on the processes necessary to manage an increasingly large fraction of an economy's resources. While measuring the "adequacy" of reserves with any precision is quite hard,

in several economies the stock of reserves does appear to be well above standard measures of adequacy based on liquidity considerations alone (Table V.3). This has especially been the case in economies where the main factor driving reserve accumulation has ceased to be a conscious effort to build up a war chest, but has rather become a by-product of attempts to lean against the appreciation of the domestic currency.

... advances in financial technology and the development of financial markets ...

Advances in financial technology and the development of financial markets have been important, more general factors behind the main trends in reserve management practices. Much as in the private sector, advances in financial technology have provided central banks with the tools necessary for a more structured approach to risk measurement and management and, arguably, have also helped to reduce the need for pure liquidity balances. The development of financial markets has increased the range of assets that provide an acceptable level of liquidity while offering more attractive yields, such as various mortgage-backed securities. Financial markets have also improved the capacity of central banks to obtain funds at short notice by posting collateral. Increasingly, central banks have also begun to use derivative products to support their investment decisions. Prospectively, derivatives markets could also support a further broadening of the investable universe. For example, the emergence of deep markets for credit default swaps could allow central banks to manage more effectively the risks associated with entry into corporate bond markets.

... and changes in the external governance environment

Finally, the impact of changes in the external governance environment has been far-reaching and multifaceted, helping to explain the cross-country breadth of the observed trends. In particular, the global shift towards greater

Foreign exchange reserves and measures of adequacy

	Reserves outstanding[1]		Reserves/imports[2]		Reserves/ broad money[3]		Reserves/ short-term debt[4]	
	2000	2006	2000	2006	2000	2006	2000	2006
China	166	1,066	9	16	10	24	8	13
Japan	347	875	11	18	6	15	2	2
Taiwan, China	107	266	9	16	19	34	8	8
Russia	24	295	6	20	44	77	2	5
Korea	96	238	7	9	29	38	2	2
Other Asia[5]	325	647	6	7	27	30	2	2
Latin America[6]	136	271	5	7	23	25	1	2
Middle East[7]	75	178	9	8	25	30	2	2
Central and eastern Europe[8]	69	181	5	4	39	36	2	1
Industrial economies[9]	344	334	1	1	3	2	0	0

[1] In billions of US dollars. [2] Months of imports. [3] In per cent. [4] Ratio; short-term external debt defined as consolidated international claims of all BIS reporting banks on countries outside the reporting area with a maturity up to and including one year plus international debt securities outstanding with a maturity up to one year; based on outstanding year-end positions. For Libya and Saudi Arabia, excludes international securities. [5] Hong Kong SAR, India, Indonesia, Malaysia, the Philippines, Singapore and Thailand. [6] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. [7] Egypt, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia and the United Arab Emirates. [8] Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. [9] Canada, the euro area, Switzerland, the United Kingdom and the United States.

Sources: IMF; Datastream; BIS. Table V.3

central bank independence has increased the emphasis on accountability and transparency. This has been one of the factors motivating a greater degree of external disclosure in reserve management and a strengthening of internal governance processes. In some countries, it has also added pressure to obtain higher returns on reserves. At the same time, there has been more focus on the importance of reputation and credibility for effective policymaking. This has heightened the sensitivity of central banks to the need for sound investment processes, in terms of both the effectiveness and security of the operations, and the management of the potential conflicts of interest involved. The role of many central banks as regulators and standard setters for the private sector, and hence their need to lead by example, has merely added to such incentives.

Challenges

How challenges are addressed can affect financial markets

The major trends in reserve management just identified have presented central banks with significant challenges. While some of these challenges have implications that are largely confined to the internal organisation and running of the institution, others can have more immediate implications for financial markets and exchange rates. To illustrate this second point, it is worth exploring in more detail three issues: the choice of "numeraire" for the design of the portfolio; the definition of the appropriate risk-return trade-off for the reserves; and the appropriate degree of public disclosure. In none of these areas is there a one-size-fits-all solution or, indeed, any such thing as a "correct" answer. Rather, difficult trade-offs need to be struck between competing considerations. Even so, the way in which these issues are resolved can have potentially significant implications.

How should the numeraire currency be chosen?

At a strategic level, the choice of the numeraire currency, or basket of currencies, underlying portfolio allocation decisions – which may differ from that used for public accounting purposes – is particularly influential for the currency composition of reserves. If it is assumed that expected returns are equalised across currencies over the long term – a common assumption when deciding on the strategic asset allocation – the choice of numeraire influences the currency composition of the benchmark portfolio primarily through its impact on the measured variability of returns. Specifically, the currency composition of reserves will be heavily tilted towards currencies with higher covariance vis-à-vis the numeraire. The adoption of a more structured and formal approach to reserve management and the availability of more sophisticated financial tools have recently highlighted the importance of this choice.

How reserves are assumed to be used matters in this choice

In principle, the choice of numeraire presupposes a careful analysis of the intended uses of the reserves and of the broader institutional environment which helps to define the risk tolerance of the reserve holder. Traditionally, when reserves were held primarily for intervention purposes, an obvious candidate for (the largely implicit) numeraire was the most liquid currency used for interventions, notably the US dollar. Similarly, when capital account transactions were less important than today, the currency denomination of imports presented a natural alternative choice of numeraire. Subsequently, in cases where reserves came to be seen primarily as a hedge for external liabilities, the currency composition of those liabilities could have gained relevance.

More recently, two trends suggest that the domestic currency might be becoming increasingly attractive as the numeraire. First, especially in countries where reserves exceed liquidity needs and the investment motive dominates, the domestic currency might be seen as a better guide to whether portfolio wealth is being maximised or not. In addition, central banks may have become more sensitive to losses, insofar as they are perceived as possibly undermining their reputation and operational independence (see below), not least by eroding their capital base. If so, this would tend to increase the relevance of the exchange rate regime in influencing the currency allocation, tilting it towards the currency, or basket, against which the domestic currency is more stable.

Domestic currency is increasingly an option

The specification of the appropriate risk-return trade-off for the reserve holder is a particularly challenging task. It would be challenging if the reserve management function were considered in isolation; it is even more so when considered as part of the package of functions performed by central banks. The way in which this issue is resolved has implications for the breadth of the investable asset universe and for the degree and nature of active management.

How should the appropriate risk-return trade-off be defined?

While the shift towards a greater investment orientation in the management of reserves has naturally promoted a more return-oriented approach, there are no obvious criteria for establishing what the right balance between risk and return should be. In part, this reflects difficulties in estimating the true opportunity cost of the funds. For example, in a proximate sense, all reserves are "borrowed", be it in domestic or foreign currency, and so the immediate financing cost is easily measured. However, an assessment of the true opportunity cost to the economy cannot shy away from general equilibrium considerations, involving a view about the counterfactual configuration of exchange and interest rates in the absence of reserve accumulation. This, in turn, would naturally depend on the alternative uses to which reserves could be put, such as infrastructure investments or reductions in taxation.

The answer depends on the opportunity costs …

The bundling of foreign reserve management with other functions complicates matters further. Central banks, in particular, because of their heightened sensitivity to reputational risk, are generally also highly sensitive to the credit and operational risks associated with investment activities, arguably well beyond their direct impact on portfolio returns. And, as reserves grow relative to the overall central bank balance sheet, concerns about losses could paradoxically increase, and hence risk tolerance decline, reflecting the greater potential for a large, negative impact on the institution's capital. The desire to avoid such outcomes can also have implications for the "location" of the reserve management function within the public sector. For example, these considerations provide one reason why special investment funds, not on the central bank's balance sheet, have been established in some economies judged to have reserves in excess of liquidity needs. At the same time, the experience of Norway suggests that some of these constraints on risk preferences are highly dependent on the specific institutional environment within which the central bank operates. There, the central bank manages its own reserves as well as the Government Pension Fund along broadly similar lines.

… potential reputational consequences …

... and other policy objectives

More generally, questions can be asked about how far a more return-oriented approach should be pushed in the first place. In an increasingly global marketplace, the shared responsibilities of public authorities for public goods such as well functioning markets and financial stability set limits on this orientation. For example, when responding to individual incentives, it is only natural for private sector agents to engage in a search for yield or, at times of turmoil, to retrench and withdraw from markets. But, in the aggregate, such behaviour, if taken too far, can contribute to financial instability.

How much disclosure is optimal?

Despite the trend towards increased transparency, considerable controversy surrounds the question of the appropriate degree of public disclosure of information on foreign reserves. In the past, much of the discussion about disclosure was concerned with the overall level of reserves and the intervention that results in changes to that stock, not its composition. However, as reserves have grown, attention has switched to their composition and the implications that changes in it could have for financial markets. This is information that central banks have traditionally been less inclined to provide.

There are trade-offs ...

External governance arrangements aside, and at the risk of some oversimplification, the optimal degree of disclosure has been seen as involving a trade-off between the efficiency-enhancing effects of providing additional information to financial markets on the one hand, and the loss of tactical room for manoeuvre for the reserve manager on the other. Differences of opinion, therefore, hinge on differences in perspective on how well markets function and on how far disclosure actually constrains the authorities' ability to pursue their objectives.

... influenced by factors such as the size of reserves involved

Factors that could reduce the willingness of reserve managers to be transparent include the size of the reserves and the nature of the exchange rate regime. If foreign exchange reserves are very large (Table V.3), then the assumption that the central bank is an atomistic player in foreign exchange markets and in the instruments it invests in is less likely to hold. Tactical considerations could play an even bigger role if information about changes in the currency composition of the reserves were interpreted as foreshadowing changes in a managed exchange rate regime. Information on currency composition could also reveal information on intervention activities by helping to identify, ex post, changes in the level of reserves due to valuation effects. More generally, changes in the currency composition of reserves technically amount to sterilised intervention on the part of the authorities whose currencies are being exchanged, and views about the impact of such transactions on exchange rates diverge considerably.

VI. Financial markets

Highlights

Prices of risky assets continued to rise throughout most of 2006 and early 2007. Two sharp sell-offs during the period proved to be short-lived corrections to the rally rather than prolonged downturns. As a result, a number of equity markets reached historical highs, while various credit spreads touched new lows. This occurred despite indications that global growth might have peaked, and as the weaker economic outlook in the United States and the effects of past interest hikes started to weigh on investor sentiment.

In this environment, bond yields in the advanced industrial economies levelled off around mid-2006 and then began to edge downwards. The United States, in particular, saw long-term bond yields falling during the second half of the year, reflecting investor concerns about US growth prospects and expectations that monetary policy would be easing. The economic outlook for Japan remained more positive, lending some support to bond yields, while the outlook for the euro area brightened progressively, and eventually brought about rising euro bond yields.

While declining bond yields may have supported equities at times during the period under review, a more important ingredient was continued strong earnings growth. Moreover, ongoing changes in capital structure boosted equity markets, as share buybacks rose further while merger and acquisition activity grew substantially. Adding to this, high and rising risk appetite among investors underpinned the rally in equities.

A combination of improving economic performance and a growing willingness among investors to take on risk also impacted favourably on corporate credit spreads in developed markets. Healthy corporate profits and low leverage pushed down the market's assessment of the likelihood of default to very low levels. Similarly, gains in emerging markets coincided with improved credit ratings and generally strong macroeconomic conditions. However, as in other markets, increasing risk appetite probably helped fuel the downward trend in spreads, both in developed corporate markets and in emerging markets.

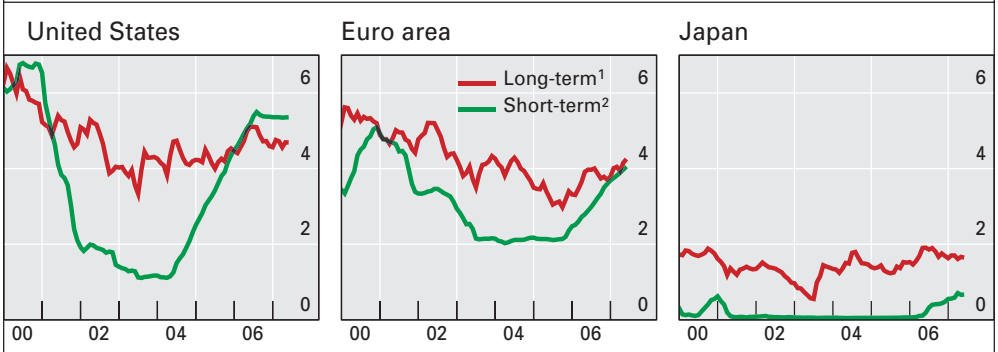
Diverging growth prospects swayed yields

Long-term bond yields edged downwards after mid-2006

A gradual rise in long-term yields that had been under way in developed country government bond markets for some time came to an end in May 2006, when global financial markets suffered a sell-off. While prices of risky assets began recovering soon thereafter, bond yields did not regain their upward momentum. Instead, G3 long-term yields began to fall around mid-2006, as investors revised downwards their outlook for economic growth, particularly for the United States (Graph VI.1). Market expectations of policy rate cuts by the Federal Reserve, evident during much of the period, contributed to this

Interest rates

In per cent



[1] Ten-year government bond yield; for the euro area, German bund. [2] Three-month interbank offered rate.

Sources: Bloomberg; national data. Graph VI.1

decline. While the growth outlook was somewhat more upbeat in Japan, this generated little upward pressure on Japanese bond yields, although it probably limited the declines. In the euro area, the positive economic momentum gathered pace progressively, eventually resulting in rising bond yields. Between early May 2006 – ie before the sell-off – and 18 May 2007, 10-year US government bond yields fell by around 35 basis points to 4.80%, while corresponding euro area yields rose by some 30 basis points to around 4.30% and those in Japan declined by close to 25 basis points to 1.65%.

Yield curves flattened in Japan and the euro area

The US Federal Reserve's 17th consecutive rate hike on 29 June 2006 was followed by a prolonged wait-and-see period, during which shifts in investors' expectations of future policy moves contributed to declining yields at both long and short maturities. While at first investors expected further tightening, albeit at a slower pace, they gradually shifted towards the view that the Federal Reserve would remain on hold for an extended period of time, and eventually to anticipations of possible cuts in policy interest rates. At the time of the June 2006 rate hike, the difference between 10-year and two-year US yields stood at close to nil. By 18 May 2007, the slope of the two- to 10-year segment of the yield curve was little changed compared to the June 2006 levels, while the short end of the US implied forward interest rate curve had inverted considerably (Graph VI.2). This was in line with expectations of an easing of US monetary policy over the near to medium term.

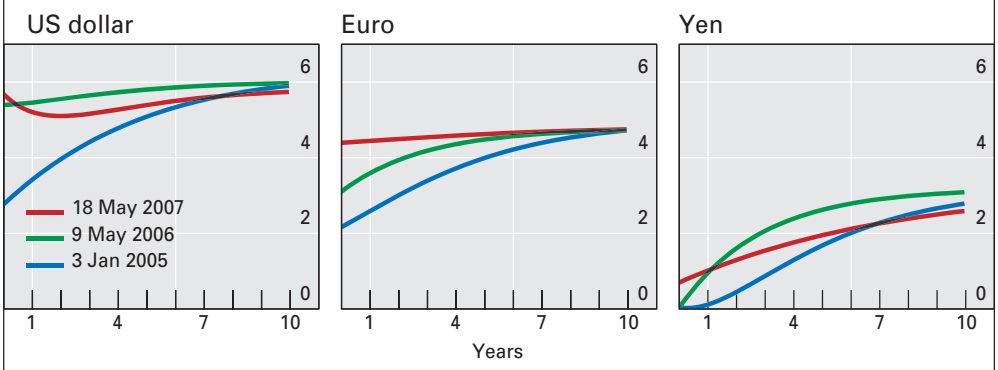
Expectations grew of US policy rate cuts ...

... while rates rose in Japan and the euro area

While rates were kept unchanged in the United States, continued tightening of monetary policy in Japan and the euro area brought flattening yield curves in these economies (Graph VI.2). Japan saw the end of the zero interest rate environment and its first rate hike in six years in July 2006; this was followed by another rate increase in February 2007. The ECB raised key interest rates by 25 basis points five times between June 2006 and May 2007 (see Chapter IV). Meanwhile, long-term bond yields fell somewhat in Japan and rose only moderately in the euro area, resulting in reduced term structure slopes. Between early May 2006 and 18 May 2007, the difference between

Forward curves[1]

In per cent



[1] Instantaneous forward rates derived from the Libor/swap curve.

Sources: Bloomberg; BIS calculations. Graph VI.2

10-year and two-year bond yields fell by around 55 basis points in the euro area, and by about 45 basis points in Japan.

Diverging growth prospects and moderating inflation expectations

An expected slowdown pushed US interest rates lower ...

As always, decisions on policy rates reflected evolving assessments of macroeconomic conditions and the outlook for the future, which also largely shaped developments in long-term bond yields. Arguably, the most important factor driving market expectations and the pricing of government securities during the past year was the expected speed and magnitude of the slowdown in economic activity in the United States. Investors' perceptions about the likely trajectory of future US growth became gradually less optimistic during 2006, as worries about the fallout from the rapidly cooling housing market, a prolonged rise in oil prices and past interest rate hikes began to take their toll. Reflecting this, survey forecasts of US economic growth for 2007 were continuously revised downwards, with a brief interruption in the first few months of 2007 (Graph VI.3, left-hand panel).

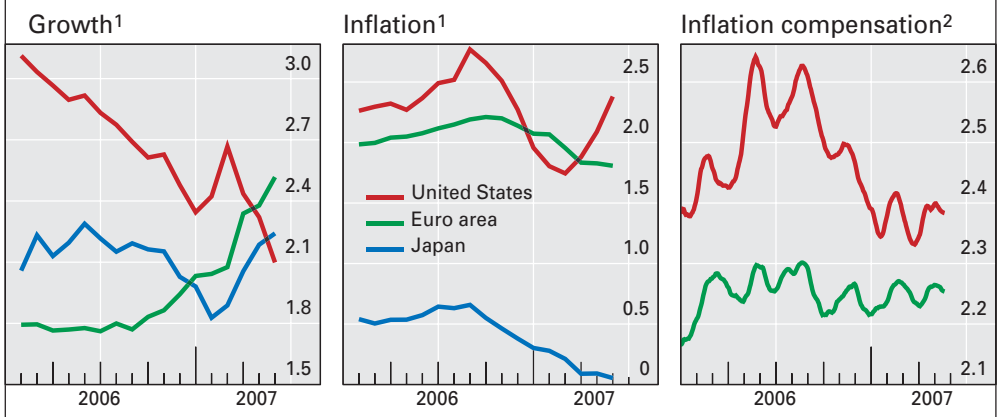
... while accelerating growth lifted euro area yields

While changes in the outlook for US economic activity also had an impact on bond yields outside the United States, expectations of economic growth in the euro area and Japan certainly played an important role in yield developments in these economies. The euro area, which saw accelerating growth figures and gradually more optimistic expectations of future economic activity, initially experienced smaller declines in bond yields than the United States, followed eventually by a gradual rise in yields. In Japan, bond yields fell less than in the United States during the period under review, as the view formed among investors that the economy was returning to normality and that growth was on track for a solid performance.

In addition to the outlook for growth, investors' perceptions about future inflation developments contributed to bond yield movements during the past year. In the first half of 2006, inflationary pressures had been seen as gradually increasing, in particular in the United States, while in the second half they seemed to be easing, following past monetary policy tightening and a decline

Forecasts for 2007 and inflation compensation measures

In per cent



[1] Forecasts, as published monthly by Consensus Economics, are positioned at the end of the month in which the forecasts were made. [2] Difference between nominal and real five-year (eight-year for the euro area) forward rates, five years ahead; 20-day moving average.

Sources: © Consensus Economics; BIS calculations. Graph VI.3

in oil prices that lasted until the end of the year. Consistent with this, survey forecasts for 2007 inflation began to moderate after a gradual rise in the first months of 2006 (Graph VI.3, centre panel). However, signs in the first half of 2007 that inflation was easing off at a slower rate than previously expected led to a partial reversal of these forecasts. Long-horizon US inflation expectations, as approximated by the difference between nominal and real forward bond yields, largely reflected these developments (Graph VI.3, right-hand panel). Meanwhile, corresponding inflation measures in the euro area were more stable, indicating a perception in markets that price pressures emanating from improving economic activity would be counterbalanced by gradually tighter monetary policy.

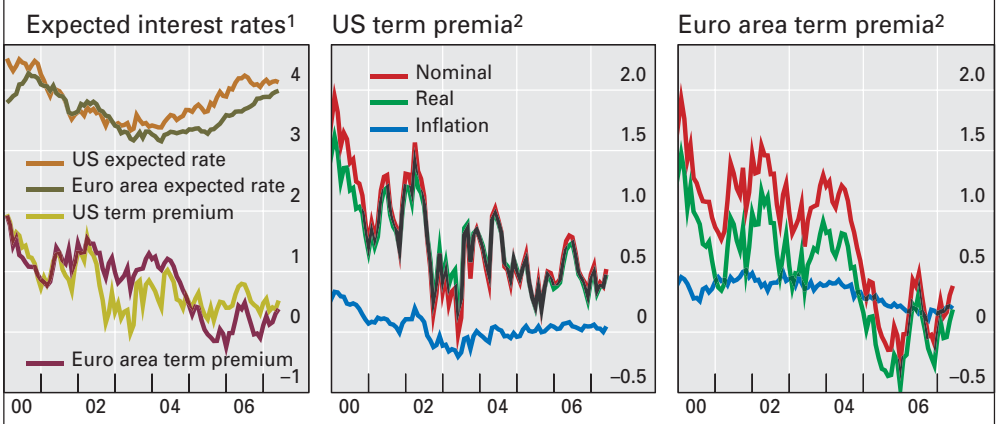
Lower term premia contributed to falling bond yields

While bond yield developments over the past year were partly shaped by expectations of the economic outlook, other factors also had an impact. In particular, the lack of significant upward momentum in euro area yields during most of 2006 seemed, to some extent, at odds with the strong economic performance of the region. Instead, declining term premia appeared to play an important role, and also added to the downward pressure on US Treasury yields.

Term premia embedded in the term structure of interest rates represent compensation to investors for bearing risks associated with uncertain future interest rate developments. Estimates of such premia for the United States and the euro area indicate that they remained low by historical standards (Graph VI.4, left-hand panel). Moreover, while term premia seem to have increased somewhat between late 2005 and mid-2006, they began to fall again afterwards. Estimates show that from mid-2006 to May 2007, the nominal 10-year term premium fell by around 25 basis points in the United States. This represented about three quarters of the total decline in the 10-year yield during

Expected interest rates and term premia

In per cent



[1] Model-implied expected average short-term interest rate over a 10-year horizon, calculated as the nominal 10-year yield minus the estimated 10-year term premium (shown in the lower part of the panel). The estimates are based on the approach described below. [2] Ten-year nominal, real and inflation risk premia in yield terms, estimated using a modified version of the essentially affine macro-finance term structure model in P Hördahl and O Tristani, "Inflation risk premia in the term structure of interest rates", *BIS Working Papers*, no 228, May 2007. Estimations are based on nominal and real yields of various maturities, as well as data on inflation, the output gap and survey expectations of three-month interest rates and inflation.

Sources: Bloomberg; BIS calculations. Graph VI.4

this period. The remaining 10 basis points were attributed to expectations of lower average interest rates going forward. In the euro area, the 10-year term premium fell by around 40 basis points in the second half of 2006, before recovering most of this decline in the first five months of 2007.

If the estimated term premium component is stripped out from 10-year bond yields, a picture emerges that seems to better reflect the contrasting economic developments over the past year in these two economies. The implied path of expected average nominal interest rates over the next 10 years continued to rise uninterruptedly for the euro area, while it levelled off and edged downwards around mid-2006 for the United States (Graph VI.4, left-hand panel).

Decomposition of term premia ...

Some information about the underlying determinants of the estimated term premia may be gleaned from modern term structure models. Term premia in nominal bond yields can, loosely speaking, be decomposed into two elements, namely an inflation risk premium and a real risk premium. The first component reflects compensation required by investors for uncertainty surrounding inflation, and the second reflects compensation required to take on risk associated with changing real interest rates. By jointly modelling the dynamics of nominal and index-linked bond yields as well as key macro variables, one can obtain an indication of how these premia have evolved over time. Admittedly, such estimates involve a considerable margin of uncertainty. Moreover, the results can be affected by liquidity conditions in the various markets, as well as by institutional factors. For example, institutional demand factors and heavy purchases of government securities by foreign central banks and other state institutions may have exerted downward pressure on bond yields for some time (see Chapter VI in the *76th Annual Report*).

... shows that the decline was largely due to falling real premia

Even so, the evidence appears to suggest that high-frequency changes in nominal term premia were due largely to fluctuations in the real component of these premia in the euro area, and virtually entirely so in the United States (Graph VI.4, centre and right-hand panels). At the same time, estimates of the euro area inflation risk premium displayed a gradual decline throughout much of 2006, while for the United States they remained essentially flat.

Implied interest rate volatilities continued to fall

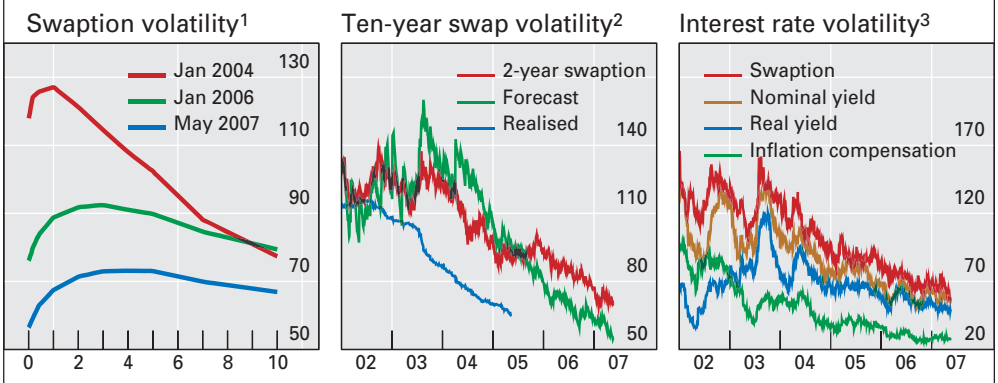
The decline in estimated term premia may, to some extent, have been due to perceptions among investors that uncertainty associated with future interest rate moves had fallen. Indeed, as proxied by implied volatilities on swaptions (options on interest rate swaps), there is some evidence that the perceived degree of interest rate uncertainty may have declined. For example, the term structure of implied swaption volatilities for 10-year US swap rates continued to shift downwards during 2006 and early 2007 (Graph VI.5, left-hand panel), and similar falls were seen for other swap rates. The sharp sell-offs in global financial markets that took place in May–June 2006 and late February–March 2007 had little impact on swaption volatilities in general, although near-term volatility on short-term rates displayed a brief surge during the second episode.

Implied swaption volatilities fell further

While changes in the required compensation for volatility risk – ie the volatility risk premium – may have influenced swaption volatilities as well, there are some indications that they may have played a smaller role. The volatility risk premium can be proxied by the gap between the implied volatility and the corresponding volatility expected by investors. One way of measuring volatility

Long-term US interest rate volatility

In basis points, annualised



[1] Term structure of implied volatilities on 10-year swap rates; average of daily values during the indicated month. The horizontal axis indicates years. [2] Forecasts are out-of-sample and based on a Spline-GARCH model that allows the estimated level of unconditional volatility to evolve over time; see R F Engle and J G Rangel, *The Spline-GARCH model for low frequency volatility and its global macroeconomic causes*, mimeo, New York University, 2006; the forecast horizon is two years; average of daily volatility forecasts. The realised volatility is the annualised standard deviation of daily 10-year swap rate changes over the next two years. [3] Swaption volatilities are three-month implied volatilities on 10-year swap rates. Nominal yield, real yield and inflation compensation refer to the historical three-month volatility on 10-year US bond yields, index-linked yields and break-even inflation rates, respectively.

Sources: Bloomberg; Datastream; BIS calculations. Graph VI.5

expectations is by using forecasts obtained from time series models. Such estimates indicate that the fall in swaption volatilities, while quite sharp, was nonetheless mainly due to expectations among investors that future volatility would continue to drop. Specifically, the decline in implied volatility during the past few years was in large part mirrored by lower (out-of-sample) forecasts of volatility generated by a model that allows for changes in the perceived long-run level of volatility. Moreover, the observed fall in implied swaption volatilities coincided with a downward trend in realised long-term interest rate volatility (Graph VI.5, centre panel).

Given that the swap spread over US Treasuries has remained quite stable in the recent past, the steady decline in the volatility of swap rates since mid-2003 has been largely matched by falling volatility on 10-year US bond yields (Graph VI.5, right-hand panel). In turn, there is some evidence suggesting that this decline might have reflected greater perceived stability of macroeconomic fundamentals. In particular, the inflation compensation of nominal bond yields has become less volatile, which, together with steady inflation risk premia, is consistent with less volatile long-horizon expectations of inflation. This might reflect greater central bank credibility, or perceptions among investors that future inflationary shocks hitting the economy are likely to be smaller than in the past. A general reduction in the variability of the estimated term premium, mostly due to a less volatile real risk premium, may also have contributed to lower interest rate volatility.

Lower volatility may be linked to perceived macro stability

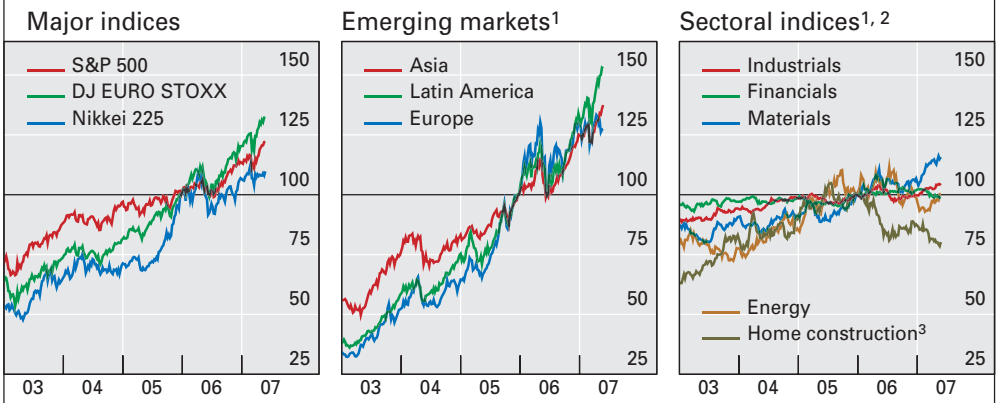
Equity markets robust despite episodes of volatility

The rally in global equity markets that had begun in early 2003 continued for most of the period under review, despite two sharp sell-offs in May–June 2006 and late February–March 2007. For the third year in a row, stocks in advanced European economies outperformed those in other developed markets, with

Equity prices rallied …

Equity prices

End-week data, in local currency; end-December 2005 = 100

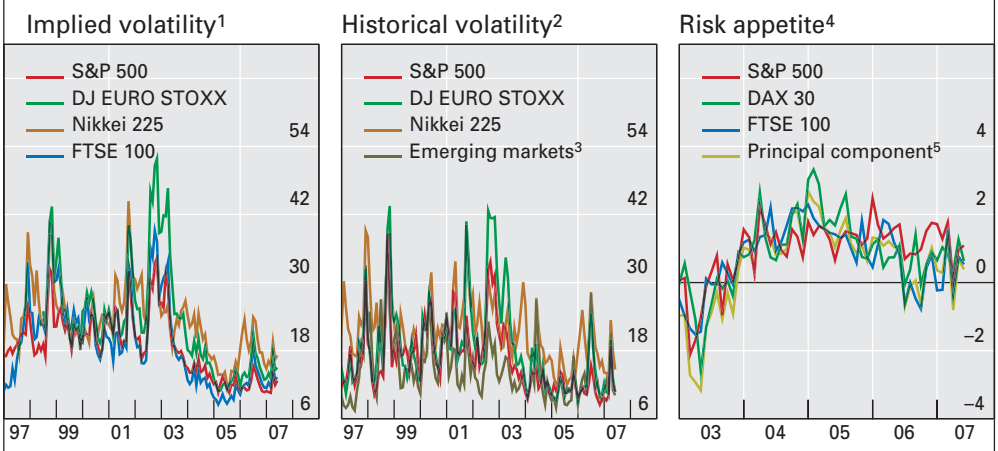


[1] Morgan Stanley Capital International equity indices. [2] Relative to the MSCI World composite index. [3] Equity index calculated by Datastream, relative to the Datastream World composite index.

Sources: Bloomberg; Datastream. Graph VI.6

Volatility and risk appetite in equity markets

Monthly averages, in per cent



[1] Annualised volatility implied by the price of at-the-money call option contracts on stock market indices. [2] Annualised conditional volatility from an asymmetric GARCH(1,1) model, estimated over the period January 1996–May 2007. [3] MSCI emerging market index. [4] Derived from the differences between two distributions of returns, one implied by option prices, the other based on actual returns estimated from historical data. [5] First principal component of risk appetite indicators estimated for the S&P 500, DAX 30 and FTSE 100.

Sources: Bloomberg; Chicago Mercantile Exchange; Datastream; Eurex; London International Financial Futures and Options Exchange; BIS calculations. Graph VI.7

the index increasing by 19% between end-March 2006 and mid-May 2007, outpacing US and Japanese share price growth of 17% and 2%, respectively (Graph VI.6, left-hand panel). Shares were on the whole stronger throughout the emerging markets, with prices in Latin America, Asia and Europe rising by 37%, 28% and 10%, respectively (Graph VI.6, centre panel). Episodes of heightened volatility surrounding the sell-offs were also brief. As a result, share price volatilities were close to historical lows in late 2006 and were still well below global long-term averages in May 2007 (Graph VI.7, left-hand and centre panels).

Strong earnings buoyed markets

... supported by strong earnings

A key support for global equity prices was provided by strong earnings of listed firms in developed country markets. Even as GDP growth cooled in the United States in the third quarter of 2006, this initially had a minimal effect on corporate earnings, which showed signs of slowing only towards the end of the year. To be sure, stagnating house prices did affect the profitability and performance of sectors such as home construction in 2006 (Graph VI.6, right-hand panel). Earnings growth in Europe was also generally strong, with robust economic activity in the United Kingdom, Germany and France helping equity markets shrug off continued tightening by the Bank of England and the ECB. Japanese profit performance lagged after the acceleration in early 2006.

Gains in equity prices in emerging markets coincided with generally favourable macroeconomic conditions (see Chapter III) and a strong appetite for risk among global investors. Sharp appreciation in the materials sector (Graph VI.6, right-hand panel), which includes metals and mining, partly reflected high growth in industrialising emerging markets such as China. In

addition, contagion effects from political unrest in individual markets, such as those in Hungary, Thailand and Ecuador, were quite limited. Even so, shares in the energy sector stagnated after mid-2006, in line with lower oil prices, as did share prices in oil-exporting Russia, which suffered particularly severe declines at the start of 2007. In contrast to developed country markets, earnings growth in emerging markets did not keep up with equity prices, and earnings multiples rose sharply (Graph VI.9, centre panel), consistent with increasing risk appetite for emerging market assets.

Risk appetite fuelled emerging market returns ...

Global stock markets incurred heavy losses in May–June 2006 and late February–March 2007, with the global MSCI index falling from peak to trough by 13% and 7%, respectively. The mid-2006 sell-off appeared to be driven more by a weakening in investor appetite for risk than by a reassessment of fundamentals (Graph VI.7, right-hand panel); as a result, emerging market equity prices experienced the most significant retreat, falling by 26%. By contrast, the early 2007 sell-off coincided with concern over US macroeconomic weakness (particularly in the housing market). Although a sharp correction in the Chinese stock exchange occurred at the beginning of the sell-off, emerging markets did not underperform developed country shares as much as in mid-2006. Compared to mid-2006, the global sell-off was also brief, and the increases in volatility measures and decrease in risk appetite were mostly retraced within a month (Graph VI.7).

Merger and acquisition activity supported the market

... and robust growth in mergers and acquisitions

Current and prospective changes in capital structure also helped to support equity prices. Share buybacks continued to increase, as S&P 500 companies purchased more than $430 billion worth of their own shares in 2006, well above the record levels scored just the previous year. In addition, the volume of leveraged buyouts (LBOs) surged to $753 billion, with takeover bids by private equity investors in 2006 exceeding (in constant dollars) those achieved in the peak year of the LBO explosion in the late 1980s. One highly noticeable difference between the latest and earlier booms was that the targets were no longer overwhelmingly US corporations; in fact, European targets constituted 31% of the announced value of all deals, as opposed to less than 10% in 1988. Targets in emerging markets and other countries also accounted for a significant proportion (Graph VI.8, left-hand panel).

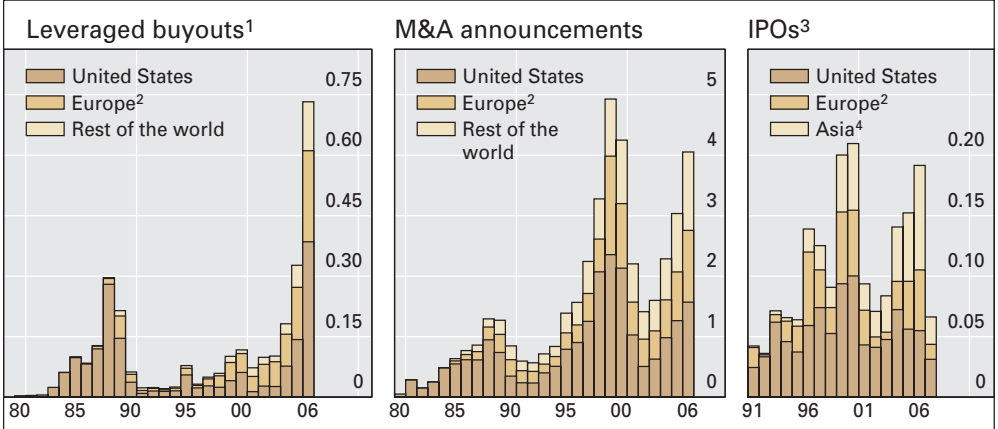
The more general category of merger and acquisition (M&A) activity grew substantially from the elevated levels of 2005, with $4.1 trillion in announced M&As in 2006, the highest level (in real terms) since 2000. M&A activity was particularly strong in Europe, growing by 52% in 2006. This expansion pushed the value of all deals to $1.2 trillion, a level approaching that in the United States (Graph VI.8, centre panel). The unprecedented activity in the market for corporate control was probably one reason for the strength of the European equity market. In December 2006, buoyed to a significant extent by news of potential corporate takeovers, the main European share index posted positive returns on 10 consecutive days, the longest such rally since 1997.

The market for corporate control was especially strong in Europe

The volume of initial public offerings (IPOs) was higher than in any year since 2000. A particularly large number of deals originated in Asia, where the

M&A and IPO activity

In trillions of US dollars



[1] Announced value of all deals, including net debt; in constant 2005 US dollars; based on the date of the announcement and the residency of the target firm. [2] France, Germany, Ireland, Italy, the Netherlands, Spain and the United Kingdom. [3] Denotes the first time an issuer sells stock to the public and is listed on an official exchange; for 2007, January–April. [4] China, Hong Kong SAR, Japan and Singapore.

Sources: Bloomberg; Thomson Financial SDC Platinum; BIS calculations. Graph VI.8

value of IPOs reached a record $86.4 billion, a 53% increase from the previous year (Graph VI.8, right-hand panel). Volume was exceptionally large on the Hong Kong and Shanghai stock exchanges. While European IPO volume grew by 27%, that in the United States remained stagnant, and the value of US offerings as a percentage of those in all major markets declined to less than 30%.

Valuations

P/E ratios fell in the United States and the euro area ...

Against the backdrop of such robust earnings, resilient share prices did not lead to increasing valuations in developed country markets, at least on the basis of several popular measures. Rather, revisions to profit forecasts generally outpaced price increases. The S&P 500 remained around 15 times one-year-ahead forecast earnings in 2006, a multiple slightly above that for the euro area MSCI. Both levels were in fact slightly below their long-term average of 16 over 1988–2005. In Japan, although price/earnings (P/E) ratios had increased sharply in the second half of 2005 and early 2006, they remained substantially below the levels of the previous decades (Graph VI.9, left-hand panel).

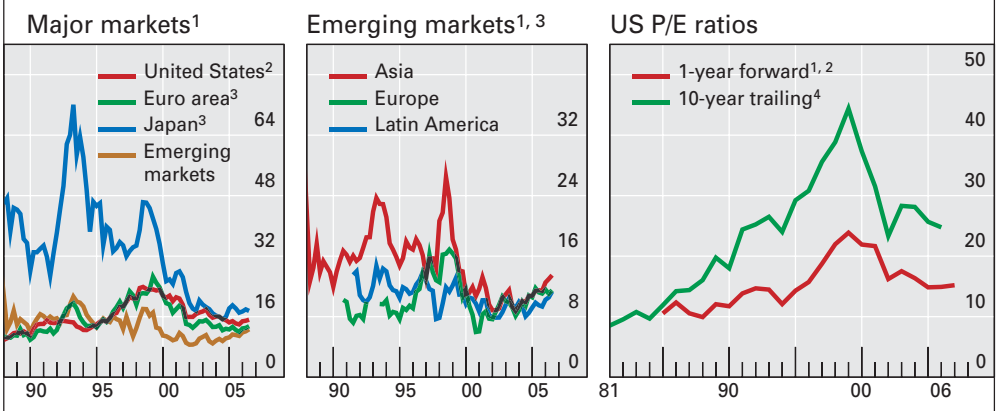
... and rose in emerging markets

In contrast, emerging market valuations were quite buoyant, as they continued to rise sharply from 2005 (Graph VI.9, centre panel). This appreciation was most pronounced in Asia, although valuations in emerging Europe have grown more rapidly over the past five years. Despite the recent advances, valuations were still well below those of the late 1990s (before the equity downturn) in each of the major emerging market regions.

To be sure, valuations in developed countries looked more stretched when based on historical measures of profits rather than short-term forecasts. As discussed below, in the United States profits as a share of GDP were close to historical highs in 2006 (see Graph VI.15). The ratio of US real equity prices to a 10-year moving average of real earnings smooths cyclical variation, and

Valuations in equity markets

Quarterly averages



[1] P/E ratios based on consensus forecasts of one-year-ahead operating earnings. [2] S&P 500. [3] MSCI index. [4] Market value of US corporate equities as a percentage of GDP divided by a 10-year trailing average of corporate profits after tax as a percentage of GDP.

Sources: I/B/E/S; Morgan Stanley Capital International; national data; BIS calculations. Graph VI.9

is a historically robust (inversely related) predictor of future returns. At the end of 2006, this P/E ratio was well above its historical average at around 25, compared to an average of just below 20 since the early 1980s (Graph VI.9, right-hand panel).

Credit spreads hovered near historical lows

Yield spreads on all types of debt tightened during the period under review, although spreads on riskier debt contracted the most. The rally in credit markets was twice interrupted by periods of market turbulence, which turned out to be relatively brief in duration. Sound corporate fundamentals, as well as strong investor demand for structured credit products and greater investor risk appetite, seemed to be important forces behind the rally.

High-yield debt outperformed

A downward trend in high-yield spreads ...

The rally in riskier credits took spreads to new lows in some markets (Graph VI.10). By late May 2007, an index of spreads on US high-yield corporate bonds, at just over 250 basis points, had fallen below its previous low reached prior to the sell-off in credit markets in the second quarter of 2005, and was within a few basis points of its low of 235 in October 1997. Similarly, spreads on European high-yield bonds fell below 190 basis points, more than 40 basis points less than the previous low reached in March 2005. Spreads on US and European investment grade corporate bonds remained within a relatively tight band and, in late May 2007, were only a few basis points wider than in March 2006.

... weathered market turbulence in May–June 2006 ...

The first temporary repricing of credit risk took place from mid-May 2006. From 288 basis points on 12 May 2006, US high-yield corporate bond spreads widened by 47 basis points by the end of June. The high-yield credit default swap (CDS) index would have widened significantly more in June and July

were it not for the automobile sector: CDS spreads on General Motors and Ford narrowed by more than 300 basis points between end-June and end-August. Spreads on risky assets remained elevated through August, but resumed their downward trajectory in late September. In May and June, flows from high-yield credits into safer assets left spreads on more highly rated borrowers less affected. For example, spreads on A-rated corporate bonds in both the United States and Europe widened by less than 10 basis points during this episode.

... and late February–March 2007

A second bout of turbulence in credit markets occurred in late February and March 2007, although this turned out to have a smaller overall impact. On 27 February, amidst a global sell-off in equity markets, spreads on US high-yield bonds jumped by more than 20 basis points, and continued to rise for around four days thereafter. While equity markets had, for the most part, recouped their losses within three weeks of the sell-off, credit markets were somewhat slower to recover. US high-yield bond spreads did not approach their late February low until the second half of May.

Growing concern over the US mortgage market ...

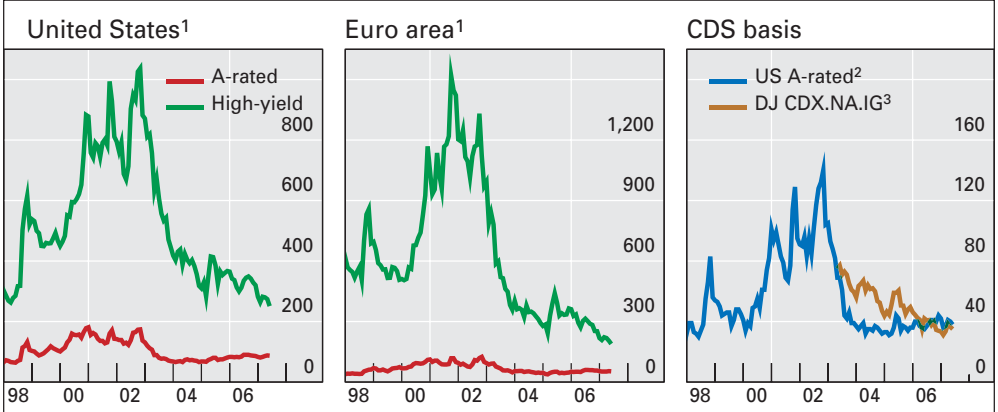
Contributing to market uncertainty was growing concern over the US subprime housing market. Delinquency rates on subprime loans, which had hovered near 10% for much of 2004 and 2005, reached 13% by end-2006, with much of the increase occurring in the fourth quarter (see Chapter VII). This led to a series of bankruptcies of subprime lenders, and to a significant widening from November 2006 of spreads on non-investment grade tranches of home equity loans (Graph VI.11, left-hand panel). Following HSBC's announcement on 8 February 2007 that more funds would have to be set aside to cover bad debts in its subprime lending portfolio, and New Century Financial's downward revision of its 2007 loan volume forecast, spreads in this market segment widened by no less than 200 basis points in the space of two days.

... and effects on CDO markets

Whether and how the problems in the US subprime mortgage market may spill over into other markets remains unclear. In part, the risks are limited

Corporate bond spreads

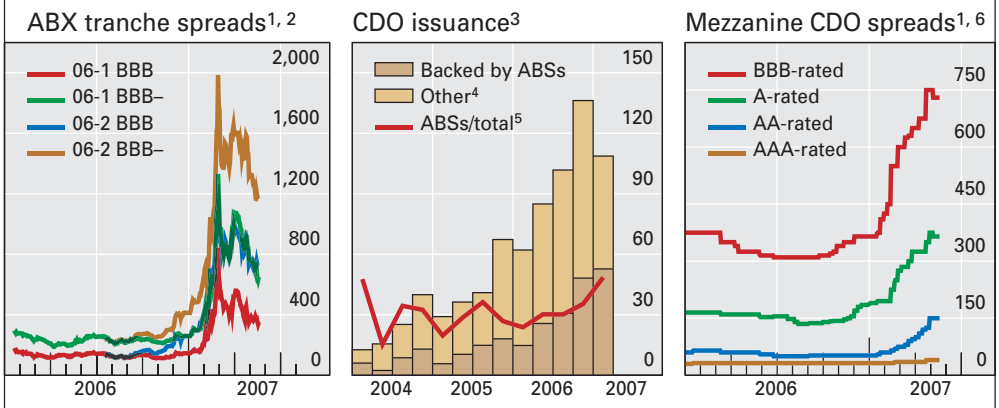
Month-end, in basis points



[1] Option-adjusted spreads over government bond yields; Merrill Lynch corporate bond indices. [2] Asset swap spreads over Libor; Merrill Lynch corporate bond indices. [3] On-the-run five-year CDS spreads.

Sources: JPMorgan Chase; Merrill Lynch. Graph VI.10

US mortgage market



[1] In basis points. [2] Home equity (ABX.HE) floating on-the-run spreads. [3] Cash and hybrid issuance, in billions of US dollars. [4] Includes bonds, CDOs, loans and other types of collateral. [5] In per cent. [6] Spreads over Libor of tranches of CDOs backed by mezzanine tranches of ABSs.

Sources: CreditFlux Data+; JPMorgan Chase; BIS calculations. Graph VI.11

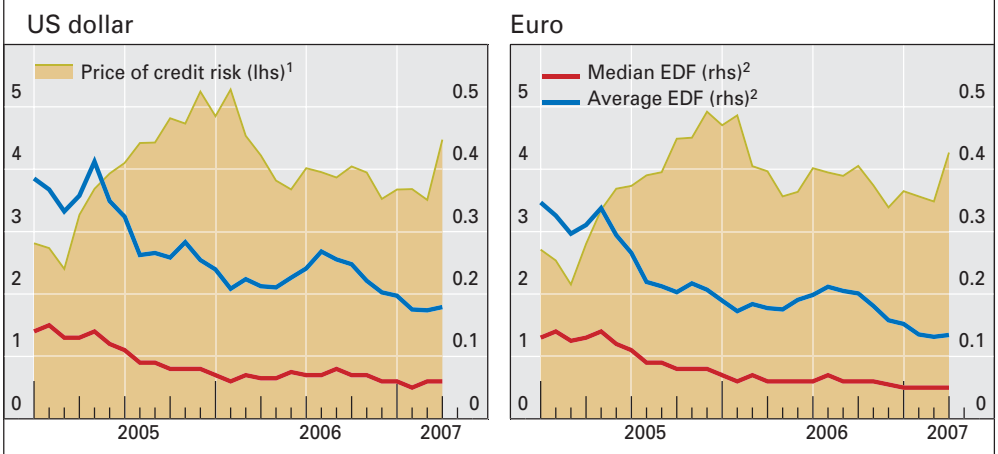
because of the relatively small size of the subprime market. Loans to these borrowers constituted only 21% of total US mortgage lending in 2006, and 14% of the total mortgage loans outstanding at the end of the year. That said, investors have become increasingly concerned about the effect that a continued deterioration might have on valuations of collateralised debt obligations (CDOs) backed by asset-backed securities (ABSs). Exactly where in the CDO market the risks posed by subprime and Alt-A mortgages (which also do not have prime borrower status) are concentrated is difficult to measure. Estimates based on individual CDO deals indicate that ABSs account for approximately one third of the total collateral backing cash CDOs (Graph VI.11, centre panel). Industry estimates suggest that a substantial share is backed by subprime and Alt-A mortgages. Spreads on tranches of CDOs backed by mezzanine tranches of ABSs began to widen in late January 2007, signalling that investors assigned a higher probability to a significant deterioration in the underlying collateral pool (Graph VI.11, right-hand panel).

Greater investor risk appetite

Changes in investor risk appetite …

While generally healthy corporate balance sheets (see below) buoyed valuations in credit markets, there is also evidence that changes in investors' risk appetite contributed to the downward trend in spreads on risky assets. A simple estimate of the price of a "unit" of risk in a particular credit market segment is obtained from the ratio of default probabilities derived from credit spreads to those derived from underlying balance sheet information, in this case Moody's-KMV estimated default frequencies (EDFs). The higher this ratio, the higher the compensation demanded by creditors for bearing a given level of default risk. To be sure, EDFs may themselves contain some element of market sentiment because they in part reflect equity prices and volatilities. That said, they are a reasonable approximation of market participants' view of fundamental default risk.

Risk appetite in credit markets



[1] Ratio of risk neutral to empirical probabilities of default. A lower value indicates a greater risk appetite. Empirical probabilities are based on Moody's-KMV EDF data. Estimates of risk neutral probabilities are derived from CDS spreads (document clause MR) and estimates of the recovery rate. The reported ratio is the value for the median name in a large sample of non-investment grade entities. [2] In per cent.

Sources: Markit; Moody's KMV; BIS calculations. Graph VI.12

... contributed to tighter high-yield spreads

Broadly speaking, these indicators suggest that investors' risk appetite increased through much of 2006. Clearly, strong corporate performance contributed to the low level of both EDFs and CDS premia during the period under review. However, CDS premia have declined relatively more, suggesting that changes in investor risk appetite, above and beyond changes in fundamentals, were a significant factor behind the movement in high-yield credit spreads (Graph VI.12). The estimated price of credit risk, which peaked in late 2005, declined during much of 2006 and early 2007, only briefly interrupted by the May–June 2006 sell-off. The most recent available data indicate that the increase in high-yield spreads in late February and March 2007 was largely due to increases in the price of risk.

Soaring issuance of structured credit products

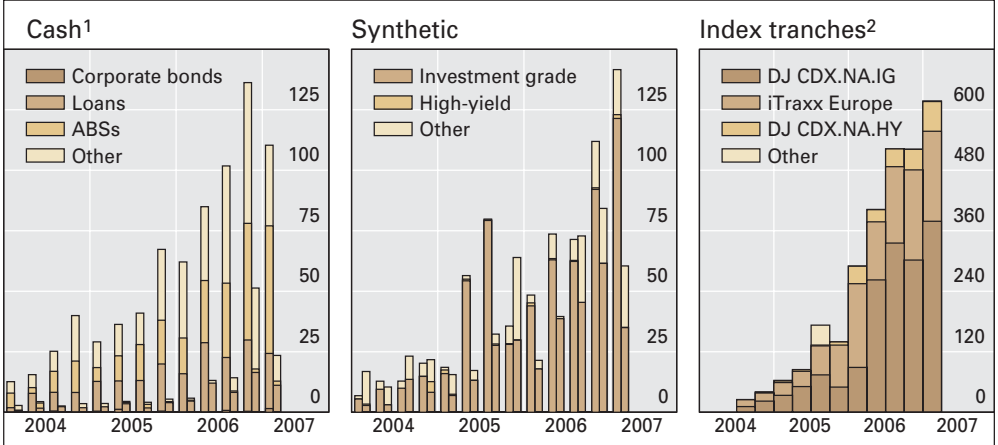
Record CDO issuance ...

The downward trend in high-yield credit spreads coincided with a period of robust issuance of structured credit products, causing some observers to raise the possibility that the growth in the CDO market since 2004 has contributed to spread compression. Global issuance of US dollar- and euro-denominated cash CDOs in 2006, at $470 billion, was the highest on record, with particularly strong activity in the fourth quarter (Graph VI.13). Similarly, issuance of synthetic CDOs (or CDOs of CDSs) was also much higher in 2006, at $524 billion, as was trading in CDS index tranches ($1,736 billion).

There are at least two channels through which the issuance of structured products may exert downward pressure on credit spreads. At a general level, issuance of cash CDOs enlarges the investor base – and hence demand – for corporate debt securities. Investors targeting highly rated securities can indirectly obtain exposure to non-investment grade corporate debt by purchasing the senior tranches of CDOs. In addition, issuers of synthetic CDOs and other structured credit products generate returns by selling default

CDO issuance

In billions of US dollars



In the left-hand and centre panels, the first bar of each pair refers to issuance in US dollars and the second to issuance in euros.

[1] Sum of cash tranche sizes by pricing date; includes only cash and hybrid structures. Hybrid portfolios consisting mainly of structured finance products different from cash CDOs are excluded. [2] Covers about 80% of index trade volume, according to CreditFlux Data+. iBoxx and Trac-x volumes have been counted as iTraxx Europe and DJ CDX.NA.IG volumes, respectively.

Sources: CreditFlux Data+; BIS calculations. Graph VI.13

protection in the CDS market, which can improve liquidity in both the derivatives and cash markets. Indeed, the supply of protection generated by structured issuance could be even larger than that suggested by the notional values of the CDOs. For example, the hedging of single-tranche CDOs, where only a particular interval of the default distribution is sold off to investors, requires that arrangers sell protection amounting to a multiple of the notional value in order to offset the high price sensitivity of these tranches. The multiples of more complex products, such as constant proportion portfolio insurance (CPPI) and constant proportion debt obligations (CPDOs) can be even higher.

... had little traceable impact on high-yield markets ...

While structured issuance can, in principle, exert downward pressure on spreads through either channel, the available evidence suggests that it may not have been a decisive factor in 2006, at least in the high-yield markets. Less than 1% of the total issuance of cash CDOs had bonds as the underlying collateral, and a large proportion of these were rated investment grade. Similarly, issuance of synthetic CDOs, index tranches and CPDOs related mainly to investment grade entities. While aggregate CDO issuance coincides with tighter high-yield CDS premia, simple regression analysis suggests that this relationship is weak and only marginally statistically significant at a monthly frequency.

... but visible effects in investment grade segments

That said, there does appear to be some evidence that the growth in synthetic CDO issuance may have contributed to the decoupling of spreads on investment grade bonds and their corresponding CDS premia (Graph VI.10, right-hand panel). From the end of the sell-off in credit markets in March 2005 to late February 2007, US dollar and euro investment grade CDS spreads tightened continuously, at a time of particularly high structured issuance. By contrast, investment grade asset swap spreads changed little overall.

A turn of the credit cycle?

With spreads near historical lows, credit markets were arguably vulnerable to a repricing. The episodes of market turbulence during the period under review may have reflected market participants' latent nervousness that the balance of risks tends to be skewed towards the downside when times are good.

Little concern about imminent turn of the credit cycle

In the near term, however, few market participants appear to be overly concerned about a sudden and widespread deterioration in credit quality. Speculative grade corporate default rates fell below 2% in 2005, and have remained near that level since, consistently coming in below rating agencies' forecasts (Graph VI.14). Even so, the fact that spreads on short- and medium-term instruments have narrowed more than those on longer-maturity debt does suggest that market participants generally expect default rates to rise.

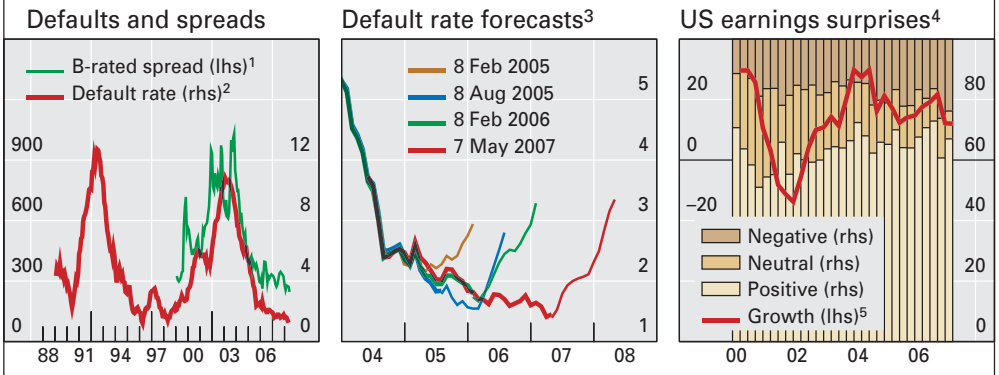
The trigger could be a slowdown in corporate profitability

A slowdown in corporate profitability could be one factor leading to a reassessment of credit risk. Although overall corporate profitability in the United States in 2006 was the strongest on record (see above), profit growth slowed markedly in late 2006 and early 2007. While positive surprises on earnings announcements again outnumbered negative ones in the fourth quarter, they did so by a much smaller margin than in previous quarters. Positive surprises rebounded somewhat in the first quarter of 2007, although this largely reflected lower expectations rather than a higher rate of profit growth.

Healthy corporate balance sheets could mitigate the effect

The impact of slowing corporate earnings on the overall default rate may, for a time, be mitigated by the healthy state of corporate balance sheets. Indeed, broad measures of corporate health suggest little cause for concern (Graph VI.15). In the aggregate, corporate leverage levels in the United States and Japan stayed well below those seen at the height of the dotcom boom, and have been falling in the euro area. Similarly, the ratio of liquid assets to total debt remained just below its recent peak in the United States, and continued its upward trend in Japan and the euro area. Finally, corporate profits as a

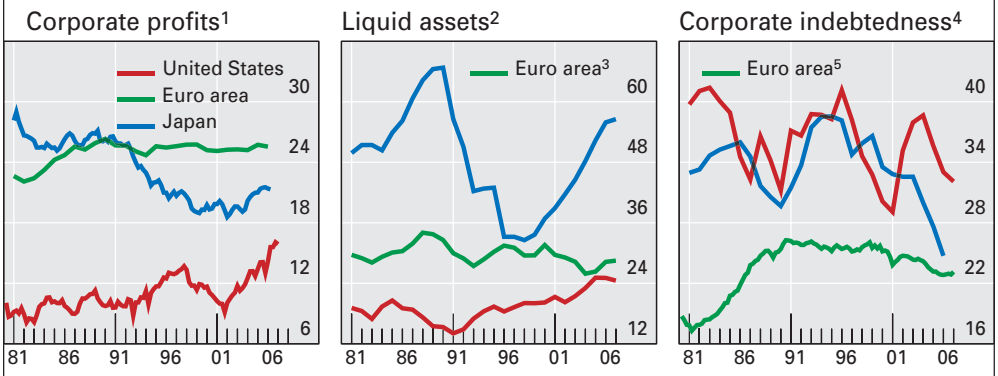
Default rates, spreads and earnings



[1] Merrill Lynch US dollar corporate bond indices; option-adjusted spreads over government bond yields, in basis points. [2] Global speculative grade historical default rate, in per cent. [3] Global speculative grade default rate, in per cent: the thin lines are one-year-ahead forecasts by Moody's at the time of the legend date; the thick lines refer to the historical default rate. [4] Companies in the S&P 500 Index; in per cent. [5] Share-weighted average annual growth rate in reported earnings.

Sources: Bloomberg; Merrill Lynch; Moody's Investors Service. Graph VI.14

Corporate balance sheet health



[1] Property and entrepreneurial income as a percentage of GDP; for the United States, corporate profits as a percentage of business GDP; for 2006, first three quarters for the euro area, first quarter for Japan. [2] Currency, deposits and securities other than shares as a percentage of total debt (loans and securities other than shares); yearly average for Japan and the United States; for the United States, includes marketable financial assets. [3] Weighted average of France and Germany up to 1988, and of France, Germany and Italy from 1989, based on 2000 GDP and PPP exchange rates; for 2006, first three quarters. [4] Debt of non-financial corporations, calculated as loans and securities other than shares, as a percentage of total assets. Total assets are calculated as financial assets plus financial net worth for France and Germany. [5] Weighted average of France and Germany based on 2000 GDP and PPP exchange rates; for 2006, first three quarters.

Sources: Bloomberg; national data. Graph VI.15

percentage of GDP were high in 2006. At least in the United States, the current situation appears quite different from that prior to the turning of the credit cycle in the late 1980s and late 1990s, when corporate profits were lower and leverage was somewhat higher than today.

Greater M&A and LBO event risk at individual firms

At first sight, the downward trend in corporate leverage appears to be at odds with the increasing volumes of M&A activity and other shareholder-friendly actions documented above (Graph VI.8). However, shareholder-friendly activity is still not particularly large relative to the corporate sector on a national accounts basis. Even in the United States, the total value of LBOs amounted to approximately 3% of the total market value of equity in 2006, and it was relatively widely spread across sectors.

That said, LBO activity can lead to a substantial rise in the indebtedness of individual firms, increasing the risks of large firm default and sectoral distress. The majority of recent M&A deals have been paid for in cash, often raised in debt markets. Equity-financed deals accounted for only 12% of the total announced deal value in 2006, down from 19% in 2004 and 26% in 2002. Cash-financed acquisitions tend to result in greater indebtedness than equity-financed deals. Figures from a major rating agency indicate that the average debt/cash flow ratio for companies acquired by private equity firms reached a record high of 5.4 in 2006 (see also Chapter VII). Losses to existing debt holders upon unanticipated changes in the capital structure have been high; according to some calculations, the five largest LBOs of public companies in 2006 resulted in mark to market losses of around $2 billion for the owners of the target companies' outstanding bonds.

Sooner or later the credit cycle will turn, and default rates will begin to rise. Strategies that earn handsome profits when spreads are low could

suddenly turn out to be riskier than anticipated. In particular, it is not clear whether the current level of spreads is high enough to compensate for a return to even modestly higher default rates. Calculations by an investment bank suggest that the current low level of credit spreads in the US dollar high-yield market would not have compensated investors for the actual defaults experienced since the mid-1970s by any cohort of five-year corporate bonds.

Strong demand for emerging market assets

A rally in emerging markets ...

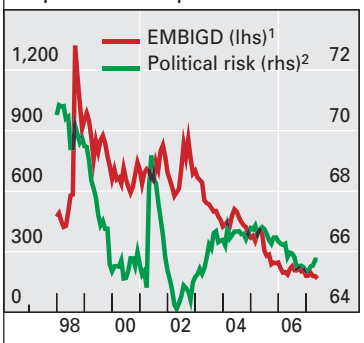
Asset prices in emerging markets followed a similar pattern to that in mature markets. Emerging equity markets, in particular, continued their unusually strong performance of previous years (see above). Spreads on emerging market external sovereign debt continued to narrow, albeit at a slower pace than in 2005, with the EMBI Global falling to new lows (Graph VI.16). Spreads on this debt fell below those on US corporate debt with the same rating. As in developed country credit markets, spreads widened only temporarily during the two sell-offs that occurred during the period under review. Yields on local currency debt rose sharply in the first half of 2006, but declined thereafter.

... was based on strong fundamentals ...

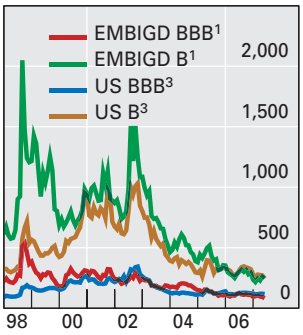
The strong performance of emerging market assets was underpinned by yet another year of vibrant economic performance. Emerging market economies continued to experience rapid growth, and many countries further improved their fiscal and balance of payments positions, contributing to limited issuance of external debt (see Chapter III). In addition, some countries continued their policy of replacing foreign currency debt with local currency bonds. At $6 billion, net issuance of international bonds by emerging market governments was higher than in the previous year ($5 billion), but remained far below the levels recorded in the late 1990s (close to $50 billion per year). Non-government debtors took advantage of the favourable financing conditions in

Emerging markets

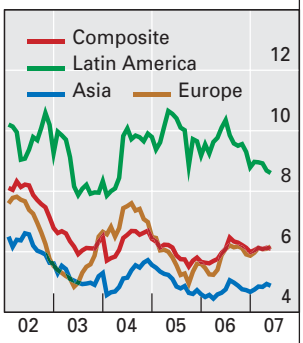
Spreads and political risk



Spreads by rating



Local bond markets[4]



[1] JPMorgan Chase EMBI Global Diversified (EMBIGD) sovereign stripped spreads over US Treasury yields, in basis points. [2] Calculated as the weighted average of the ICRG risk rating of the individual countries that make up the EMBIGD composite index, using JPMorgan Chase weights. [3] Merrill Lynch option-adjusted spreads over government bond yields; US dollar corporate bond indices, in basis points. [4] JPMorgan Chase Government Bond Index - Emerging Markets (GBI-EM) Broad yield; monthly averages, in per cent.

Sources: Datastream; International Country Risk Guide (ICRG); JPMorgan Chase; Merrill Lynch; BIS calculations. Graph VI.16

2006, with $130 billion in new issuance, almost four fifths of which was by financial institutions. Equity issuance also reached new highs, with several very large IPOs from the financial sector, primarily in China and Russia.

... and largely unaffected by political events

While isolated political and economic events also contributed to volatility, they had little lasting effect overall. For example, spreads on Ecuador's external debt soared from less than 500 basis points in the summer of 2006 to more than 1,000 basis points in January 2007, over concern about an Argentine-style debt restructuring, although they later retraced much of this. A military coup in Thailand and riots in Hungary led to a general widening of spreads in September 2006, but this reversed within days. In December 2006, the imposition of capital controls in Thailand to stem the appreciation of the baht led to a 15% drop in the Bangkok stock exchange on the day of the announcement, and a depreciation of the baht by 4% over the following days, but had little impact elsewhere. However, stock prices in Thailand recovered most of their losses over the next few months after the authorities exempted many transactions from the controls. A widespread nationalisation programme introduced by the Venezuelan government in early 2007 drove up credit spreads and led stocks to plummet, but had little effect on other markets. Similarly, a political crisis in Turkey around the same time had little impact on emerging markets as a whole. Despite these events, average political risk across 22 emerging markets, based on a widely used measure, declined noticeably in the first half of 2006 and remained stable thereafter, as increasing risks in some countries were offset by declining risks in others (Graph VI.16, left-hand panel).

Are emerging market assets going mainstream?

High-grade investors ...

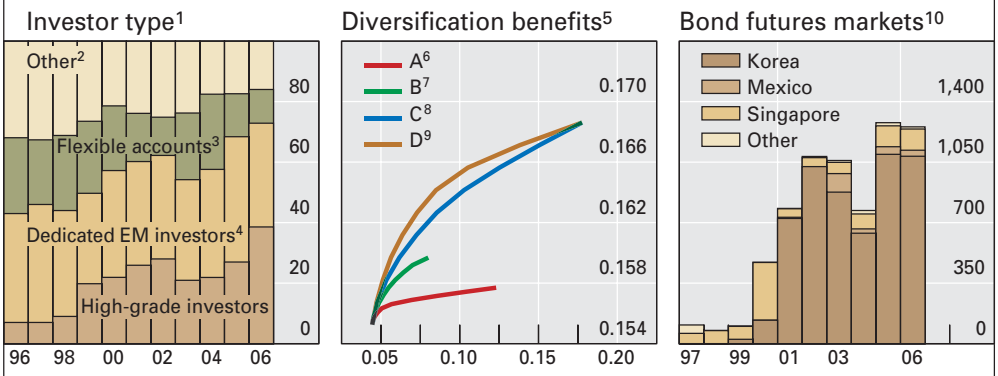
Investing in emerging market assets used to be the domain of specialised investors. This is no longer the case. According to one limited set of data, the participation of "high-grade" investors, or investors whose primary mandate is investments in highly rated assets, increased to just under 40% of client turnover in 2006, from 7% 10 years ago (Graph VI.17, left-hand panel). Specialist emerging market investors, such as dedicated mutual funds or specialised hedge funds, remain significant, although their strategy appears to have shifted from investing primarily in external sovereign debt to local currency assets.

... have been attracted by the benefits of diversification

High returns, and the perceived benefits of portfolio diversification, have led non-specialist investors to channel funds into emerging market assets. According to a standard portfolio model estimated over the period January 2002–March 2006 (admittedly a period of high returns), investing in US dollar-denominated sovereign emerging market bonds would have considerably improved the risk/return characteristics of a portfolio relative to a benchmark containing no emerging market investments (Graph VI.17, centre panel). On an ex post basis, adding emerging market equities and local currency debt would have shifted out the portfolio frontier even further.

While exposures to emerging markets could in principle increase the risk of sharp losses at times of stress, this was not the case during the two relatively mild sell-offs during the period under review. For example, a portfolio

Investment in emerging market assets



[1] JPMorgan Chase client trading volumes in emerging markets; annual average; as a percentage of the total. [2] Includes non-US financial institutions, private banking accounts, securities brokers and dealers, and other residual sectors. [3] Macro hedge funds and proprietary trading accounts. [4] Latin American investors, dedicated mutual and hedge funds. [5] Portfolio risk is plotted on the horizontal axis and portfolio return on the vertical axis. [6] Core assets only (GBI global traded total return index level in US dollars, JPMorgan Chase developed market high-yield market index level in US dollars and Morgan Stanley Capital Index World equity price). [7] A plus emerging market external debt (JPMorgan Chase cumulative total return index in US dollars). [8] B plus EMBI Global emerging market equities (Morgan Stanley Capital Index emerging market equity price). [9] C plus emerging market local currency bonds (GBI emerging market traded total return index level in US dollars). [10] Turnover of futures on local currency bonds; notional amounts, in billions of US dollars.

Sources: Datastream; JPMorgan Chase; BIS calculations. Graph VI.17

with a large proportion of emerging market assets would have performed worse than a similar portfolio of developed economy assets only during the sell-off in May–June 2006, in particular if it contained local currency bonds. However, the difference in performance between these portfolios would have disappeared within weeks of this episode as markets recovered. In February 2007, a higher share of emerging market investment would even have had a stabilising effect on the value of a portfolio.

While emerging market assets have clearly become more popular among institutional investors, it would be premature to consider them a truly "mainstream" asset class. One obstacle to greater participation by foreign investors is the presence of capital controls in many emerging market economies. Such restrictions might explain the much lower rates of participation by foreign investors in Asian local currency bond markets compared to those in central and eastern Europe or Latin America, where capital controls are less common. That said, foreign investors can to some extent obtain exposure even to restricted markets, indirectly through non-deliverable forwards (see Chapter III). These instruments are traded offshore and settled in foreign currency. Thus, they replicate the payoffs of local instruments without involving any transaction in the currency of the target market.

A second obstacle to more foreign investment, in particular in local currency bond markets, is the limited availability of instruments to hedge exchange rate and interest rate risk. While hedging currency movements over a few months is generally feasible, it is much more difficult to obtain protection against fluctuations in exchange rates over longer periods of time. The problem

is even more acute when it comes to trading interest rate risk. Only a few countries, namely Korea, Singapore and, to a lesser extent, Mexico, have a liquid market for bond futures (Graph VI.17, right-hand panel), although derivatives on short-term interest rates are more widely available. The absence of a liquid futures market could also detract from the development of a market for interest rate swaps, as swap dealers often use futures to hedge their positions. While far from comprehensive, the available BIS data show sizeable interest rate swap positions only in the Hong Kong dollar, although local sources of data indicate activity in several other currencies.

A third obstacle could be that the resilience of emerging market assets remains unproven under less benign global conditions. Since the default by Argentina in late 2001, there has been no major disruption in emerging markets. This is in sharp contrast with the experience of the 1980s and 1990s, when investors at times incurred heavy losses on their investments in these markets.

VII. The financial sector in the advanced industrial countries

Highlights

Overall, the financial sector in the advanced industrial countries registered a good performance in the period under review. Building on the strengths of recent years, financial firms continued to improve profitability against a backdrop of generally favourable economic conditions and strong capital market activity. However, compared to the recent past, the picture was less uniform across institutions. In certain segments, clear signs emerged that excessively optimistic expectations might have been boosting the recent growth in activity.

The more sizeable risks to financial stability appear to lie in the medium term. Given the strong position of balance sheets and current profit levels, financial systems are well positioned to cope with likely near-term sources of strain. The potentially more important sources of vulnerability are indirect and remain linked to broader macroeconomic developments. The implications of past risk-taking, in the form of exposures related to property investments and to the leveraged financing boom, will depend critically on the future path of interest rates and the economy as a whole. A turn in the credit cycle, or a more general worsening of macroeconomic conditions, including a weakening in household spending, remain key sources of longer-term vulnerability.

Financial globalisation has been a major structural trend with important implications for the organisation of banking firms, the nature of their business strategies and their risk profiles. Banking firms seeking growth through cross-border mergers and exposures outside their home markets have created a network of international capital flows which offers profit and diversification opportunities. At the same time, these strategies carry a number of risks that relate to the performance of both individual institutions and national economies. As a result, the internationalisation of banking also has implications for prudential structures and for the calibration of policy instruments.

The performance of financial firms

The sound overall performance of financial firms continued to be supported by largely the same factors that have driven the positive results over the past several years. A favourable macroeconomic environment has provided the foundation upon which firms have built, taking advantage of the increased scope for diversification through new risk transfer instruments, the rapid pace of innovation in financial markets, and continuing efforts to control costs. The sector's general optimism about the rewards from risk-taking has so far been supported by a benign credit environment and generous revenues from expansion into new areas. The financial system as a whole has been able to

deal effectively with problems that materialised with individual firms or specific markets, indicating the existence of comfortable cushions and a sufficient degree of flexibility to respond to shocks. However, patchy performance in various segments, coupled with a general trend towards higher leverage and more aggressive risk-taking, also suggests that those attributes could be put to more severe tests in the medium term.

Commercial banks

Commercial banks had a solid overall performance last year. Profits remained generally buoyant, helped by continuing growth in credit demand, low costs from defaults and low yield curve volatility (Table VII.1).

European banks grew stronger ...

European banks continued to pursue growth on the basis of fee-generating services to households and retail business clients. Credit growth remained quite strong overall, although its pace began to moderate in countries like Spain, where it has been the strongest for some time (Graph VII.1). Moreover, surveys point to a relaxation of credit standards vis-à-vis households and businesses. Competitive pressures and access to alternative sources of funding have combined to encourage less stringent covenants on loans, in particular for corporate borrowers engaged in mergers and acquisitions. The increased ability of lenders to diversify away credit risk through derivatives or securitisation, or in the fast-growing secondary loan market, may also have contributed to this slippage in standards. Nevertheless, banks in most countries do not appear to be facing difficulties in managing pressures from defaults. On the contrary, provisions are generally low and declining. In those cases where signs of deteriorating quality of loan portfolios did appear, such as in the United Kingdom and Spain, lenders were able to maintain healthy profit levels.

Profitability of major banks[1]

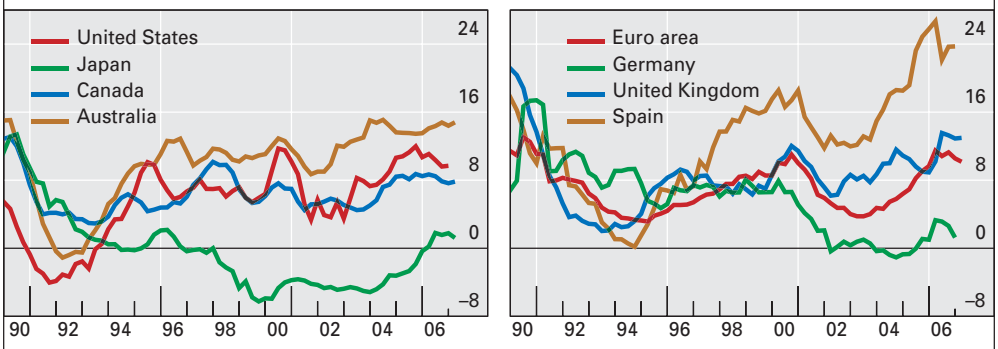
As a percentage of total average assets

	Pre-tax profits			Provisioning expenses			Net interest margin			Operating costs		
	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
United States (10)	1.84	1.89	1.83	0.19	0.17	0.18	2.78	2.65	2.51	3.46	3.25	3.10
Canada (5)	1.22	1.01	1.32	0.06	0.10	0.10	1.97	1.79	1.64	2.92	3.00	2.56
Japan (13)	0.34	0.73	0.94	0.55	0.14	0.09	0.95	0.85	0.97	1.70	1.29	1.37
Australia[2] (4)	1.48	1.39	1.61	0.18	0.13	0.13	2.09	1.68	1.96	2.18	1.62	1.64
United Kingdom[3] (9)	0.95	0.87	0.98	0.20	0.23	0.27	1.21	1.07	1.13	1.69	1.58	1.68
Switzerland (5)	0.73	0.68	0.84	–0.01	–0.02	–0.01	0.96	0.68	0.45	2.72	2.34	1.72
Sweden[2] (3)	0.91	0.90	1.03	0.02	0.01	0.01	0.99	0.88	0.76	1.21	1.07	1.12
Austria[2] (3)	0.78	0.85	1.64	0.34	0.31	0.38	1.83	1.64	1.90	2.41	2.09	2.40
Germany[4] (9)	0.13	0.37	0.47	0.22	0.08	0.09	0.72	0.63	0.66	1.41	1.15	1.19
France[3] (6)	0.65	0.67	0.86	0.08	0.05	0.06	0.86	0.83	0.81	1.49	1.94	1.43
Italy[2] (5)	0.87	1.05	1.15	0.41	0.24	0.32	1.99	1.70	2.14	2.83	2.11	2.54
Netherlands[2] (4)	0.50	0.59	0.55	0.08	0.05	0.10	1.26	1.10	1.14	1.51	1.30	1.45
Spain[2] (5)	0.89	1.18	1.51	0.24	0.23	0.34	1.47	1.55	1.78	1.78	1.80	2.12

[1] The values in parentheses indicate the number of banks included for 2006. [2] All values are IFRS. [3] For 2005 and 2006, IFRS; 2004 values are a mix of local GAAP and IFRS. [4] Values are a mix of IFRS and local GAAP.

Source: Fitch Ratings. Table VII.1

Credit growth[1]



[1] Private domestic credit; annual changes, in per cent.

Sources: IMF; national data. Graph VII.1

... and continued to consolidate

European banks continued to consolidate. The removal of actual and perceived obstacles to mergers in countries like Germany and Italy has encouraged deals, which in the case of Italy have been the single most important driver of bank share performance. The prospective cross-border merger involving some of Europe's largest banks is also likely to trigger further deals among competitors. However, for most of the period under review, acquiring banks were primarily focused on exploiting rapid growth opportunities by establishing a presence in countries that have recently acceded to the European Union and in emerging markets in south-eastern Europe.

Record profits in the United States together with signs of levelling-off

US banks remained healthy and profitable, but a few signs began to suggest a possible tapering-off of profit growth. Although the period under review saw the sixth consecutive year of record earnings, the average return on assets and equity fell slightly while overall profits seemed to decelerate in the second half of the year. This was mostly the result of the continued compression of interest margins and the slowdown in housing market activity and associated revenues from mortgage lending. The effect was more pronounced for smaller lenders, whereas larger banks were more successful in supplementing their income from a broader range of non-interest sources. Banks remained well capitalised but, although provisioning costs stayed at very low levels, non-performing loans and charge-offs edged up, especially in loan categories where growth had been strongest in recent years. More recently, lenders are reported to have tightened credit standards in their retail book, apparently in response to increased signs that debt levels might be stretching the balance sheets of higher-risk households (see Chapter II). At the same time, survey evidence suggests that terms on credit to businesses eased.

Stability in Japan

Japanese banks registered a second consecutive year of positive financial results, albeit not an improvement over the previous year's performance. Lower operating profits reflected the continuing pressure on margins and the persistently weak growth in credit demand. Having recovered a sense of stability on the domestic front, Japanese banks have been exploring opportunities to expand abroad, especially in Asia. The public sector continued to divest from its banking interests through privatisation and changes in the profile of state-owned lenders.

Investment banks

Record investment bank profits driven by ...

The period under review saw yet another year of record profits for investment banks. Strong drivers of revenue growth were the corporate advisory business, prime brokerage services and proprietary activities, including those associated with private equity deals. Higher profits were also supported in the near term by an increased appetite for risk among the major international houses.

... an M&A boom ...

It was also a record year for merger and acquisition (M&A) transactions, partly due to booming activity of private equity funds (see Chapter VI). In addition to receiving advisory fees, investment banks benefited from this activity in a variety of ways. Larger houses supported these deals by offering loan financing to the private equity acquirer, but also by participating in many cases as equity investors committing their own funds. Securities underwriting contributed significantly to income growth (Graph VII.2), although the business environment favoured larger houses with global operations, to the disadvantage of lower-tier investment banks.

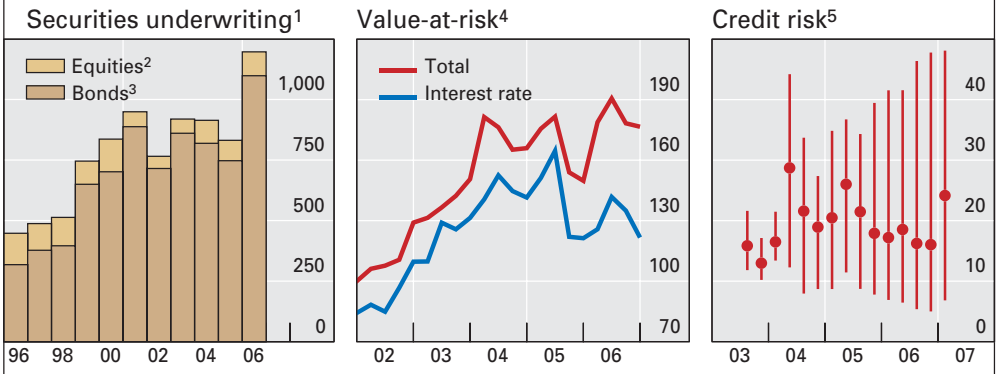
... and proprietary business ...

Proprietary trading and involvement in the structured finance business have been another important source of investment bank profits for some time. Major US houses registered record gains from such activities and were able to boost their return on equity beyond 20%. Universal banks relied more on the strength of their asset and wealth management franchise to achieve similar, albeit lower returns. Broader market liquidity and active trading by clients, including hedge funds, boosted the profits of those firms with strong capital markets functions.

... go together with higher risk-taking

Higher profits have been associated with higher risk-taking. Disclosed figures of value-at-risk (VaR) for major investment banks have almost doubled since 2002 (Graph VII.2). Viewed against the backdrop of a low-volatility environment, this increase indicates an intensifying propensity to take on risk, although the relationship of VaR to equity has remained relatively

Indicators of investment banks' activity and risk



[1] In billions of US dollars. [2] Initial public offerings in Germany, Japan, the United Kingdom and the United States. [3] Completed international debt securities issuance. [4] Market capitalisation-weighted average of eight large institutions' total and interest rate VaR relative to their total VaR in the fourth quarter of 2001; in per cent. [5] CDS spreads for 12 large institutions, in basis points. Lines and dots indicate the range of and average unweighted CDS spreads respectively.

Sources: Dealogic; Markit; Thomson Financial; BIS. Graph VII.2

constant. Similarly, the credit risk associated with many of these firms' outstanding bonds, as measured by the premia on credit default swaps (CDSs), increased substantially in 2007, indicating counterparties' concern about the potential risks in their investment strategy in the event of a turn in market conditions.

Hedge funds

Continuing trends among hedge funds:

Developments in the hedge fund sector did not deviate significantly from the patterns established in the previous year. Continuing moderate investment performance, punctuated by the high-profile failure of a large fund, went hand in hand with a slowdown in the rate of growth of the sector. At the same time, the trend towards greater institutionalisation persisted, allied with continuing calls for greater transparency in funds' activities.

moderation in returns and inflows ...

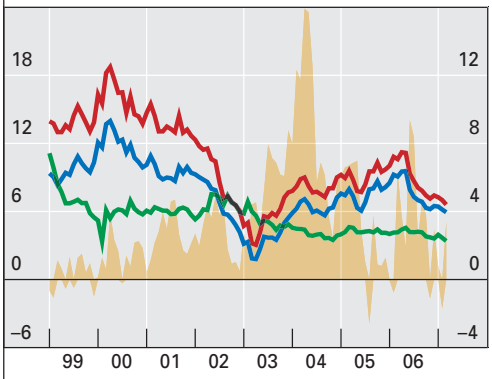
Overall, average investment performance remained subdued during the period under review (Graph VII.3, left-hand panel). Many funds experienced strains during the second quarter of 2006, and while performance rebounded slightly during the fourth quarter, returns suffered again in the subsequent one. Net inflows remained volatile during most of the period, before turning moderately negative towards the end of 2006. Investor interest in the sector appears to have levelled off over the past couple of years, and closures have outnumbered new funds launched.

... more risk-taking ...

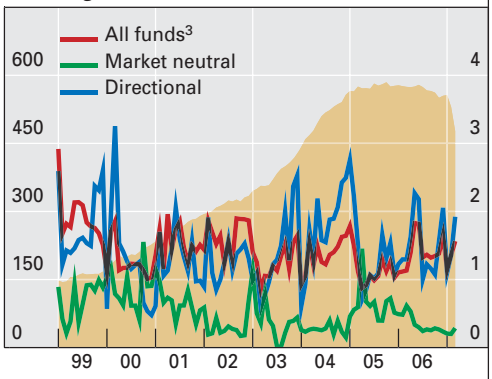
The search for yield opportunities has attracted hedge fund activity to many of the booming markets for risk transfer, most notably those related to credit risk. Hedge funds have become key suppliers of liquidity in these markets through active trading, while their willingness to take on risk has supported the hedging operations of those institutions that are more focused on originating and servicing the underlying assets. Coming under greater

Hedge fund size, performance and leverage

Returns[1] and inflows



Leverage measures[2] and assets



The shaded areas represent hedge fund flows and stocks respectively, indicated by the left-hand scales, in billions of US dollars.

[1] Average annualised excess return (36-month moving average), in per cent, across hedge funds; relative to three-month US Treasury bill yields. [2] Based on the regression methodology described in P McGuire, E Remolona and K Tsatsaronis, "Time-varying exposures and leverage in hedge funds", *BIS Quarterly Review*, March 2005. [3] Includes all available styles of hedge fund families weighted by assets under management.

Sources: Hedge Fund Research, Inc; BIS calculations. Graph VII.3

competitive pressure, and making use of favourable funding conditions, the sector has opted for somewhat higher leverage levels compared to the recent past, in an effort to boost returns (Graph VII.3, right-hand panel).

The combination of an opportunistic investment style and reliance on leverage has prompted concerns among some market observers about hedge funds' ability to withstand a more challenging market environment. In fact, the failure of a large fund due to outsize bets in the natural gas market served as a reminder of the potential fragility of hedge funds' financial strategy. In that particular event, however, other market participants were ready to contribute to the smooth unwinding of these positions, and the fund's difficulties did not have repercussions in the broader market.

... and pressure to improve disclosures

An important change in the sector has been the trend towards greater transparency. Some of the larger fund companies have sought stock exchange listing or have disclosed information about their operations in the process of issuing public bonds. Rating agencies are also prepared to issue counterparty ratings for hedge funds. On the official side, pressure continues towards more formal arrangements for the oversight of the sector.

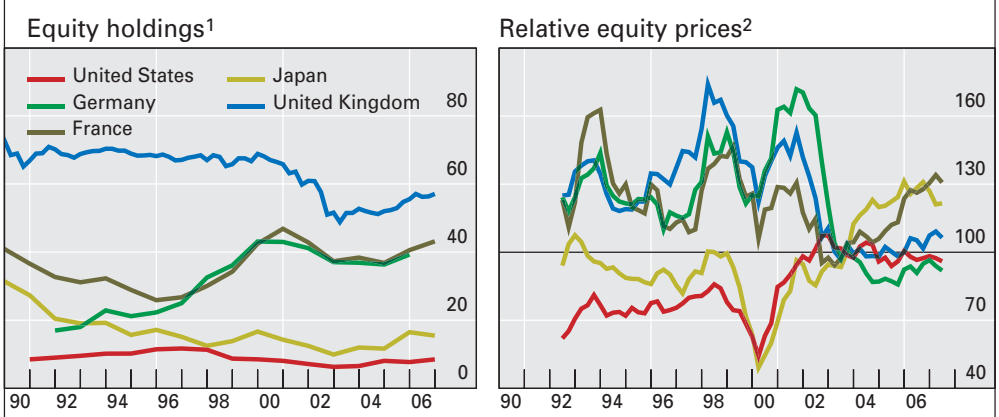
Insurance companies

The fortunes of insurance companies improved during the period under review. More favourable market conditions shored up balance sheets in all sectors, while the non-life sector made a dramatic recovery from the challenging environment of the previous year.

Life insurers remained strong ...

Healthy equity market performance and somewhat higher interest rates improved life insurers' balance sheets and boosted demand for their policies (Graph VII.4). In the United States, individual variable annuity sales continued to grow strongly, thanks to a rising stock market and the increase in the number of retirees. In France, life insurance premium growth was driven by a surge in demand for unit-linked policies, while growth in the UK annuity market was supported by strong demand by pension funds.

Insurance companies: equity holdings and performance



[1] As a percentage of total financial assets. For Japan, including pension funds. [2] Ratio to broad equity index; quarterly averages, 2003 = 100.

Sources: Datastream; National Association of Insurance Commissioners; national data. Graph VII.4

By contrast, the recovery in premium growth in Japan halted, as the increased demand for individual annuities failed to offset the decline in individual life insurance premiums.

... despite low yields

Relatively low long-term yields represent a challenge to life insurers, especially in the presence of minimum guaranteed returns on their policies. Flat yield curves do not encourage demand for savings-type products, while low long-term interest rates raise the cost of their funding. This increases companies' dependence on sales of investment-type products. Given the large financial market exposure of life insurers, a potential turn in the credit cycle and adverse global macroeconomic developments could pose risks to profitability.

Non-life insurers recovered ...

Non-life companies recovered well from a very costly 2005, when claims had surged as a result of a series of natural catastrophes. Most US and Bermudian property and casualty insurers and reinsurers registered a remarkable turnaround, as firmer premium rates, a low level of claims and strong investment performance combined to boost income and restore profitability. In contrast, premium growth for European non-life insurers was more modest, while Japanese non-life insurers exhibited lower net profits owing to higher typhoon-related claims and investment losses.

... but risks are expected to remain high

Despite the relatively benign 2006 tropical storm season, the coming years are expected to witness a higher level of hurricane-related losses in the United States than the pre-2005 average. The increased risk raised premium rates and limited global reinsurance capacity in 2006. In order to overcome capacity limits and withstand large-scale natural disasters more easily, non-life insurers are likely to continue building up their capital buffers.

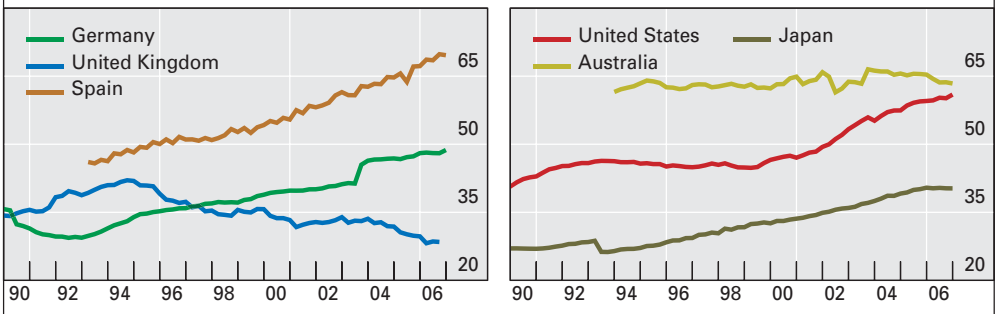
Vulnerabilities

The main sources of financial system risk may be rooted in possible excesses over the past years of growth, but their effects may only materialise over the medium term. Elevated exposures to real estate, an increase in leveraged finance, including in the booming private equity market, and a worsening in the credit cycle are important areas of vulnerability. In the near term, the continuing good performance of the financial sector augurs well for the system's ability to withstand likely shocks. Over the longer run, the severity of strains will remain critically connected to future macroeconomic developments.

Property exposures

The possibility of a slump in real estate markets remains a significant risk to financial stability. Over the past several years, real estate financing has been a major activity and an important source of profits for banks in many countries (Graph VII.5). The boom in the markets for securitised assets related to property financing has spread the direct and indirect exposures to property risk widely across the financial system. Residential property investments account for most of the growth in exposures. Commercial property markets are arguably less exuberant, although markets for related investments are susceptible to contagion from their residential counterparts (see Chapter VI).

Banks' real estate exposure[1]



[1] Ratio of banks' real estate-related lending to total lending. Definitions vary across countries.

Source: National data. Graph VII.5

Residential real estate

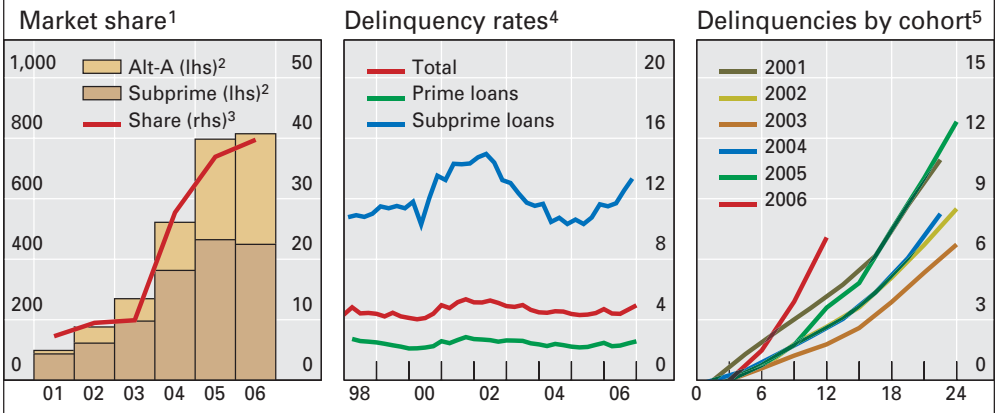
Buoyant housing markets ...

The buoyancy of residential property prices in many jurisdictions has been supported to a large extent by low interest rates and accompanied by a rapid expansion of mortgage credit to households. Intensified mortgage activity has also been an important source of fee income for the originating institutions. Moreover, a favourable economic environment has meant that credit costs associated with overall mortgage defaults have stayed at historically low levels, further flattering the bottom line of banks and other mortgage holders. The low incidence of losses has also supported the deepening of structured finance markets for residential mortgages by stimulating the interest of portfolio investors in securities linked to the cash flows from such loans.

... and laxer standards ...

Greater securitisation has brought about a broader dispersion of exposures among market participants but has also distorted the incentives of mortgage originators, principally in the United States. By placing greater emphasis on income that is directly linked to the volume of originated loans,

US mortgage market



[1] Data refer to the issuance of residential mortgage-backed securities (MBSs). [2] In billions of US dollars. [3] MBS issuance backed by subprime and Alt-A loans as a percentage of total MBS issuance. [4] Delinquencies as a percentage of total residential mortgage loans outstanding; sum of 30-, 60- and 90-day past due loans, by type. [5] Subprime mortgage delinquency rates (60+ days) by cohort year, in per cent. Months of seasoning are plotted on the horizontal axis.

Sources: Bloomberg; LoanPerformance; UBS, *Mortgage Strategist*. Graph VII.6

securitisation has often led to an erosion of credit standards. In addition, mounting competitive pressures and extrapolative expectations about house price growth have arguably led to an underpricing of mortgage risk, a shift towards floating rate contracts designed to keep servicing costs low early in the life of the loan, and a boom in the issuance of the riskier types of mortgage (Graph VII.6, left-hand panel). As a result, moderate increases in the level of interest rates have affected a larger fraction of outstanding mortgages than in the past. Delinquencies have risen, especially among the most recent loan vintages to high-risk categories of borrowers whose access to financing had been severely restricted in the past (Graph VII.6, right-hand panel).

... created risks

Future developments in interest rates, house prices and overall business conditions will play a key role in mitigating or exacerbating these risks. Interest rates will influence the cost of servicing existing mortgage debt and affect the demand for new loans, while the state of the business cycle will impact household incomes (see Chapter II). Forced sales are likely to compound the unsold housing stock, putting further downward pressure on house prices.

Commercial real estate

In most countries, commercial real estate markets appear to be in an upward cyclical phase. Absorption of new properties has been strong, vacancy rates

Commercial property prices[1]

	Nominal change[2]			Level[3]	*Memo: Office vacancy rates*[4]		
	1997–2005	2005	2006	2006	*2004*	*2005*	*2006*
United States	2.9	12.0	12.3	42.3	*16.0*	*13.9*	*12.6*
Japan	–7.9	10.5	19.6	19.2	*6.0*	*3.9*	*3.0*
Germany	–1.5	–4.9	–5.2	36.2	*11.4*	*11.6*	*9.9*
United Kingdom	3.8	13.4	17.2	69.4	*9.8*	*7.3*	*5.7*
France	4.2	6.2	15.0	71.5	*6.6*	*6.5*	*5.1*
Canada	2.8	9.1	13.2	59.5	*14.4*	*12.1*	*10.5*
Spain	1.4[5]	5.0	7.6	98.6	*8.4*	*6.1*	*3.4*
Netherlands	2.5	0.1	4.3	80.9	*12.0*	*13.6*	*11.7*
Australia	4.2	10.9	2.6	54.5	*11.5*	*7.2*	*8.3*
Switzerland	1.2	2.1	0.0	61.0	*9.0*	*11.5*	*10.9*
Sweden	2.8	5.6	9.5	48.5	*17.6*	*16.8*	*15.4*
Norway	1.6	6.3	10.8	63.8	*11.0*	*9.0*	*8.2*
Denmark	7.8	19.8	9.0	100.0	*10.3*	*7.9*	*5.0*
Finland	4.2	11.9	12.0	80.3	*9.5*	*9.0*	*8.1*
Ireland	12.0	16.7	21.7	100.0	*16.7*	*15.2*	*12.0*

[1] For Australia and Denmark, prime property in major cities; for Japan, commercial land prices for six large city areas. [2] Annual changes, in per cent. [3] Peak period of inflation-adjusted commercial property prices = 100. [4] Immediately vacant office floor space (including sublettings) in all completed buildings within a market, as a percentage of the total stock. For Switzerland and the United States, nationwide; for Australia, France, Germany, the Netherlands and Spain, average of major cities; for other countries, capital city. [5] Between 2001 and 2005.

Sources: Catella Property Consultants; CB Richard Ellis; Investment Property Databank Ltd; Japan Real Estate Institute; Jones Lang LaSalle; National Council of Real Estate Investment Fiduciaries; Sadolin & Albæk; Wüest & Partner. Table VII.2

have been falling from a high level, and prices have been rebounding from generally low levels (Table VII.2).

Commercial property exposures have risen ...

Commercial bank lending to the sector has been growing sharply in a number of countries, in some cases triggering concern among regulators. US banks have nearly doubled their commercial property loans over the last five years, with such loans making up 14% of total assets in September 2006. Loan growth has been mostly concentrated in small and medium-sized banks, where commercial real estate lending amounts to more than three times their risk-weighted capital. In Japan, bank regulators have cautioned lenders against indiscriminately increasing their exposures to commercial property.

... but markets remain resilient so far

The publicly traded segments of the market have been performing exceedingly strongly. Annual market rates of return on equity stakes in commercial real estate investment vehicles have been in the range of 15–20% in the past three years, making the asset class a favourite among investors searching for higher yields. However, returns seem to be driven mainly by capital gains as rental yields have remained steady or even declined in some markets, such as the United Kingdom and the United States. This raises the possibility that a worsening of the strains in the markets for securitised residential mortgages could create ripple effects in traded markets for commercial real estate investments.

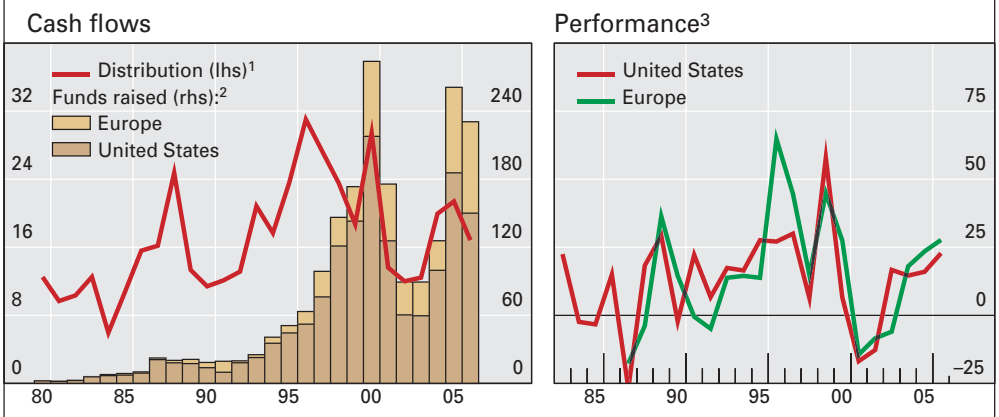
Leveraged financing

A feature of financial sector activity over the past several years has been a greater reliance on leverage to enhance investment returns. Two manifestations of this feature have been the boom in the activity of private equity funds and the gradual trend towards more highly leveraged strategies among hedge funds. In both cases, the incidence of higher leverage has been somewhat concentrated on a relatively small number of players so far, but in an environment of laxer credit standards there is a risk of it becoming more generalised.

The private equity boom intensified ...

The boom in private equity intensified in the past year. There was a further increase in the number of private equity deals completed and, importantly, in

Private equity: cash flows and performance



[1] As a percentage of total size (net asset value). [2] In billions of US dollars. [3] Internal rate of return (one-year horizon); size-weighted average for all types of fund, in per cent.

Source: Thomson Financial. Graph VII.7

the average size of transactions (see Chapter VI). Private equity funds targeted larger companies, often pooling their resources in consortia. Increased activity was matched by enhanced performance (Graph VII.7), although arguably the latter largely reflected previous investment decisions. As a result, funds were able to raise near record sums of capital from investors seeking higher yields, including many pension funds and funds of hedge funds. Few of the larger funds have issued, or are interested in issuing, public equity in order to gain access to a permanent source of capital.

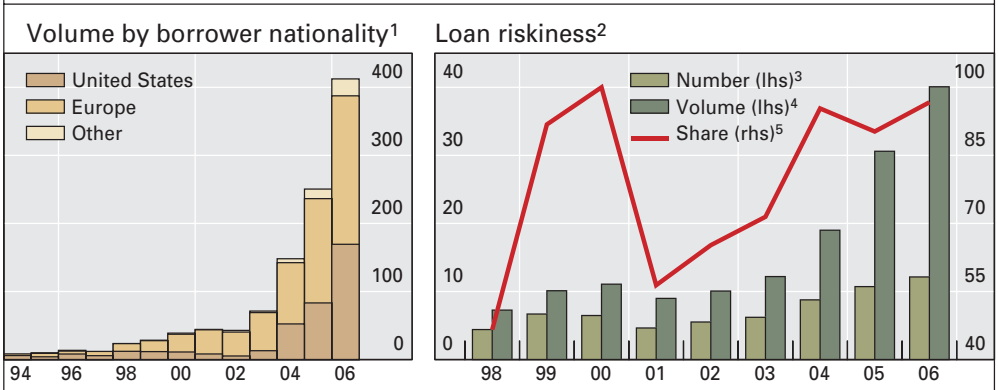
... fuelled by easy credit

Easy financing has played a key role in the private equity boom. Funds have issued record levels of debt to finance these deals. The volume of international syndicated loans related to leveraged buyouts (LBOs) increased by 70% last year. While the strongest growth was registered in the United States, the majority of loans were granted to European borrowers (Graph VII.8, left-hand panel). Reported leverage in such transactions has been trending upwards, as funds have been able to access financing on easier terms, including through contracts with covenants that are considerably less restrictive for the borrower. Together, these factors have led to a surge in speculative grade loans, which account for 90% of all LBO loans arranged over the last two years (Graph VII.8, right-hand panel).

Higher leverage and ...

The levels of leverage employed in private equity transactions have raised questions about their longer-term sustainability. Acquired companies' capital structures are altered through so-called "leveraged recapitalisations", which flatter the acquirer's income at the expense of the target's equity. This is a key component of funds' financial strategy and can partly account for their strong performance. However, the strategy depends on the availability of cheap funding, and the financial health of the acquired companies (and associated debt) would be the most vulnerable in the event of a worsening in the credit or business environment. While the releveraging appears to be largely confined to the targeted companies (see Chapter VI), there are concerns that expanding LBO activity will create pressures for companies to increase debt levels more generally, either as a defence against being

LBO loan size and risk



[1] Issuance, in billions of US dollars. [2] Loans with ratings below BB. [3] In hundreds. [4] In tens of billions of US dollars. [5] As a percentage of all rated LBO loans.

Source: Dealogic Loanware. Graph VII.8

taken over or in an effort to raise the return on equity to match that of private equity targets.

... opaqueness increase overall risk

Another concern is the relative opacity of the companies that have been taken private. Reduced disclosure requirements for companies that are not listed in public markets restrict public scrutiny of their management, while the growing size of the acquisitions puts a premium on the adequacy of governance structures in private companies.

Similar worries relate to the activities of hedge funds. Higher levels of leverage (Graph VII.3) combined with relative opaqueness have raised concerns that any future problems in the sector could spread widely across the financial system. Counterparties may have underestimated the riskiness of individual funds and the overall fragility of markets where the funds are active.

The credit cycle

Given the key role that a benign credit environment has been playing in boosting the performance of the financial sector over the past years, a turn in the credit cycle represents a significant risk to its outlook. Investment strategies that are predicated on continuing low spreads and rising asset prices are critically exposed to an increased incidence of defaults. The way the credit cycle interacts with overall macroeconomic conditions will determine the challenges to financial stability over the medium term.

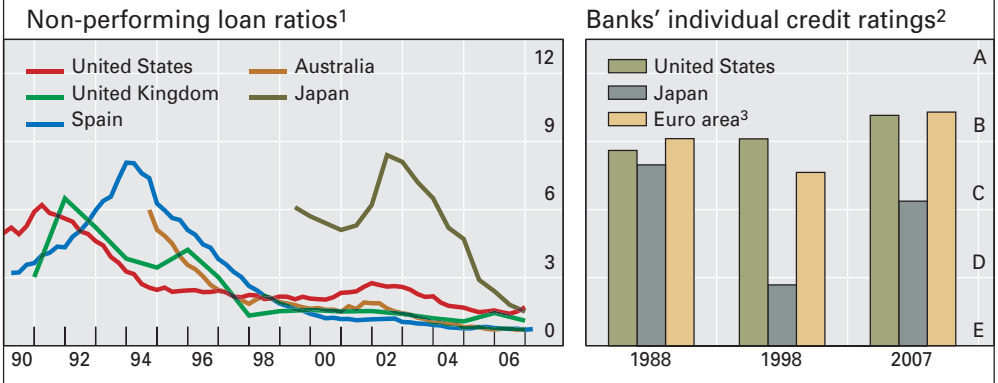
Benign credit conditions ...

Low and declining credit costs have been a major feature of financial firms' performance. The level of non-performing loans in bank portfolios has been at historical lows in many countries (Graph VII.9) and, coupled with low provisioning, has contributed to banks' high profitability. Together with low interest rates, the benign credit environment has supported the supply of funding that has been the driving force behind the buoyancy of structured credit product markets and leveraged financing activity.

... may have been exceptional

In many respects, these conditions could be characterised as exceptional from the perspective of recent business cycle experience. The long period of

Indicators of banking system health



[1] As a percentage of total loans; definitions and coverage differ across countries. [2] Average of major banks for which ratings are available. The ratings assess the banks' strength assuming no external support. [3] For 1988 and 1998, German banks only.

Sources: Fitch Ratings; national data. Graph VII.9

economic growth that started in the mid-1990s was interrupted only briefly by the relatively mild slowdown in the early part of this decade following the bursting of the technology bubble. During this episode, the financial system was able to deal effectively with a spate of corporate defaults thanks to growing demand for credit by households and the beneficial impact of strengthened credit risk transfer mechanisms.

Dealing with higher credit risk ...

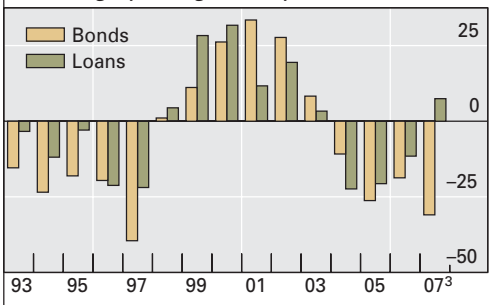
A turn in the credit cycle is arguably within the expectations of market observers, although its timing would be hard to predict. Signs of strain in housing finance markets have multiplied, primarily in the United States, and household indebtedness remains a concern in many jurisdictions as retail loan delinquencies have risen. While corporate defaults are still very low (see Chapter VI), the sustainability of higher debt levels would in some cases be at risk in the event of a worsening of business conditions or a less accommodating supply of credit.

... depends on ex ante discipline

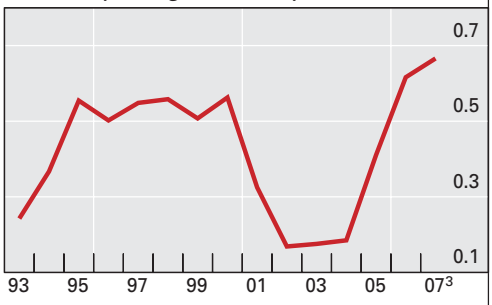
A general question regarding the ability of banks to weather potential strains from a turn in the cycle, possibly associated with a broader slowdown in economic activity, relates to the discipline they have shown in their lending standards. A favourable environment has encouraged more aggressive lending practices in some segments, such as mortgages to high-risk borrowers. More generally, the risk sensitivity of loan pricing appears to have increased in recent years. Syndicated loan spreads appear to have widened compared to bond spreads over the past year and to have become more sensitive to credit risk (Graph VII.10). This is a positive sign, although the stock of richly priced debt accumulated over the earlier part of the decade may become a source of risk to lenders' portfolios as these loans mature. Dealing with higher default rates in a changing environment may create incentives for some form of forbearance with respect to existing borrowers, further weakening the asset quality of lenders and curtailing the supply of new credits.

Pricing of risk in syndicated loan and bond markets

Average pricing discrepancies[1]



Relative pricing sensitivity[2]



[1] Facility size-weighted averages of discrepancies (in basis points) between actual (bond or loan) spreads and those implied by a model incorporating short-term interest rates, rating, time to maturity, guarantees, collateral, currency risk and size of facility. A negative number indicates that market spreads are lower than model-implied spreads. [2] Time-varying relative sensitivity of loan and bond prices to credit risk, estimated as the regression coefficient of loan rates on the yield index for corporate bonds of the same rating. Other variables include the size and maturity of the loan facility. A value of 0.5 implies that the difference in spreads between two facilities, one with a lower rating than the other, is half as great for loans as it is for bonds. [3] First quarter.

Sources: Dealogic; national data; BIS calculations. Graph VII.10

The internationalisation of banking

The growth in international banking activity has been a major structural trend in industrial economies for the last few decades. Initially, banks' international expansion mainly took the form of cross-border business. More recently, though, banks have increasingly established a direct presence in foreign jurisdictions. This trend has brought a number of benefits to both exporters and importers of financial services in the form of greater diversification, access to broader sources of funds and transfer of know-how. At the same time, however, it has presented a number of policy challenges for both home and host authorities in terms of how to assess and address financial sector risks and in terms of overall macroeconomic management.

Trends and patterns

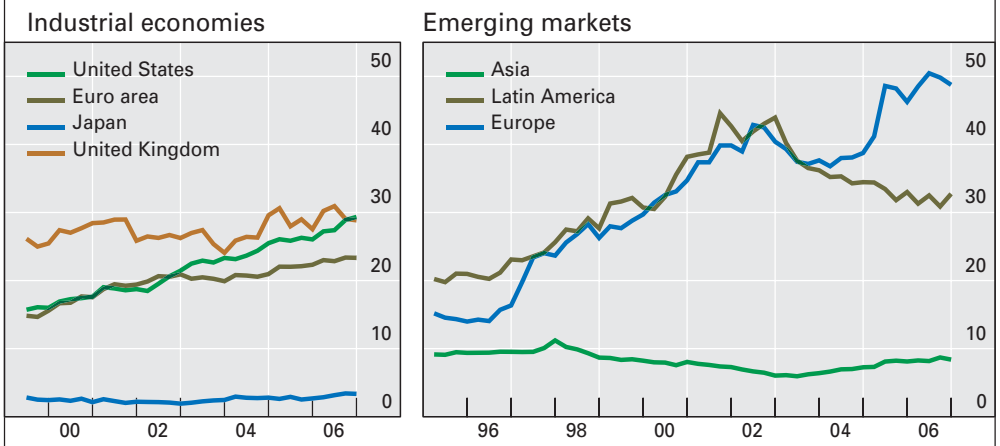
Growing internationalisation of banking ...

The international component of banks' activities has been growing steadily over the past 30 years. International claims of banks located in industrial economies rose at an average annual rate of 11.5% between 1977 and 2006. Over the past 10 years the pace has accelerated, exceeding 18% in the most recent year. Measured against economic activity, these claims have quintupled since 1980, reaching the equivalent of 50% of world GDP by 2006. The rate of growth has not been uniform, with the data showing pronounced cycles in activity. However, the current pace of growth has only been exceeded twice since the mid-1970s.

... driven by general economic trends ...

This progressive internationalisation has been driven to a large extent by the factors that have supported the general globalisation of business and trade. Financing the needs of booming cross-border economic activity and following banks' traditional customers in their international ventures have been important motivations for the development of international banking activity. Moreover, greater capital account liberalisation has allowed borrowers to receive funding

Foreign banks' participation in national lending markets[1]



[1] By residence of borrower. Foreign credit (sum of cross-border credit and local credit in local currency by foreign banks) as a share of total lending to non-bank borrowers.

Sources: IMF; national data; BIS. Graph VII.11

through foreign-based intermediaries. In many national markets, foreign-headquartered banks contribute a large and increasing share of total credit to non-bank borrowers, either directly from abroad or through their local offices (Graph VII.11). Among the major industrial economies, foreign banks account for a higher share of total credit in the United States, the United Kingdom and the euro area than in Japan. In emerging market economies, where privatisation and consolidation have altered the banking landscape, foreign bank participation has risen markedly in Latin America and Europe, albeit with substantial differences between individual countries.

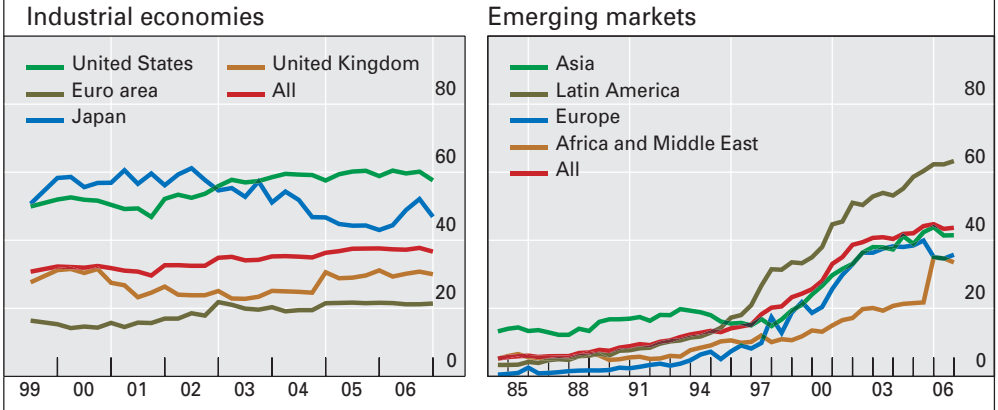
... and specific structural factors

In addition, a number of structural factors, more specific to the financial industry, have elevated international expansion to an independent objective of banking firms. Advances in communications and computing technology and innovations in financial markets, as well as advances in the measurement and management of financial risk, have helped many banks extend the scope and scale of their business. These developments have facilitated the increase in international activities by lowering their cost. At the same time, as the limits to domestic growth were being reached because of declining returns on investment and anti-monopoly regulations, international expansion presented the most promising avenue for those institutions seeking balance sheet growth.

Patterns include ...

It is not easy to describe global patterns in banking internationalisation. Experiences differ across countries and banks, owing partly to the influence of historical and institutional factors, and partly to differences in the underlying structure and development of the respective economies. Nevertheless, it is useful to review some broad characteristics of the internationalisation process. These relate to the choice between establishing a local presence abroad and providing banking services across borders, the associated patterns of funding and lending in local currency, and the growing size of the interbank markets, together with the role of banking centres in channelling international flows.

Local claims in host countries[1]



[1] By residence of borrower. Foreign banks' local claims in local currency as a percentage of all foreign banks' claims.

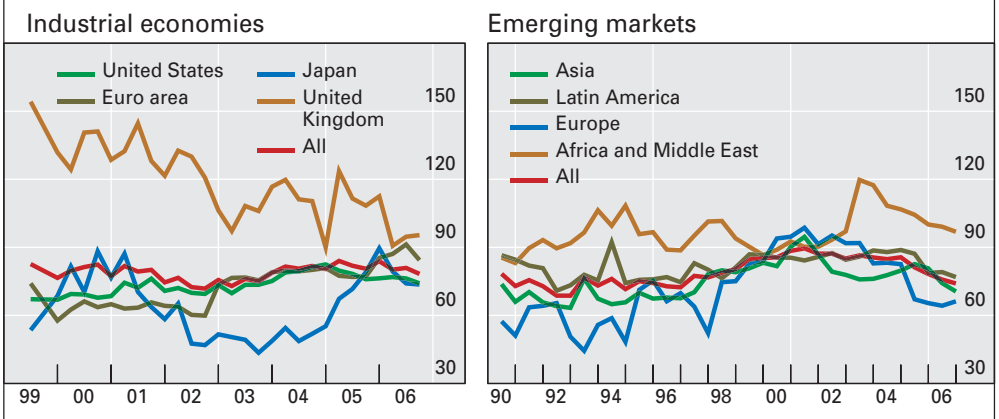
Source: BIS. Graph VII.12

An important aspect of the international activities of banks is whether they are conducted through local offices in the foreign jurisdiction or cross-border from the home office. The relative importance of international credit channelled through local offices varies significantly across countries and over time. In the late 1990s, international banks' lending through local offices accounted for about one quarter of claims vis-à-vis borrowers abroad (Graph VII.12). There was, however, considerable diversity depending on the country of the borrower. Foreign banks tended to favour a local presence in the United States and Japan, while they seemed to opt for cross-border lending within the euro area. The diversity across emerging market economies was much less pronounced.

... a shift towards local presence ...

In most regions, there has been a consistent upward trend in favour of local presence. Among advanced industrial economies this has been particularly evident in the United States, where lending through local offices has risen to about 60% of total international claims. By contrast, despite the introduction of the single currency, there has been little discernible increase in cross-border establishment of banks within the euro area. The growing importance of local presence has been most pronounced among emerging market economies. Over the course of the current decade, the share of claims channelled through local offices has grown to more than 40% of the total. Financial sector liberalisation and privatisations, in many cases in the aftermath of financial crises, have facilitated the opening of branches or the acquisition of local banks. Even so, the aggregates conceal considerable variation across individual countries, owing to idiosyncratic factors. During the past decade, foreign bank ownership has risen most notably in the Americas and among emerging and transition economies in Europe, and less so in Asia, Africa and the Middle East. This reflects a broader trend whereby an increasing fraction of mergers and acquisitions in the financial industry are cross-border, both in industrial and in emerging market economies. As a result, a number of banking systems are now effectively foreign-owned, as in New Zealand, Mexico and some central and eastern European countries.

Funding of local claims[1]



[1] By residence of borrower. Foreign banks' local liabilities in local currency as a percentage of their local claims in local currency.

Source: BIS. Graph VII.13

... increased reliance on local funding ...

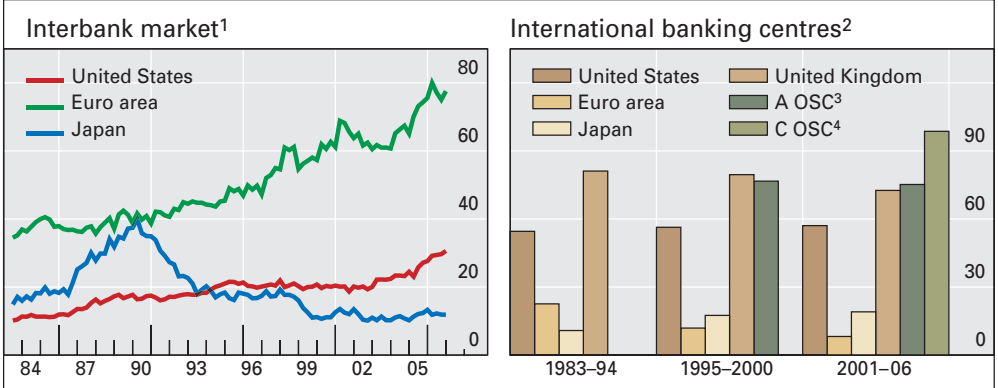
The shift from cross-border banking towards the creation of international banking organisations can be seen in the extent to which their local claims are locally funded. Foreign banks increasingly serve foreign markets by having their offices raise deposits locally, substituting for cross-border liabilities or local liabilities in foreign currency. Local funding in industrial economies amounts on average to about 80% of local claims in local currency. While local offices in the United Kingdom have tended to overfund local sterling lending with local sterling deposits, the opposite has been the case for banking offices in Japan. In emerging market economies, an upward trend in local funding could be discerned during the late 1990s (Graph VII.13). This trend was especially evident in Europe and Asia, perhaps in response to vulnerabilities exposed during the Asian crisis. It has since reversed along with the incidence of currency crises. A strategy of balanced increases in local assets and liabilities may reflect a number of motivations, such as more emphasis on retail banking (offering mortgages and credit cards to local depositors) or reduced vulnerability to currency mismatches and transfer risk. Local assets and liabilities will tend to increase in parallel, whether foreign banks grow their local operations organically or engage in cross-border acquisitions of banks with an existing depositor base.

... growing interbank activity ...

Exposures to other banks represent the lion's share of international bank assets and liabilities, accounting for over 60% of the total. The interbank segment of the international banking market has steadily expanded in most countries, both in absolute volume and relative to domestic monetary aggregates (Graph VII.14, left-hand panel). International interbank activity is particularly important for European banks, especially those domiciled within the euro area. With the advent of the euro the interbank deposit market within the single currency area received a major boost, becoming a key channel for the efficient allocation of liquidity. By contrast, the prolonged weakness of Japanese banks has led to a shrinking of their participation in the international interbank market since the mid-1990s.

International banking market

In per cent



[1] International interbank liabilities, by residence of borrowing bank, as a share of M2 in the particular country or region. [2] Share of foreign banks' international lending in total international lending, by host country. [3] Asian offshore centres: Hong Kong SAR and Singapore. [4] Caribbean offshore centres: the Bahamas, Bermuda, the Cayman Islands and Panama.

Sources: ECB; Bank of Japan; Board of Governors of the Federal Reserve System; BIS. Graph VII.14

While the international banking market is fairly diffused across jurisdictions, a small number of international banking hubs play a key role in the overall distribution of funds. These centres are characterised by a high percentage of international banking activity conducted by foreign-headquartered institutions. The dominant shares of the United Kingdom and the United States in interbank activity mirror the role of London and New York as international financial centres. The United Kingdom, in particular, attracts over 20% of global interbank deposits, with foreign banks accounting for more than 70% of the overall international banking activity in this jurisdiction (Graph VII.14, right-hand panel). In addition, a number of countries, including Asian and Caribbean offshore centres, have established themselves as regional hubs, playing an important role in intermediating banking flows between regions.

... and the emergence of hubs

Policy challenges

The internationalisation of financial intermediation brings benefits for home and host economy alike, but it also presents a number of challenges for individual institutions as well as for home and host country policymakers. Home and host financial systems benefit from banks that are better diversified, on both the assets and liabilities side of their balance sheets, and from a potentially more stable source of financing for economic activity. The challenges are both microeconomic and macroeconomic in nature. They relate to the management of the different types of risk that arise as a result of the greater complexity of banks with international operations. Assessing the performance and vulnerabilities of internationally active institutions and the stability of open financial systems requires cooperation between authorities in sharing information and coordinating policy interventions, often in the context of asymmetric incentives.

The trend poses challenges to banks and policymakers

Micro

At the level of the individual institution, the greater internationalisation of banks' operations brings about a greater degree of complexity. The conduct of cross-border business requires operations to be adapted to differing client, market and prudential cultures, and also coordinated across different units within the organisation. Meshing corporate cultures, harmonising practices and creating an effective reporting and control structure are key success factors. The fact that in some cases foreign units were previously independent entities may complicate the task.

Cross-border banks are more complex ...

The challenges for the authorities in charge of the prudential oversight of internationally active banks are similar in scope, albeit different in nature. They revolve around the differences in perspective between the home and host authorities. Monitoring of performance and assessment of the risk profile of these institutions depend critically on the availability of sufficient information regarding overall activities and business practices. This task naturally includes forming a view on the risks associated with international exposures or mismatches in the maturity and currency composition of an institution's overall balance sheet. Cooperation between home and host authorities in sharing information, views and specific local knowledge is a key component of an

... and more difficult to monitor ...

effective monitoring mechanism. Similarly, differences in the design and application of prudential tools in the various jurisdictions can conflict with the bank's attempt to manage its business on an integrated basis, taking advantage of synergies and diversification opportunities. Differences in the classification rules for non-performing assets and provisioning requirements are a case in point.

... and to manage under stress

Complexity also interferes with the effectiveness of intervention when the bank comes under stress. Assessing the solvency of a bank depends on forming precise views about the current and prospective value of its assets and liabilities. The timely and accurate evaluation of illiquid or opaque items often benefits from local supervisory expertise. This highlights the importance of open channels of communication between the authorities in different jurisdictions. Moreover, access to emergency support will be subject to potentially different practices and conflicting incentives of various authorities which would prefer that national resources not be put at risk in support of foreign operations and foreign creditors of the bank.

The resolution of crises is also complicated by the fact that decisions concerning the workout process, in the event of a failure, will also be influenced by national interests and differences in perspective of the parties involved. To what extent intermediation capacity should be preserved in the host jurisdiction could well be a point of contention. So too could be the sharing of the financial burden via the commitment of public funds. The issues become particularly complex when the distribution of the affected bank's international activities gives rise to asymmetric perspectives among the authorities involved. This would be the case when, for example, the operations in the host country are small in comparison to the size of the international bank, but systemically important when compared to the size of the local economy. The two authorities may then have sharply different views on the issue of closure.

Macro

International-isation ...

The growing internationalisation of banking also presents challenges from the point of view of macroeconomic management, both in the traditional sense of control of liquidity and credit flows by the monetary authority and in the sense of ensuring the overall stability of the financial system.

... may complicate monetary policy ...

The ability of internationally active banks to manage liquidity and balance sheets across the jurisdictions in which they operate may at times weaken the effectiveness of monetary policy instruments. Easier access to funding from abroad facilitates banks' ability to pursue high-yielding opportunities in periods of persistent international interest rate differentials. Aggressive lending strategies may also increase the supply of credit to households and businesses at lower interest rates, but at a much elevated exchange rate risk, which is more difficult to appreciate. These practices can weaken the power of monetary policy instruments and frustrate the authorities' pursuit of policy objectives. The experience in central and eastern European economies is a notable example. Until recently, credit expansion had defied the efforts of central banks to stem it, and this has boosted domestic demand, supported buoyant housing prices and contributed to rising current account deficits.

... and the management of systemic risk

Similarly, from a macroprudential perspective, internationally active banks present challenges to policy efforts aimed at financial stability. As regards the monitoring of vulnerabilities, these challenges are relatively balanced between home and host authorities. Both need to evaluate potential scenarios that involve developments in the economies where domestically active banks have important operations. By contrast, the application of prudential tools in leaning against imprudent practices comes up against control and incentive issues. Locally applied measures may be ineffective if largely international institutions represent a major share of domestic banking activity. And coordination between prudential authorities can be hampered because of differences in perspective if the host country operations are only a small component of the overall activities of these institutions. In addition, the management and resolution of systemic crises has to confront the obstacles highlighted above in the case of individual institutions, namely the availability of high-quality and timely information, legal and operational complexity, and conflicting interests of participating authorities. The situation is further complicated by misalignments between the claims on the institutions' resources from different authorities and the distribution of any fiscal costs of the workout.

Policymakers have been addressing the issues

In view of these policy challenges, efforts are being made to create structures that facilitate the risk assessment of internationally active banking firms and enhance crisis management. Concrete examples include setting up bilateral and multilateral mechanisms in the form of regular forums, and establishing templates and other communication channels to aid the joint assessment of the performance of these banks. Often these efforts are formalised as memoranda of understanding between the relevant authorities, but they can also have a more informal, although not necessarily less useful, character. The development of global regulatory standards is an important step towards achieving greater coherence in prudential frameworks across jurisdictions. While standards relate to the design of regulatory instruments, such as capital and provisioning rules, they also contribute to the formation of a common supervisory culture by establishing best practice in their application. Finally, structures that have been put in place to improve the flow of information for monitoring purposes have also been used to discuss and plan action in the event of systemic stress. These discussions may be necessarily more informal given the complexity of the issues and concerns about moral hazard.

Scope for further progress

Despite the progress made so far, many aspects require further work. This is not only due to the complex circumstances of particular banks or the institutional framework prevailing in specific jurisdictions. It also reflects the fact that the nature of the policy challenges is changing as the economics of cross-border banking evolve.

VIII. Conclusion: prevention rather than cure?

Economics is not a science, at least not in the sense that repeated experiments always produce the same results. Thus, economic forecasts are often widely off the mark, particularly at cyclical turning points, with inadequate data, deficient models and random shocks often conspiring to produce unsatisfactory outcomes. Even trickier is the task of assigning probabilities to the risks surrounding forecasts. Indeed, this is so difficult that it is scarcely an exaggeration to say that we face a fundamentally uncertain world – one in which probabilities cannot be calculated – rather than simply a risky one.

Economic history is a useful guide in this respect. The Great Inflation in the 1970s took most commentators and policymakers completely by surprise, as did the pace of disinflation and the subsequent economic recovery after the problem was effectively confronted. Similarly, virtually no one foresaw the Great Depression of the 1930s, or the crises which affected Japan and Southeast Asia in the early and late 1990s, respectively. In fact, each downturn was preceded by a period of non-inflationary growth exuberant enough to lead many commentators to suggest that a "new era" had arrived. Similar surprises can be noted at a more micro level. Around the time of the failure of LTCM in 1998, the firm faced price shocks in various markets that were almost 10 times larger than might reasonably have been expected based on previous history. As a result, its fundamental assumptions – that it was adequately diversified, had ample liquidity and was well capitalised – all proved disastrously wrong.

Of course, many will say that our understanding of economic processes has improved thanks to this experience. Yet this is not such an easy proposition to prove. Consider, for example, the typical way in which central bank economists forecast future inflation using econometric models of how wages and prices interact. To do this accurately, at least five questions have to be answered correctly. What is the best way to measure excess capacity in the domestic economy? What is the trend rate of growth of productivity? Are foreign influences limited to import prices alone? Are wages driven by forward-looking price expectations, or by past price developments? If expectations are important, are they influenced by the credibility of central banks or by something else, like actual or even perceived inflation? Each of these questions is currently highly contentious. And when we turn to other economic variables, the degree of disagreement about many equally fundamental issues is just as great.

Indeed, in the light of massive and ongoing structural changes, it is not hard to argue that our understanding of economic processes may even be less today than it was in the past. On the real side of the economy, a combination of technological progress and globalisation has revolutionised production. On the financial side, new players, new instruments and new attitudes have proven

equally revolutionary. And on the monetary side, increasingly independent central banks have changed dramatically in terms of both how they act and how they communicate with the public. In the midst of all this change, could anyone seriously contend that it is business as usual?

There is, moreover, a special uncertainty in the area of monetary policy. While the commitment of central bankers to the pursuit of price stability has never been stronger, the role played by money and credit is being increasingly debated, against the backdrop of the uncertainty about the inflation process referred to above. For some central banks, and indeed many leading academics, neither money nor credit is thought to play any useful role in the conduct of monetary policy. For others, in contrast, the too rapid growth of such aggregates could be either a harbinger of inflation or the sign of a financially driven boom-bust cycle with its own unwelcome characteristics.

Against this background, neither central banks nor the markets are likely to be infallible in their judgments. This has important implications. The implication for markets is that they must continue to do their own independent thinking. Simply looking into the mirror of the central banks' convictions could well prove a dangerous strategy. The implication for policymakers is that they should continue to work on improving the resilience of the system to inevitable but unexpected shocks.

Topics of current concern to policymakers

The consensus forecast for the global economy, which is obtained through a poll of economists, anticipates that recent high levels of growth will continue, that global inflation will stay quite subdued, and that global current account imbalances will gradually moderate. With respect to financial markets, the consensus forecast for 2007 is that long rates will stay around current levels. Evidently, and appropriately, this forecast implicitly assumes that there will be no major geopolitical disruptions and no disturbances in the financial sector significant enough to affect the real economy.

As a near-term proposition, a forecast that says the future will be a lot like the past has much to recommend it. Indeed, looking closely at forecast errors in recent years, one might conclude that there are grounds for even greater optimism. Real growth has, on the whole, been stronger than expected, while inflation has generally stayed in line with predictions, despite sharp increases in commodity prices in the last year or so. Long-term interest rates have also consistently come in below anticipated levels. Since it is well known that forecast errors often display a significant degree of persistence, one might with some confidence expect the good news to continue. Only with respect to global trade imbalances have the actual outturns been markedly worse than expected, but even here, as noted in the Introduction to this Annual Report, there are some signs of improvement.

Yet it is not difficult to identify uncertainties that could conceivably cause this near-term forecast to come unstuck, or that could result in less welcome outcomes over a longer horizon. Below, various areas of concern are identified and analysed separately, although they could well be interdependent. As

will be described in the following section, those who are more focused on such interdependencies tend to see accommodative financial conditions as the causal thread linking these areas of concern together.

A first uncertainty has to do with the possible resurgence of global inflation and, potentially, inflation expectations. Estimates of capacity gaps in most of the major industrial countries indicate that they are approaching or have reached the limits of their potential. Disinflation pressures originating in emerging market economies also seem to be easing in the wake of sometimes extraordinary domestic growth rates. In China, in particular, it has become increasingly clear over the last few months that measures to slow the economy have not been effective so far. Partially as a result, continued strong increases in global energy and other commodity prices show no signs of abating, and questions are being raised about the ongoing capacity of companies to offset these higher costs through savings elsewhere. Finally, the fact that monetary and credit aggregates have also been growing very rapidly, not least in countries such as China that use foreign exchange intervention to resist currency appreciation, is a further worrisome sign for many.

Given the still pivotal role of the United States in the world economy, the possible inflationary impact of cyclically rising wages and declining productivity growth is a source of near-term uncertainty. In addition, two medium-term considerations need to be taken into account. The ratio of house prices to rents is at an all-time high. Unless house prices fall significantly, a renormalisation would imply a prospective rise in rents which would feed directly into the measured CPI. Moreover, if global trade imbalances need to be resolved, a further and perhaps substantial decline in the dollar might also be part of the adjustment process. To date, shrinking foreign margins, allied with productivity increases, have sufficed to keep exchange rate pass-through to a minimum in the United States. Whether this will continue remains to be seen.

Viewed in this light, the recent slowing in the US economy must be judged welcome. Yet, as 2006 wore on, concerns began to mount that this might turn into rather too much of a good thing. The attention of financial markets first focused on the US subprime mortgage market, but the underlying issue is much broader. The household saving rate in the United States fell for a time into negative territory, as sluggish wage growth failed to provide adequate support for a sharp increase in consumer spending and residential investment. Easy credit terms, especially in the mortgage market, encouraged both higher debt levels and higher house prices. The latter, in turn, provided both the collateral to justify more lending, and the perception of increased wealth to justify more spending.

The concern is that this might all reverse. Debt service levels are already elevated and mortgage rates might rise further. House prices only need to stop rising (indeed, this may already have happened) to slow both the recourse to credit and the sense of confidence arising from increases in wealth. Moreover, when cuts in construction jobs begin to match the much larger fall in housing starts to date, then wage income, job security and confidence could be further affected. Were corporate fixed investment, already inexplicably weak given high profits and low financing costs, to retreat as well,

then the stage might be set for a more significant and perhaps unwelcome deceleration in US growth.

If this is the risk, it must also be recorded that the ratio of US household debt to income has been creeping up for decades without seriously compromising consumer confidence. Consumer spending could also get a second wind from faster wage increases. The wage share is secularly low and might rebound. Moreover, the United States is at that "late cycle" stage, when unemployment is low and compensation normally tends to rise. However, this possibility could have undesirable implications as well. As noted above, inflation pressures might increase, or, if wage demands instead cut into profit margins, stock market expectations could be disappointed, with possible implications for both asset prices and corporate investment.

Were the US economy to slow substantially, the crucial question would be how others might be affected. On the one hand, domestic demand has recently gained strength in the euro area and Japan, as well as in a number of emerging market economies. Furthermore, unlike the IT-related slowdown around the turn of the century, there has not been a synchronised industrial boom that might suddenly collapse at the global level. Support for continued global growth is also provided by the falling share of exports to the United States, in a context of surging world trade overall.

On the other hand, in both Germany and Japan the revival of domestic demand has been overwhelmingly in the form of corporate investment, itself driven by strong export demand. The same can be said for China, where the growth rate of the economy has been characterised by Premier Wen Jiabao as "unstable, unbalanced, uncoordinated and unsustainable". Moreover, even without a synchronised business cycle, boardroom confidence globally might be affected by a sharp US downturn. And while direct exports to the United States might have fallen relative to global totals, a major component of the latter has been imports for assembly in China. In this regard, the indirect exposure of many countries in Asia to slower US growth might still be significant. Finally, it is notable that the United States is by no means alone in its dependence on debt-fuelled consumption, with some countries even having substantially negative household saving rates. This provides a further channel for possible contagion.

To near-term uncertainties about inflation and growth must be added a number of medium-term concerns, not least persistent and substantial global trade imbalances. Does this constitute a problem, requiring a policy response to lower the possibility of large and perhaps abrupt movements in exchange rates? Or, rather, can we assume that the capital inflows needed to finance such deficits will be available on not significantly different terms for the foreseeable future?

Countries with large trade deficits are generally those where domestic demand has been growing relatively fast, and where interest rates are relatively high in consequence. In principle, such countries should also have depreciating currencies. This would allow external deficits to be reduced over time as domestic demand began to ease under the influence of higher rates. Unfortunately, in practice, relatively high interest rates often induce private

capital inflows of such a magnitude as to cause the exchange rate to appreciate rather than depreciate, and to raise domestic asset prices, which leads to more spending rather than less. Both these developments will cause the trade deficit to worsen further. This process was very much part of the story in the United States prior to 2001, and the second element of it continues today. Moreover, in recent years there have been a number of variations on this "carry trade" theme, with still more dramatic effects on smaller economies like New Zealand and a number of countries in central and eastern Europe. In many of these countries, including some where fundamentals have significantly improved, fears have been rising that a sudden reversal of such capital flows might significantly complicate macroeconomic management.

The US trade deficit is of a very special nature, largely because of the dollar's role as a reserve currency. Thus, the significant reduction of private sector capital inflows after 2001 was counterbalanced by inflows from the public sector, leading to only a gradual decline in the value of the dollar. This has had the advantage of being quite manageable, but the disadvantage is that there has been no discernible reduction in the US trade deficit. When we add to this the gradual movement of the service account into deficit, and the growing size of the external debt position, the dollar clearly remains vulnerable to a sudden loss of private sector confidence, and presumably associated increases in risk premia in financial markets. While to some degree this would be welcome, as part of the external adjustment process, it could at the same time aggravate both near-term inflation pressures and the risks of a more serious downturn.

The reliability of public sector inflows has also become more uncertain, for at least two reasons. First, countries outside the United States might now be increasingly inclined to reduce intervention and let their currencies rise. Reasons for this might include a desire to limit the losses arising from an ever-growing currency exposure. But, likely to be of greater importance, there is mounting evidence of the domestic distortions associated with both currency intervention and easy monetary policies whose effect has been to hold down exchange rates. Authorities in China, Japan and some commodity-producing countries have already publicly expressed strong concern about excessive capital investments, and possible resource misallocations, in their respective countries. And, as noted above, in a number of countries inflationary pressures are rising and sterilisation seems to be becoming increasingly difficult.

The second potential threat is that holders of large portfolios of reserves might begin to reduce the proportion of new reserves held in US dollars. On the one hand, the principle of uncovered interest parity implies that, over sufficiently long time horizons, returns will not be increased by such a strategy. This would argue against the rebalancing of portfolios still primarily held in dollars. On the other hand, the variance of such returns, measured in domestic currency, could be reduced if the currency composition of the reserve portfolio were chosen with this end in mind. Whether concerns about the variability of returns would provide sufficient motivation for a significant reduction in the proportion of dollar holdings remains an open question. So too does the issue of whether such official actions would materially affect exchange rates, barring

widespread imitation by the private sector. What is more certain is that, as reserve managers increasingly focus on maximising returns, they will be attracted to the currencies of countries that give them ready access to equity and other instruments that allow them to do so.

A final set of medium-term uncertainties has to do with potential vulnerabilities in financial markets and possible knock-on effects on financial institutions. As noted in the Introduction, the prices of virtually all assets have been trending upwards, almost without interruption, since the middle of 2003. For some commentators, it is not hard to find plausible reasons why individual asset price increases are justified and therefore more likely to be sustainable. For example, the very low risk spreads on sovereign issues are consistent with clear improvements in governance and macroeconomic policies in many countries. Comparably low spreads on high-risk corporates reflect high profits and very low default rates in recent years. Unusually low term premia could be the result of the absence of volatility in the major macro variables for some time. The prices of commodities and fine art reflect new sources of demand from newly emerging markets. And the increase in house prices, which has now become almost a global phenomenon, can be ascribed to lower long-term mortgage rates.

Yet it could also be suggested, consistent with the inherent difficulty of making longer-term valuations, that the market reaction to good news might have become irrationally exuberant. There seems to be a natural tendency in markets for past successes to lead to more risk-taking, more leverage, more funding, higher prices, more collateral and, in turn, more risk-taking. One manifestation of this, over the last few years, has been that the intermittent periods of financial volatility have become progressively shorter. Apparently, the observed resilience of markets to successive shocks has increasingly encouraged the view that lower prices constitute a buying opportunity. The danger with such endogenous market processes is that they can, indeed must, eventually go into reverse if the fundamentals have been overpriced. Moreover, should liquidity dry up and correlations among asset prices rise, the concern would be that prices might also overshoot on the downside. Such cycles have been seen many times in the past.

The obvious question is: who might be hurt by such a turn of events? The big investment and commercial banks seem very well capitalised, and many have been making record profits. Their attention to risk management issues has also been unprecedented. Yet some sources of concern must already have been identified by the markets, since the spreads on credit default swaps for some of the best known names have recently been elevated in comparison to the levels that would be normal given their credit ratings. One area of concern is market risk and leverage. Balance sheets have grown significantly. Moreover, value-at-risk measures have stayed constant even though measured volatility has fallen substantially. Another possible worry, linked to the "originate and distribute" strategy, is that originators might be stuck with a warehouse of depreciating assets in turbulent times. The fact that banks are now increasingly providing bridge equity, along with bridge loans, to support the still growing number of corporate mergers and acquisitions, is not a good sign. A closely

related concern is the possibility that banks have, either intentionally or inadvertently, retained a significant degree of credit risk on their books.

Assuming that the big banks have managed to distribute more widely the risks inherent in the loans they have made, who now holds these risks, and can they manage them adequately? The honest answer is that we do not know. Much of the risk is embodied in various forms of asset-backed securities of growing complexity and opacity. They have been purchased by a wide range of smaller banks, pension funds, insurance companies, hedge funds, other funds and even individuals, who have been encouraged to invest by the generally high ratings given to these instruments. Unfortunately, the ratings reflect only expected credit losses, and not the unusually high probability of tail events that could have large effects on market values. Hedge funds might be most exposed, since many have tended to specialise in purchases of the riskiest sorts of these instruments, and their inherent leverage can in consequence be very high.

It is not, by definition, possible to put all these uncertainties together and arrive at a prediction. Rather, if one believes that a range of possible developments could all interact in various ways, such interactions could form the basis of a thousand stories. Yet it must be noted that behind each set of concerns lurks the common factor of the highly accommodating financial conditions noted in the Introduction. While this observation need not call into question the consensus forecast as such, it should at least serve to remind us that tail events affecting the global economy might at some point have much higher costs than is commonly supposed.

Challenges in formulating a policy response

There are a number of difficult and important questions facing central bankers, to which there are no agreed answers. A first issue has to do with the appropriate role of monetary and credit aggregates in the formulation of monetary policy. A second issue is closely related: assuming that occasional credit-driven boom-bust cycles are possible, should the public sector seek to prevent the build-up of imbalances, or rather just clean up afterwards?

Concerning the first issue, three schools of thought can be identified, each with at least some adherents in most central banks. A first school emphasises the short-run effects on inflation of gaps between aggregate demand and supply, with longer-run inflation trends being largely determined by expectations about such gaps. The role of money and credit is generally played down by this group. A second school attaches more importance to monetary developments in influencing longer-run trends in inflation. In practice, this would imply a continuing emphasis on the influence of demand-supply gaps on inflation, but with policy conclusions being systematically cross-checked against the monetary data. Finally, a third school of thought also attributes great importance to monetary, but above all credit, developments, albeit for a rather different reason. Adherents of this school become concerned when they see rapid growth of the aggregates along with rising asset prices, particularly if also associated with substantial and sustained deviations of spending patterns

from traditional norms. They admit that the medium-term outcome could be rising inflation, but fear rather more that a boom-bust cycle might have significant economic costs, potentially including unwelcome deflation over a longer-term horizon.

Both historical experience and intellectual fashion have played a role in these divergences. Adherents of the first school would contend that forecasts of inflation using gap methodology have proven reasonably accurate in many countries over many years. Their refusal to countenance any more formal role for money rests in part on the unsuccessful "monetarist" experiment of the 1970s, but also on the failure of econometric work to reveal a stable and causal relationship with inflation in their countries. Supporters of the second school of thought would note that their belief in the money-inflation nexus is deeply rooted in theory. Moreover, the Deutsche Bundesbank and the Swiss National Bank have been translating such beliefs into effective anti-inflationary policies for decades. The third school of thought has been influenced not just by pre-World War II business cycle theory but also by the wrenching historical experience of the booms and busts referred to earlier.

While fashions come and go, it appears that the influence of the second and third schools has been growing. In recent years, a number of central banks, when raising policy rates, have cited concerns about very rapid growth in both credit and asset prices. A number of other central banks have announced their intention to lengthen their normal policy horizon, to allow them to better evaluate the full range of possible effects arising from their policies. Finally, almost everywhere, one hears reference being made to the "normalisation" of policy rates, a concept which logically implies that the appropriateness of policy cannot be judged on its short-run impact alone.

Behind this shift in thinking have been a number of influences. Forecasting inflation using traditional methodologies has become more difficult everywhere. Central banks are therefore looking for new guideposts, and these include the use of monetary and credit aggregates. Indeed, research in some central banks has recently identified what appears to be a reliable relationship between their monetary aggregates and inflation over long periods. Moreover, with the passage of time, new crises and the further analysis of old ones have provided empirical evidence to support the specific arguments for concern expressed by the third school. Finally, as evidence has accumulated that the global economy is characterised both by many imbalances and by a flatter short-run Phillips curve, the potential economic losses in a subsequent downturn have also been revised upwards. In sum, the possible implications of getting policy wrong have grown. All of these factors have helped to spur debate, and even sometimes to change minds.

A second question, eliciting diverse answers, is how best to deal with what seems to be the natural procyclicality of the financial system. Should policy sometimes lean against an upturn, even in the absence of inflationary pressures? And if so, how? Should it rather lean primarily against the subsequent downturn, and if so how? Or, reflecting our lack of understanding, and the shortcomings of each of the individual policy instruments we currently possess, should it do both, using a number of policy instruments

simultaneously? Short of serious re-regulation of financial markets, which would create many harmful inefficiencies over time, this more pragmatic approach to procyclicality in the financial system might have much to recommend it.

The principal argument for tightening monetary policy in the upswing is to moderate the excesses in economic and financial behaviour and, in so doing, contain the costs of the downturn. There are of course some significant practical difficulties with this approach. How do policymakers evaluate when imbalances are building up to such a size as to warrant action? What degree of tightening would be required to moderate market euphoria, and might it do serious harm to unaffected parts of the economy? These points have been made repeatedly, and validly, in connection with the hurdles that central bankers would face in targeting asset prices. But the suggestion being made here is different. It is rather to react when a number of indicators – not just asset prices but also credit growth and spending patterns – are simultaneously behaving in a manner that indicates increasing exposures. In principle, such a configuration of developments would be both rarer and easier to identify. Moreover, the more widespread the euphoria, the less worry there will be that tighter policy might inflict collateral damage on unaffected sectors.

That said, small, and increasingly not so small, open economies will have a particular problem with this prescription if their relatively higher interest rates attract substantial capital inflows. These can contribute in turn to both a sharply higher exchange rate and more, rather than less, accommodative domestic credit conditions. Both can, for a time, exacerbate the underlying imbalances of concern to policymakers, as seen most recently in New Zealand and Thailand. One desirable response might be tighter fiscal policy, but if this simply increases confidence in the country, such a move might attract still more inflows. In any event, fiscal tightening is not always easy to implement politically, since unexpected tax receipts associated with such expansions often make the government's fiscal position look overly conservative to begin with. Longer-term, recurrent difficulties of this sort could eventually call into question the viability of some smaller currencies. In fact, this is consistent with what happened in Europe after restrictions on international capital flows were eased in the 1980s.

In the face of extreme difficulties of this sort, a number of smaller economies have turned to the use of administrative instruments to promote credit restraint. Various forms of capital controls, higher reserve requirements, changes in risk weights, lower loan-to-value ratios and other measures have all been tried, albeit with only limited success. In any event, all administrative measures of this sort routinely invite evasion over time.

Nonetheless, these practical difficulties acknowledged, the potential costs arising from the underlying problems emphasise the need for domestic monetary and regulatory authorities to cooperate more systematically in the future than they have tended to in the past. Preferably based on better information than we have today about household, corporate and bank exposures, agreement should be reached in advance about what the respective policymakers might do to mitigate the risks associated with rising

credit exposure. Indeed, in some cases emerging difficulties might call for more cooperation internationally, rather than just domestically. Consider the example of central and eastern Europe. Most of the credit being granted there is coming from commercial banks headquartered in western Europe. For virtually all of these banks, there is no significant capital exposure involved. At the same time, the macroeconomic exposure of the countries receiving the loans is rising steadily.

In the light of all these difficulties associated with preventive action, it is not surprising that there is also a second school of thought. It essentially accepts that busts will happen, but argues that the associated costs can be significantly moderated by vigorous monetary easing after the event. Indeed, it might be noted that this approach has been used repeatedly over the last 20 years, not least in 2001, and seems to have worked reasonably well in many cases.

Yet this second approach also has its shortcomings. The first is that it might not always work. Consider the Japanese case as an example of "pushing on a string". Is it credible that a 15-year phase of weak economic performance had its roots in the failure of the Bank of Japan to ease aggressively enough in 1991? As a simple matter of fact, Japanese policy rates did come down very sharply at that time, as indeed they did in the United States in 1930, to similar limited effect. What is more credible as an explanation of stagnation in the Japanese case is that the zero lower bound for policy rates proved an important constraint, and that excessive investment and debt built up in the good times weighed heavily on the economy for many years.

While the use of lower interest rates to sustain demand might still be sensible, lower rates can also have unwelcome side effects if maintained for too long. On the supply side of the economy, below-equilibrium interest rates effectively transfer wealth from creditors to debtors, which will tend to lower saving rates and economic potential over time. If "zombie" companies are allowed to survive, continuing excess production capacity is likely to undercut the profits and viability of other companies. On the financial side, easy financing can also encourage mergers and acquisitions, as seen quite recently. Not only does the historical record indicate that such takeovers often fail to add value, but also the fear of takeovers could over time encourage a more general gearing-up of the corporate sector as a means of self-insurance. Within the financial sector, the search for yield might encourage imprudent behaviour. All of these factors make the economy more vulnerable to shocks over time. In effect, dealing with today's problem of deficient demand through sustained monetary accommodation can sow the seeds for more serious problems further ahead.

Such reflections lead to the conclusion that the management of problems through infusions of liquidity must, at the least, be complemented by more concrete and fundamental efforts to promote the reduction of excess debt and unprofitable investment built up in the earlier period. Companies whose survival chances are not evident should be closed promptly, with shareholders and managers paying the price. Other firms should then be allowed to find alternative uses for what resources remain. Moreover, if the banking system is

seriously affected in turn, it should be restructured according to the sensible principles laid out so clearly in response to the Nordic banking crises of the early 1990s.

A complicating element, particularly in emerging market economies, is that such restructuring requires a skill set that many countries do not possess. Accountants, appraisers, lawyers and insolvency experts are all in short supply. Moreover, in a number of countries, legal procedures are not yet sufficiently developed to ensure speedy and final solutions, either using the courts or through out-of-court procedures. It is not hard to imagine that such shortcomings could in some countries strongly encourage forbearance in the event of future crises. Clearly, attention should be paid to this issue as soon as possible, since rectifying such deficiencies will certainly take time. It is of course true that large financial firms in the advanced industrial countries are currently trying to address such problems by assembling teams of workout and bankruptcy specialists. So-called "vulture funds" are also increasingly in evidence. However, whether this should be a source of solace or rather of concern remains to be seen.

Where should policies go from here?

Now that a number of uncertainties have been laid out about prospective economic and financial events, complicating the issue of how policy might best respond, an unfortunate reality presents itself. Policy must still be made, and in a forward-looking context. Fortunately, the current confluence of circumstances is such that some recommendations can be hazarded. Broadly, they come down to using today's evident good times to prepare for a future that will, by definition, be less certain.

With respect to monetary policies, those who are concerned with near-term inflation as well as those concerned about a further build-up of medium-term imbalances might welcome further tightening. Inflation pressures globally seem to be increasing, while evidence of various imbalances continues to mount almost everywhere. For those concerned about inflation pressures, economies with external deficits, particularly the larger ones, should in principle bear a particular responsibility for contributing to the moderation of global demand growth. Those who are concerned about imbalances and resource misallocations would note that China seems to have a particularly large gap between actual interest rates and the "normal" rate determined by the economy's potential growth rate.

Japan has been facing persistent downward pressure on prices, but these pressures increasingly reflect the positive supply side shocks seen elsewhere in the world. This fact, together with secular improvements in the levels of corporate debt and non-performing loans, implies that the potential for a dangerous deflationary spiral has now been much reduced. The fact that the economy seems to be growing robustly, and that capital outflows from Japan might be having unwelcome effects elsewhere in the world, provides further arguments for supporting the suggestion that the Bank of Japan should continue to normalise interest rates gradually.

Both short-term and medium-term considerations should also guide the path of fiscal policy in the same direction. Tighter fiscal policies could play a role in moderating global demand growth, although the dangers of fine-tuning in this regard are not negligible. But, to adopt a longer view, both government deficits and debts have been described as troublingly high in many countries. Moreover, countries with twin deficits, fiscal and external, might reap particular benefits from further steps towards fiscal consolidation. This could serve to reduce risk premia, the likelihood of disruptive capital flight in the event of future economic setbacks, and of course the attendant possibility of sharp movements in foreign exchange markets.

While, in general, large economies with floating exchange rates should continue to let them float freely, there is clearly something anomalous in the ongoing decline in the external value of the yen. Tighter monetary policies would help to redress this situation, but the underlying problem seems to be a too firm conviction on the part of investors that the yen will not be allowed to strengthen in any significant way. As a counterweight, investors might be better encouraged to consider the autumn of 1998, when the yen rose by more than 10% against the US dollar in the space of two days, inflicting sizeable losses on those involved in the carry trade business.

There should also be a greater willingness to let the renminbi rise, even though one recognises the formidable internal challenges this will pose to the Chinese authorities. Such a move would also allow other Asian currencies to move up further against the US dollar, again contributing to a reduction in global trade imbalances. While some in China seem to believe that the source of Japan's recent problems lay in allowing the yen to rise in the late 1980s, this is a misreading of history. The seeds of the Japanese bust were actually sown in the preceding, rampant monetary expansion designed to keep the yen down. Moreover, given the recent rates of credit expansion, asset price increases and massive investments in heavy industry, the Chinese economy also seems to be demonstrating very similar, disquieting symptoms.

Currently buoyant economic and financial conditions should also provide support for structural reforms that would enhance growth worldwide. Perhaps the greatest challenge with respect to the real economy is to facilitate the shift into non-tradable services in countries that currently have large trade surpluses, in particular China and Japan. By the same token, a shift into tradables is needed in the United States, to help reduce its current account deficit.

The problem at the moment is that the allocation of resources in all three countries has been moving resolutely in the wrong direction. In China and Japan, investment is still in large part focused on export markets. Moreover, should there be an economic shock affecting the Asian region, there is a reasonable chance that export markets would be relied upon even more heavily to maintain employment growth. The threat posed by rising protectionist pressures in western countries would clearly be exacerbated, and these pressures are already very substantial. In the United States, it is the recent massive investment in housing that has been unwelcome from an external adjustment perspective. Housing is the ultimate non-tradable, non-fungible and long-lived good. The

implication is that, to achieve the internal reallocation of capital and labour required in the countries concerned, the price signal provided by exchange rate movements might need to be significantly greater than otherwise.

Turning to financial sector developments, it would clearly be undesirable, even were it possible, to roll back the changes that have occurred over the last few decades in the advanced industrial countries. Nevertheless, more scepticism might be expressed about some of the purported benefits of having new players, new instruments and new business models, in particular the "originate and distribute" approach which has become so widespread. These developments have clear benefits, but they may also have side effects, with associated costs. In emerging market economies, the essential point is that liberalisation needs to be preceded by structural changes that will allow financial systems to remain resilient in the face of both domestic and external shocks. While much progress has been made, much more is still needed.

Finally, it is worth noting that domestic policymakers have always faced the challenge of responding to external shocks but, in our globalised and market-driven world, these have become ever more significant. Moreover, for the same reasons, the actions of domestic policymakers increasingly have external effects on others. These interactions apply in good times, but perhaps become more important in bad ones, when the efforts of many national authorities need to be harnessed to manage international problems at the least cost. While international cooperation has improved in some areas, the political and institutional structure has not kept up with these changing global realities. There is still far too strong a tendency for national authorities to go it alone, and for international dialogue to go no further than that. This is yet another global imbalance that urgently needs to be dealt with.

Contents

Organisation, governance and activities

This chapter provides an overview of the internal organisation and governance of the Bank for International Settlements (BIS). It also reviews the activities of the Bank, and of the international groups it hosts, over the past financial year. These activities focus on promoting cooperation among central banks and other financial authorities, and on providing financial services to central bank customers.

Organisation and governance of the Bank

The Bank, its management and shareholders

The BIS is an international organisation that fosters international monetary and financial cooperation and serves as a bank for central banks. Its head office is in Basel, Switzerland, and it has two representative offices, one in the Hong Kong Special Administrative Region of the People's Republic of China and one in Mexico City. The Bank currently employs 562 staff from 49 countries.

The BIS fulfils its mandate by acting as:

- a forum to promote discussion and facilitate decision-making among central banks and to support dialogue with other authorities with responsibility for promoting financial stability;
- a centre for research on policy issues confronting central banks and financial sector supervisory authorities;
- a prime counterparty for central banks in their financial transactions; and
- an agent or trustee in connection with international financial operations.

The Bank also hosts the secretariats of a number of committees and organisations that seek to promote financial stability:

- The Basel Committee on Banking Supervision, the Committee on the Global Financial System, the Committee on Payment and Settlement Systems and the Markets Committee were established by the Governors of the G10 central banks at various times over the past 40 years. They enjoy a significant degree of autonomy in setting their agendas and structuring their activities.
- The Financial Stability Forum, the International Association of Insurance Supervisors and the International Association of Deposit Insurers are independent organisations whose secretariats are also hosted by the BIS but do not directly report to the BIS or its member central banks.
- The Irving Fisher Committee on Central Bank Statistics is governed by the international central banking community and operates under the auspices of the BIS.

Details of the role and recent activities of these committees and organisations are provided below.

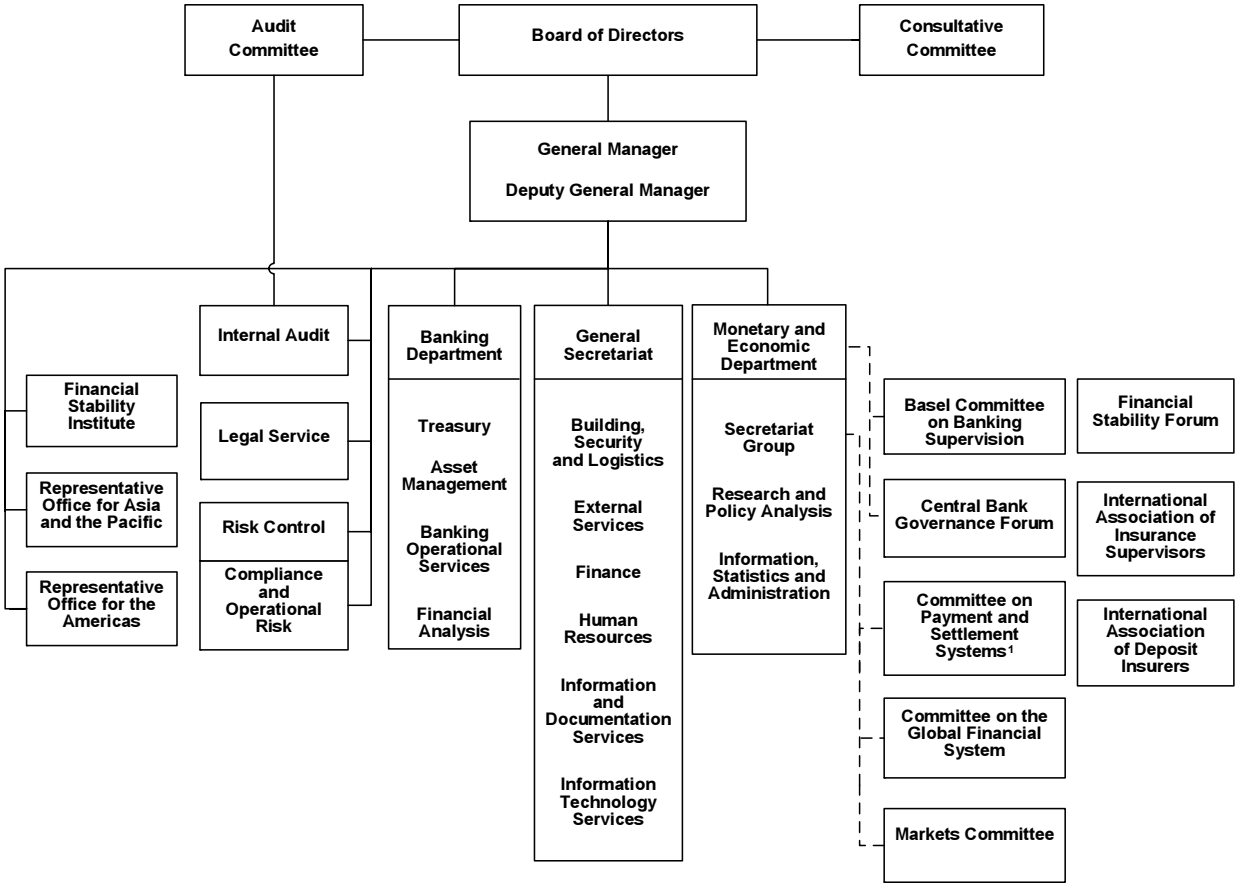
The Bank has three main departments: the Monetary and Economic Department, the Banking Department and the General Secretariat. These are supplemented by: the Legal Service; the Compliance and Operational Risk, Internal Audit and Risk Control units; and the Financial Stability Institute, which fosters the dissemination of standards and best practices to financial system supervisors worldwide.

Three main bodies govern and manage the Bank:

- The General Meeting of member central banks. Fifty-five central banks or monetary authorities currently have rights of voting and representation at General Meetings. The Annual General Meeting is held within four months of the end of the Bank's financial year, 31 March. In 2006, 100 central banks took part, including 77 at Governor level. Delegates from 20 international institutions also attended.
- The Board of Directors, currently comprising 19 members. Its main tasks include determining the strategic and policy direction of the Bank and supervising the Bank's Management. The Board is assisted by the Audit Committee and the Consultative Committee, composed of selected Directors.
- The Executive Committee, chaired by the General Manager and comprising the Deputy General Manager, the Heads of Department and other officers of similar rank appointed by the Board. The Executive Committee advises the General Manager on all important matters affecting the Bank as a whole.

Member central banks, Directors and senior officials, and recent changes in the composition of the Board and Management are listed at the end of this chapter.

Organisation of the BIS as of 31 March 2007



[1] The CPSS secretariat also handles the secretariat functions for the Central Bank Counterfeit Deterrence Group

Governance of the Bank

Board enlargement

With a view to further strengthening central bank cooperation, and in line with the Bank's more global role, the Board of Directors decided on 26 June 2006 to elect, in accordance with Article 27(3) of the Bank's Statutes, three additional central bank Governors as members of the Board of Directors. Guillermo Ortiz, Governor of the Bank of Mexico, Jean-Claude Trichet, President of the European Central Bank, and Zhou Xiaochuan, Governor of the People's Bank of China, were duly elected with effect from 1 July 2006. Their terms of office are for three years and may be renewed.

Following the increase in the number of BIS shareholders in recent years, these elections bring the global diversity of BIS membership to Board level.

Promotion of international financial and monetary cooperation: direct contributions of the BIS

Regular consultations on monetary and financial matters

Every two months, the Governors and other senior officials of the BIS member central banks convene for a series of meetings to discuss current economic and financial developments and the outlook for the world economy and financial markets. They also exchange views and experiences on issues of special and topical interest to central banks. These bimonthly meetings, normally held in Basel, are one of the most important ways in which the Bank promotes cooperation within the central banking community. The November 2006 BIS bimonthly meetings took place in Sydney and were hosted by the Reserve Bank of Australia.

This series of meetings organised every two months comprises, in particular, the Global Economy Meeting and the All Governors' Meeting. The Global Economy Meeting brings to the discussion table more than 30 Governors of key industrial and emerging market economies. This group monitors economic and financial developments and assesses the risks and opportunities in the world economy and financial markets. In May 2006, the Board of Governors adopted a new format for the Global Economy Meeting, which was implemented in September 2006. A major change was to increase the number of attendees by generally inviting the Governors of a wider number of small to medium-sized economies, while at the same time introducing a more appropriate regional representation.

The All Governors' Meeting, in which all shareholding member central bank Governors participate, discusses selected topics that are of general interest to all BIS member central banks. In 2006/07, the topics discussed were:

- measuring inflation, as a key element in the conduct of monetary policy;
- developments in the area of large-value payment and settlement systems;
- trends in financial integration in emerging market economies and the associated policy challenges;
- statistical challenges for central bank policymaking and the role and activities of the Irving Fisher Committee; and
- risk management organisation and implementation in the governance of large private sector financial institutions.

Other regular meetings that take place during these bimonthly gatherings are the meetings of Governors of the G10 countries and those of Governors of major emerging market economies, which explore themes that are of special relevance to the respective groups of economies. Governors who are members of the Central Bank Governance Group also meet on a regular basis.

Because not all central banks are directly involved in the work of the Basel-based committees and other organisations hosted by the Bank, special meetings for Governors take place as needed to brief them on the activities of

these specialised groupings or to explore topics of direct importance. In 2006/07, selected groups of Governors discussed:

- the relationship between the central bank and the government;
- the challenges for central banks posed by current global economic and financial developments, especially in their effects on smaller industrial and emerging market economies; and
- the implications of the rise of emerging market economies for the international monetary system.

In analysing issues related to financial stability, Governors attach importance to dialogue with heads of supervisory agencies, other financial authorities and senior executives from the private financial sector. The Bank regularly organises informal discussions among public and private sector representatives that focus on their shared interests in promoting and maintaining a sound and well functioning international financial system. In addition, the Bank organises various other meetings, on a regular or an ad hoc basis, for senior central bank officials. In a number of these meetings, other financial authorities, the private financial sector and the academic community are invited to contribute to the dialogue.

Other meetings organised for senior central bankers on a less frequent basis include:

- the meetings of the working parties on domestic monetary policy, held in Basel but also hosted on a regional basis by a number of central banks in Asia, central and eastern Europe, and Latin America; and
- the meeting of Deputy Governors of emerging market economies, for which this year's theme was the changing nature of the transmission mechanism for monetary policy in emerging market economies.

Representative Offices

The Representative Office for Asia and the Pacific (Asian Office) and that for the Americas (Americas Office) aim to strengthen relations between the BIS and central banks and financial supervisory authorities in the respective regions, and to promote cooperation within each region. The Offices organise meetings, foster the exchange of information and data, and contribute to the Bank's financial and economic research. The Offices also help to deliver BIS banking services through regular visits to reserve managers in central banks and meetings at both technical and managerial levels.

Asia-Pacific

During the past year, the Asian Office worked to strengthen its relationship with BIS shareholders in the region. To this end, both the dealing room and, especially, the research team took on additional staff.

The Asian Office organised or supported meetings on monetary policy, financial market development and financial stability. A highlight was a high-level meeting on central bank monitoring of financial markets, held jointly with the People's Bank of China in Hong Kong SAR in November 2006. Other meetings were held in conjunction with the EMEAP working groups on banking

supervision and financial markets, as well as with the Hong Kong Institute for Monetary Research.

Banking activity and the Asian Bond Funds

The Asian Office's dealing room made progress towards providing the full range of BIS banking services to regional customers. It further developed its foreign exchange activity and expanded investments in the region through both placements with existing counterparties and new outlets.

As fund manager of the first Asian Bond Fund (ABF1) initiative of the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP), the BIS continues to invest a portfolio of US dollar-denominated sovereign and quasi-sovereign issues of eight EMEAP economies.

As fund administrator, the BIS helped to widen the offering of bond funds to the public under EMEAP's second Asian Bond Fund (ABF2) initiative. Eleven central banks have provided seed money from their international reserves to purchase funds that invest in sovereign and quasi-sovereign domestic currency denominated bonds in eight EMEAP economies. The launching of public bond funds in Indonesia, Korea and the Philippines, in addition to the four individual market funds launched last year, helped to bring the overall size of the ABF2 to $3.1 billion at end-March 2007. Approximately $800 million of private investment now complements the investment by central banks, which has grown from $2 billion to $2.3 billion. The Pan Asia Bond Index Fund returned about 17% in its first 21 months of operation, to March 2007.

Asian Consultative Council and the BIS Special Governors' Meeting in Asia

The Asian Consultative Council (ACC) comprises the Governors of the BIS member central banks in the Asia-Pacific region. It provides a vehicle for communication between these central banks and the BIS Board and Management on matters of interest and concern to the Asian central banking community. The BIS Asian Office provides the secretariat services for the ACC.

Two meetings of the ACC gave Asian shareholding central banks the opportunity to guide the BIS Board and Management in their efforts to strengthen the Bank's relationship with them. These efforts include the widening of banking services, enhancement of the work of the Financial Stability Institute, and a three-year Asian research programme directed at improving monetary policy and operations, developing money and capital markets, and promoting financial stability and prudential policy. At both meetings, ACC members discussed individual research topics, clarifying the policy concerns underlying their suggestions. At the February meeting in Hong Kong SAR, the ACC had the opportunity to respond to some research initiatives that had been completed, in particular work on the household finance sector in Asia. In addition, the chair of the Task Force on Regional Cooperation among Central Banks reported on its work, which had been commissioned at the ACC retreat the previous year.

Each year, the BIS hosts a Special Governors' Meeting in Asia. This informal meeting of central bank governors provides an opportunity for

Governors to review the global economic and financial situation, with specific emphasis on developments in Asia and the Pacific. Following the February ACC meeting, Asia-Pacific Governors and several other Governors met for the ninth Special Governors' Meeting. They discussed the appropriate policy response to strong capital flows from outside the region, the economic outlook, and how central banks should monitor financial markets.

Asian research programme

The three-year Asian research programme began in September 2006. Regional central bankers and bank supervisors have organised themselves into two research networks, one that studies monetary policy and exchange rates, and the other analysing financial markets and institutions. The networks share information on policy issues, identify collaborative projects and organise workshops. Five economists have been hired on contracts of up to three years. In addition, the programme has hosted, and continues to seek, researchers from regional central banks, as well as from regional universities and policy institutes.

The Americas

During its fourth year of operation, the Americas Office focused its activity on strengthening its contacts with central banks in the region and cooperating more closely with regional supervisory authorities. Unlike the Asian Office, the Americas Office has no trading room, but it nonetheless actively supports BIS banking activities in the region. One highlight in this regard was a high-level seminar on reserve management, held in Santiago in May 2006.

Research efforts mainly concerned the development of fixed income markets in countries of the region and economic modelling (so-called dynamic stochastic general equilibrium (DSGE) models).

The Office also organised or supported a series of high-level meetings in Mexico and elsewhere, sometimes jointly with regional central banks and other institutions. Highlights included a meeting for regional central banks on transmission mechanisms for monetary policy, held in Colombia in March 2007; a meeting of the Working Party on Monetary Policy in Latin America, held in Peru in October 2006; and two sessions at the 11th Annual Meeting of the Latin America and Caribbean Economic Association in Mexico in November 2006, one on "Using DSGE models for policy analysis" and another on "The development of domestic bond markets and financial stability implications". Also noteworthy were the numerous regional seminars organised mainly by the FSI.

Financial Stability Institute

The Financial Stability Institute (FSI) assists financial sector supervisory authorities worldwide in strengthening oversight of their financial systems, thereby fostering financial stability globally. The FSI follows a two-pronged approach designed to disseminate standards and sound practices primarily to the banking and insurance supervision sectors.

Meetings, seminars and conferences

The first prong of the FSI approach is a long-standing series of high-level meetings, seminars and conferences both in Basel and in various regions of the world. In 2006, the FSI organised a total of 52 events on a broad range of financial sector topics. More than 1,600 representatives of central banks and banking and insurance supervisory agencies participated. Of particular note were the high-level regional meetings held for Deputy Governors and heads of supervisory authorities in Asia, Latin America and the Middle East. These meetings focused principally on Basel II implementation.

FSI Connect

The second prong of the FSI approach is FSI Connect, an online information and learning resource tool for financial sector supervisors and central bankers. FSI Connect currently includes more than 120 tutorials covering a wide range of topics for users at all levels of experience and expertise. The FSI continues to add new topics. In addition, 40 tutorials related to capital and Basel II have been made available in French and Spanish. More than 125 central banks and supervisory authorities subscribe to FSI Connect, representing more than 8,000 users. It is available to subscribers 24 hours a day, seven days a week.

Other major initiatives

In 2006, the FSI updated its 2004 survey on the plans of individual countries to implement Basel II. The new survey confirmed that more than 90 countries plan to do so, with most of them starting with the less advanced approaches. Compared with the 2004 survey, some countries anticipate slight delays in their Basel II implementation timetable. These delays appear to reflect a more realistic assessment of what is needed to achieve implementation, especially with regard to the more sophisticated approaches.

Promotion of financial stability through the permanent committees hosted by the BIS

Basel Committee on Banking Supervision

The Basel Committee on Banking Supervision, chaired by Nout Wellink, President of the Netherlands Bank, provides a forum for dialogue and information exchange among supervisors. It promotes improvements in bank risk management practices and the framework for banking supervision, and mechanisms for effective implementation by many countries of the principles developed by the Committee.

Reorganisation of the Committee's group structure

In October 2006 the Committee adopted a new, streamlined structure for its working groups. While maintaining a strong focus on capital adequacy issues, this restructuring emphasises a forward-looking strategy that has four interrelated and mutually reinforcing elements:

- to maintain a strong capital foundation for banks;
- to reinforce this foundation by promoting other infrastructure needed for sound supervision;
- to develop policy responses that are proportionate and flexible; and
- to deepen and expand outreach to non-Committee supervisors, as well as to other financial sectors and to the industry.

In support of this strategy, the Committee has reorganised its work around four core groups. These are:

- the Accord Implementation Group, established to share information and promote consistency in Basel II implementation;
- the Accounting Task Force, which works to ensure that international accounting and auditing standards and practices promote sound risk management at financial institutions, support market discipline through transparency, and reinforce the safety and soundness of the banking system;
- the International Liaison Group, which provides a forum for deepening the Committee's engagement with supervisors around the world on a broad range of issues; and
- the Policy Development Group, which identifies and reviews emerging supervisory issues and proposes and develops policies to promote a sound banking system and high supervisory standards.

Implementation of the revised capital framework ("Basel II")

Consistent cross-border implementation of Basel II remains an important focus for the Basel Committee. Supporting this objective, and to assist banks and supervisors as they prepare to implement Basel II, the Committee has released a series of papers to provide further clarity and guidance on a variety of Basel II implementation issues. These include papers related to home-host information sharing for effective Basel II implementation, the "use test" for the internal ratings-based approach, the observed range of practice in key elements of the advanced measurement approaches (AMA) for operational risk, and home-host supervisory cooperation and allocation mechanisms in the context of AMA.

In 2007, the Committee is paying particular attention to Pillar 2 (Supervisory Review Process) of the Basel II framework, reflecting the increasing international attention by both supervisors and the industry. A specific example is the Accord Implementation Group's use of case studies, allowing supervisors and bankers to deal with practical implementation issues.

Core Principles for Effective Banking Supervision

At the International Conference of Banking Supervisors (ICBS) held in Mérida, Mexico in October 2006, senior bank supervisors and central bankers from over 120 countries endorsed a significantly enhanced version of the Core Principles for Effective Banking Supervision and the Core Principles Methodology. The 25 Core Principles are globally agreed minimum standards for banking regulation and supervision, while the Core Principles Methodology provides guidance on how to interpret and assess the principles.

The Basel Committee decided to update the Core Principles, first promulgated in 1997, in the light of the many innovations and developments in banking, financial instruments and the markets within which banks operate, and the methods and approaches used by supervisors. In addition, experience gained through country assessments had made it clear that key elements of the existing Principles should be clarified and strengthened.

The revised Core Principles pay significantly more attention to sound risk management and corporate governance practices. The criteria for dealing with the fight against money laundering and terrorist financing, as well as fraud prevention, have also been strengthened. In addition, cross-border and cross-sectoral trends and developments are reflected more comprehensively, as is the need for closer cooperation and information exchange between supervisors from different sectors and jurisdictions. The importance of the independence, accountability and transparency of bank supervisory authorities has been further emphasised.

Accounting, auditing and compliance

In June 2006, the Basel Committee finalised its supervisory guidance on the use of the fair value option for financial instruments by banks and will continue to monitor its implementation. Over the past year, the Committee has taken an active role in the work to develop international accounting and auditing standards and has responded to several formal requests for comment from the International Accounting Standards Board and other international accounting and auditing standard setters. As the use of fair value estimates in financial statements has increased, the Committee has been keen to ensure that these estimates are reliable, relevant and auditable. In addition to its work on accounting standards related to financial instruments, the Committee is also focusing on issues related to the development of a common conceptual framework and the review of key audit issues from a banking supervision perspective.

Outreach

In recent years the Basel Committee has been working to further enhance its dialogue with supervisors around the world. At the October 2006 ICBS, participants reiterated the importance of continued improvements in banks' governance and risk management, and confirmed their determination to improve supervisory cooperation and information sharing. They also focused on issues arising from the growing presence of international banks in domestic markets.

The International Liaison Group (ILG) provides a platform for non-member countries to contribute to new Basel Committee initiatives early in the process and to develop proposals that are of particular interest to ILG members. The Committee will continue to explore ways to expand its dialogue with non-member countries and to support the current level of involvement through the work of the ILG, meetings with regional groups of banking supervisors and the biennial ICBS, as well as other formal and informal mechanisms.

Committee on the Global Financial System

The Committee on the Global Financial System (CGFS), chaired by Donald L Kohn, Vice Chairman of the Board of Governors of the Federal Reserve System, monitors financial market developments and analyses their implications for financial stability. The Committee, whose members are the G10 central banks and the Central Bank of Luxembourg, regularly invites representatives from the central banks or monetary authorities of Australia, Brazil, China, Hong Kong SAR, India, Korea, Mexico, Singapore and Spain to join its discussions.

Important topics of discussion during the past year included:

- the possible impact of a sudden repricing of risk and of the transmission of shocks to the real economy in increasingly integrated capital markets;
- the capacity of the global financial system to disperse risks across a wider investor base in the light of innovations in structured credit products;
- the risks that could arise from carry trades, in which investors borrow in low-yielding currencies and invest in high-yielding ones; and
- the impact of changes in financial market volatility on global financial stability.

As part of its efforts to gain a deeper understanding of structural developments in financial markets, the CGFS established two working groups. One focused on the determinants of institutional investors' asset allocation decisions and their potential implications for the financial system, given the increasingly important role they play in channelling household savings and pension assets into financial markets.

The second working group examined the impact on domestic financial intermediation of a switch in emerging market economies from foreign currency to local currency debt, and the challenges that remain in developing more liquid local bond markets.

In addition, the Committee organised several special meetings:

- a workshop on structural changes in credit markets to update market information gathered through past CGFS initiatives and to discuss ongoing trends in credit markets;
- a workshop on balance sheet effects and emerging market bond spreads, to analyse the factors influencing sovereign spreads;
- a workshop on the use of the BIS international financial statistics in research on global financial stability; and
- regional meetings on housing finance at the Central Bank of Malaysia and the National Bank of Denmark, following the publication of a CGFS working group report on *Housing finance in the global financial system*.

Committee on Payment and Settlement Systems

The Committee on Payment and Settlement Systems (CPSS), chaired by Timothy F Geithner, President and Chief Executive Officer of the Federal Reserve Bank of New York, contributes to strengthening financial market infrastructure by promoting sound and efficient payment and settlement

systems. It cooperates with other international institutions and groupings, and involves a wide group of central banks in its work.

In 2006, the Committee carried out a new survey of how banks and other selected institutions manage the risks they may incur when settling foreign exchange transactions. The results will help the Committee to assess the extent to which foreign exchange settlement risk remains a threat to the financial system and whether there is a need for further action on the part of individual banks, the industry and central banks. The Committee expects to publish its findings in late 2007.

In January 2007, the CPSS and the World Bank issued a joint report on *General principles for international remittance services*. Based on an analysis of the payment system aspects of remittances, the report sets out five general principles designed to assist countries that want to improve the market for remittance services. These principles relate to: transparency and consumer protection, payment system infrastructure, the legal and regulatory framework, market structure and competition, and governance and risk management.

In March 2007, the Committee issued a report on *New developments in clearing and settlement arrangements for OTC derivatives*. It analyses existing arrangements and risk management practices in the broader OTC derivatives market and evaluates the potential for risks to be mitigated by greater use of, and enhancements to, market infrastructure. The report focuses on:

- the risks created by delays in documenting and confirming transactions;
- the implications of the rapidly expanding use of collateral to mitigate counterparty credit risks;
- the potential for expanding the use of central counterparty clearing to reduce counterparty risks;
- the implications of OTC derivatives prime brokerage;
- the risks associated with unauthorised novations of contracts; and
- the potential for significant market disruptions from the closeout of OTC derivatives transactions following the default of a large market participant.

The Committee continued to enhance cooperation among central banks, including those of emerging market economies. It also provided support and expertise to workshops and seminars on payment system issues organised by the BIS in cooperation with regional central banking organisations.

Markets Committee

The Markets Committee, chaired by Hiroshi Nakaso, Director General of the Bank of Japan, brings together senior officials responsible for market operations at G10 central banks. At its bimonthly meetings, participants exchange views on recent developments in foreign exchange and related financial markets. In particular, the Committee focuses on the short-run implications of specific events, and also the implications of structural changes, for the functioning of these markets. The Committee regularly invites representatives from the central banks or monetary authorities of Australia, Brazil, China, Hong Kong SAR, India, Korea, Mexico, Singapore and Spain to join its discussions.

Issues covered in this year's meetings included:

- the impact of monetary policy decisions on markets;
- movements in exchange rates, including the analysis of carry trade strategies;
- financial market developments related to commodities;
- the impact across different asset classes of sudden shifts in risk appetite; and
- capital inflows into emerging markets, in particular emerging equity markets.

Members also discussed a number of specific topics, including preparations for the 2007 Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity, the growing role of institutional investors in financial markets, recent developments in commodity markets, and regional investment in emerging markets. Some of these topics were discussed with private sector representatives at special meetings.

Central Bank Counterfeit Deterrence Group

The Central Bank Counterfeit Deterrence Group (CBCDG), chaired by Bonnie Schwab, Adviser, Currency, at the Bank of Canada, is mandated by the Governors of the G10 central banks to investigate emerging threats to the security of banknotes and to propose solutions for implementation by the issuing authorities. The CBCDG has developed anti-counterfeiting features to prevent banknote images from being replicated by colour copiers and digital technology (personal computers, printers and scanners). The BIS continued to support the work of the CBCDG by hosting its Secretariat and by acting as its agent in contractual arrangements.

Other areas of central bank cooperation promoted by the BIS

Research activities

In addition to providing background material for meetings of senior central bankers, and secretariat and analytical services to committees, the BIS contributes to international monetary and financial cooperation by carrying out its own research and analysis on issues of interest to central banks and, increasingly, financial supervisory authorities. This work finds its way into the Bank's publications, such as the *Annual Report*, the *Quarterly Review* and the *BIS Papers* and *Working Papers* series, as well as external professional publications. Most of the Bank's research is published on its website (www.bis.org).

In line with the Bank's mission, the long-term focus of the research is on monetary and financial stability issues. Themes receiving special attention recently included:

- changes in the inflation process, in particular the linkages between inflation and globalisation, as well as the role of exchange rates;
- the role of monetary and credit aggregates in monetary policy frameworks;

- the measurement and pricing of credit risk;
- the measurement of risk appetite and its impact on the pricing of financial assets;
- trends in international banking;
- coordination between monetary and prudential policies;
- foreign exchange reserve management practices; and
- monetary and financial stability issues in Asia-Pacific under the three-year Asian research programme (see above).

As part of its research activities the BIS also organises conferences and workshops, typically bringing together senior policymakers, academics and market participants. In the past year, meetings of this sort included:

- the Fifth BIS Annual Conference, held in Brunnen, Switzerland in June 2006, which focused on financial globalisation;
- central bank economists' meetings, held twice a year, which in October 2006 examined the determinants and policy implications of changing asset prices; and
- a meeting of central bank legal experts, which focused on legal aspects of immunities applicable to central banks' assets.

Central bank governance

Central banks' growing interest in organisational, governance and strategic management issues led the BIS, at the end of 2006, to reorganise and increase its secretariat support for the Central Bank Governance Forum. This builds on the adoption in 2005 of a charter for the Forum. The Governance Forum fosters the good governance of central banks as public policy institutions. It consists of the Central Bank Governance Group, the Central Bank Governance Network and the Secretariat provided by the BIS.

The Governance Group, comprising Governors from a broadly based and representative group of central banks, met several times during the year. Topics of discussion included the management of conflicts of interest and public perceptions of central banks. The Group also initiated major studies of the organisation of risk management within central banks and key issues in the design of a modern central bank.

The Governance Network – now spanning almost 50 central banks and monetary authorities – again actively provided information and expertise on organisational, governance and strategic management issues.

Several special-focus surveys were conducted in support of the Governance Group's deliberations and for the benefit of Governance Network central banks that are reviewing their own practices.

Cooperation in the statistical area

The BIS contributes to, and closely monitors, ongoing efforts to improve economic, monetary and financial statistics at the international, regional and national level. BIS statistical experts are also invited to participate in expert meetings of the IMF, OECD and ECB.

Irving Fisher Committee on Central Bank Statistics

During 2006, the Irving Fisher Committee on Central Bank Statistics (IFC), a forum of central bank users and compilers of statistics, established itself at the BIS, with most of the BIS's shareholding central banks formally becoming full institutional members. The Committee's first meeting at the BIS, at which 53 members were represented, was held on 29 August 2006. At this meeting the Committee's functions and future activities were defined and a new Executive was constituted. The Committee is chaired by Jan Smets, Director at the National Bank of Belgium. Membership is open to all interested central banks. The IFC also welcomes individual and institutional members from inside and outside the central banking community as associates.

Highlights of the year included:

- the Third IFC Conference (August 2006), the theme of which was "Measuring the financial position of the household sector". More than 130 experts from 68 central banks participated; and
- a contribution to the International Association of Official Statistics "People on the move" conference (September 2006). The topic of the plenary session organised by the IFC was "Financial aspects of migration: the measurement of remittances".

The proceedings of these meetings are published in the *IFC Bulletin*, which is now part of the BIS publications series.

BIS Data Bank

Through the Data Bank, participating central banks regularly report national data to the BIS, which makes these data available to the other participants. Users access the Data Bank through a newly redesigned web-based application, rolled out in the past year. At the same time, the Data Bank's content has been expanded to include data on payment and settlement systems, in particular those collected regularly by the Committee on Payment and Settlement Systems.

Korea's central bank and Singapore's monetary authority officially became participants in the past year, bringing the total to 41 BIS shareholding central banks. Those member central banks that do not participate in the Data Bank have started to report a limited number of key economic indicators; these are included in the background statistical document prepared for each BIS bimonthly meeting.

The Data Bank's technical platform electronically receives and/or disseminates the BIS international financial statistics on international banking, securities, foreign exchange and derivatives markets.

International financial statistics

Last year the guidelines to the BIS international banking statistics, which are an important methodological source for users of these data, were updated. The BIS and reporting central banks also carried out analytical work on the relationship between the locational and consolidated banking datasets and on estimates for the currency breakdown of the consolidated statistics.

BIS statisticians supported the collection of data on securities markets by the CGFS's working group on local currency bond markets (see above). The

exercise identified which data are currently available on securities issuance and holdings from various national and international sources, permitting improvements in the BIS securities statistics.

The BIS banking and securities statistics are an important data source for the Joint External Debt Hub, established in cooperation with the IMF, OECD and World Bank. Last year the BIS began to cooperate actively with the International Union of Credit and Investment Insurers (the Berne Union) in order to obtain data on international trade credit for inclusion in the Hub.

Preparations for the next Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity, to be carried out between April and June 2007, got well under way during the year. It is expected that 54 central banks from around the world will participate. The findings will be published in the second half of 2007.

Statistical information technology applications upgrade

The BIS is undertaking a multi-year upgrade of its relevant information technology (IT) applications to improve its capability to support central bank cooperation in the statistical area. In the course of this project, the BIS has collected information from central banks pertaining to the use of graphical tools as well as time series in the context of relational databases. This information is typically shared with the central banks submitting such information to the BIS.

Statistical Data and Metadata Exchange

As in 2006, in 2007 the BIS is chairing the Statistical Data and Metadata Exchange (SDMX) initiative, which fosters standards for the exchange of statistical information. It is sponsored by the BIS, along with the ECB, Eurostat, IMF, OECD, United Nations and World Bank. SDMX products include:

- technical standards, approved by the International Organization for Standardization;
- content-oriented guidelines for exchange of data and metadata; and
- implementation tools that are made available by sponsoring organisations or private sector vendors.

More than 200 experts attended a conference hosted by the World Bank, "Towards implementation of SDMX", in January 2007. It gave an overview of SDMX developments, demonstrated practical implementations and provided introductory capacity-building. At the conference, a joint project was announced by SDMX and XBRL International (eXtensible Business Reporting Language, used for electronic exchange of accounting information). This will explore opportunities for interoperability between their respective data exchange formats.

Draft standards and guidelines are available for public comment on the SDMX website (www.sdmx.org).

Group of Computer Experts of the G10 central banks

The major goal of the Group of Computer Experts is to share technical and organisational experiences in the IT area among a number of key central banks. The Group, supported by working groups and task forces, meets twice a year.

The Group's November 2006 meeting assessed central banks' experiences under the topic of "Applications", with a special review of rapid application development (RAD). IT governance, business continuity and IT security were dominant themes. A number of cooperative developments among central banks, particularly related to the implementation of the European payment system TARGET2 in 2007, were also discussed.

The Group's Working Party on Security Issues (WPSI) held two meetings in the last year to discuss:

- organisational structures and the trend towards merging IT and physical security;
- risks from malicious mobile code;
- solutions for remote access;
- network segregation; and
- the costs of security solutions.

On the subject of business continuity, emphasis has been placed on risk management, particularly as related to preparations for possible pandemics. There has also been an increased focus on resilience in staff resources, as opposed to a past emphasis on physical and IT resources.

In June 2007, the Group held its triennial workshop, now called the Central Bank Information Technology Exchange (CBITX). The four scheduled sessions covered "Meeting the needs of knowledge workers", "Portfolio management and cost accounting", "IT risk management" and "IT services provision", and offered opportunities for participants to share their experiences, concerns and lessons learned in these areas.

A decision was taken this year to hold a joint meeting of the G10 heads of IT security and the WPSI. The first meeting, Workshop 2008, to be held in March 2008 at the BIS, will enable the sharing of experiences and information relating to operational risks to central banks.

Cooperation with regional central bank groupings

Although the BIS does not provide bilateral technical assistance, it occasionally supports regional training initiatives for central banks. During the past year this included:

- a workshop on "Financial stability: role of central banks", organised by the Bank of Algeria for central bankers from the French-speaking countries of North and West Africa;
- a seminar on "Non-bank financial intermediation: challenges for central banks", organised by the South East Asian Central Banks (SEACEN) and hosted by the State Bank of Vietnam;
- the organisation of two modules, one on banking and finance and the other on monetary policy, as part of the Masters in Banking and Finance programme of the Centre Africain d'Études Supérieures en Gestion (CESAG), located in Dakar;
- a meeting hosted by the Reserve Bank of South Africa for the central banks of the Southern African Development Community (SADC) on the topic of regional monetary and financial integration; and

- a seminar on bank and market-based financial intermediation for central banks from central and eastern Europe, and the Commonwealth of Independent States at the Joint Vienna Institute.

In summer 2006, 40 central banks from industrial countries, central and eastern Europe and the Commonwealth of Independent States met in Basel for the annual meeting of the Group of Coordinators of Technical Cooperation and Training. One of the topics discussed was the shift in demand for technical cooperation towards new regions, notably the Middle East, Asia and Africa (including the Maghreb).

Internal Audit

G10 central bank auditors meet regularly to share experience and knowledge in their area of expertise, and to address new issues and challenges. The main topics for discussion usually derive from international auditing standards and the continuous need to improve control over the risks faced by central banks. Twice a year, the BIS's Internal Audit unit organises and hosts the meetings of the G10 Working Party on IT Audit Methodologies.

In June 2006, the BIS participated in the 20th Annual Plenary Conference of G10 Heads of Internal Audit, hosted by the Netherlands Bank and covering: ethics, ethical awareness and auditing; the use of risk models; and auditing business continuity management (for which the BIS coordinated the work of a G10 task force).

BIS Internal Audit has established an information sharing network for internal audit heads from Asia-Pacific central banks and monetary authorities. In October, the BIS Representative Office for the Americas, in cooperation with Internal Audit, organised in Mexico City the first BIS meeting of heads of internal audit from Latin American and Caribbean central banks.

BIS contributions to broader international financial cooperation

Group of Ten

In contributing to the work of the G10 Finance Ministers and central bank Governors, the BIS participates as an observer institution and provides secretariat support together with the IMF and OECD. At their September 2006 meeting in Singapore, the G10 Ministers and Governors considered a report on the prospects for the G10 and concluded that the global economy's changing landscape underscored the need to give greater focus to international economic cooperation. They agreed that future annual meetings of G10 Ministers and Governors would be most useful if they included informal and frank discussions of significant international economic and financial issues. To facilitate such discussions, the Chairman of the G10 could invite the FSF Chair, the chairs of the various G10 committees or other participants in the meeting to introduce issues for discussion pertaining to financial markets and systems.

Financial Stability Forum

The Financial Stability Forum (FSF), chaired by Mario Draghi, Governor of the Bank of Italy, was established at the BIS in 1999 by G7 Finance Ministers and central bank Governors to promote international financial stability through enhanced information exchange and cooperation in financial supervision and surveillance. Its remit is to assess risks and vulnerabilities affecting the international financial system and to encourage and coordinate action to address them. The FSF comprises senior officials from finance ministries, central banks and financial regulators in key financial centres, as well as representatives of international financial institutions (the BIS, IMF, OECD and World Bank), international supervisory and regulatory standard-setting bodies (the Basel Committee, the IAIS, the International Accounting Standards Board (IASB) and the International Organization of Securities Commissions (IOSCO)) and central bank expert groupings (CGFS and CPSS). Switzerland joined the FSF in January 2007.

The FSF meets twice yearly in plenary form, most recently in September 2006 in Paris and March 2007 in Frankfurt. The Forum also holds regional meetings to foster wider exchanges of views on financial vulnerabilities and the work under way nationally and internationally to address them. The most recent regional meeting was held in Stockholm in January 2007, focusing on rapid credit growth, foreign currency borrowing and supervisory challenges associated with cross-border banking in emerging European economies.

At its March 2007 meeting, the FSF reviewed the drivers and implications of the turbulence in financial markets in late February and early March 2007. It also discussed developments in credit risk transfer markets and the impact of increased private equity and leveraged buyout transactions on overall corporate leverage and credit exposures of intermediaries. The FSF also assessed the systemic risks posed by the growth of the hedge fund sector and the supervisory, regulatory and private sector actions taken in recent years to strengthen market discipline, risk management practices and market infrastructure. In the light of the increasing involvement of hedge funds in credit markets with complex products, the FSF discussed how financial institutions are responding to associated risks, including developments in collateral, margining and stress testing practices. Following a request from G7 Finance Ministers and central bank Governors, the FSF has prepared an update of its 2000 report on highly leveraged institutions.

The FSF has also worked to promote the preparedness of financial authorities and the wider financial sector for dealing with possible financial crises and business continuity incidents, including an avian flu pandemic. In November last year, the FSF and the UK authorities organised a workshop on planning and communication for financial crises and business continuity incidents. As a follow-up, the FSF members are sharing information and experiences in this area, including lessons learned from crisis exercises and business continuity incidents.

The FSF is also promoting work on how regulation could be made more effective and efficient, including by facilitating dialogue between regulators and

the financial industry. As part of this work, the FSF's regulatory members are undertaking a stocktaking exercise on the principles and procedures they follow in the development and interpretation of new regulations and other policy initiatives.

The FSF has supported efforts to strengthen international auditing and accounting standards and practices. In the light of the need to strengthen audit quality and improve the global consistency of audit regulation, the FSF welcomed the first meeting of the International Forum of Independent Audit Regulators in March 2007 and supported its planned work programme. The FSF also took stock of the recent progress of accounting standard setters in addressing various international issues, including ongoing efforts to harmonise accounting standards and to ensure consistent interpretation of standards.

The FSF's offshore financial centre (OFC) Review Group assessed the progress made by its member bodies to promote further improvements in OFCs, notably in effective cross-border cooperation and information exchange and the adequacy of supervisory resources. The FSF has started a review of its OFCs initiative, which it will discuss in September 2007.

FSF website: www.fsforum.org.

International Association of Insurance Supervisors

The International Association of Insurance Supervisors (IAIS), hosted by the BIS since 1998, aims to contribute to global financial stability through improved supervision of the insurance industry, the development of standards for supervision, international cooperation based on exchange of information, and mutual assistance. In collaboration with other international regulatory bodies (in the framework of the Joint Forum of the Basel Committee, IOSCO and the IAIS), the IAIS has also helped develop principles for the supervision of financial conglomerates. The continuous increase in new members and observers reflects the growing recognition of the IAIS's role.

During the past year, the IAIS took major steps in the following five areas.

Accounting

The IAIS finalised a comment paper, *Issues arising as a result of the IASB's Insurance Contracts Project – Phase II: second set of IAIS observations*, as input into the International Accounting Standards Board's Phase II project. The paper sets out a number of principles, or key observations, on measurement themes common to both general purpose financial reporting and regulatory reporting. The principles identified include various features of insurance liability measurement, risk margins and aspects of life insurance accounting.

Capital adequacy and solvency

The IAIS is progressively building a common structure and common standards for the assessment of insurer solvency, which will serve to enhance the transparency and comparability of insurers worldwide. This will benefit

consumers, the industry, investors and other interested parties. A standard and a supporting issues paper on asset-liability management (ALM) were developed and adopted in October, the first in a suite of standards proposed under the IAIS Framework for Insurance Supervision, and detailed in the Roadmap Paper (*A new framework for insurance supervision: towards a common structure and common standards for the assessment of insurer solvency*). In February 2007, building on the earlier *Cornerstones for the formulation of regulatory financial requirements*, the IAIS approved the *IAIS common structure for the assessment of insurer solvency*, which provides a basis for the IAIS to develop its standards and guidance on this topic by presenting a coherent risk-based methodology for the setting of regulatory financial requirements.

Reinsurance

The revised IAIS guidance paper on *Risk transfer, disclosure and analysis of finite reinsurance*, adopted in October 2006, outlines the background on the development of finite reinsurance and the uses of this product by insurers, as well as issues in finite reinsurance and various supervisory approaches to address them. The revision addresses the sections on life insurance and reflects the latest developments in accounting for reinsurance contracts. In November 2006, the IAIS published the third edition of its *Global reinsurance market report*. The report reviews the overall financial health of the sector in 2005, an exceptional year for the reinsurance market, with unprecedented levels of losses due to natural catastrophes.

Information sharing

Recognising that supervisors must collaborate at both the national and international levels to ensure that insurers and reinsurers are supervised effectively, the IAIS adopted a *Multilateral memorandum of understanding (MMOU) for the sharing of information between supervisors* in February 2007. It defines a set of principles and procedures for sharing information, views and assessments, and provides a more efficient basis on which to make such sharing possible.

Training

During the past year, the IAIS organised or assisted in some 20 seminars, conferences and workshops around the world, in collaboration with the FSI. The IAIS also completed the Core Curriculum project, the result of a successful partnership between the IAIS and the World Bank Group in developing material for use in training insurance supervisors on the key elements of the IAIS Insurance Core Principles.

IAIS website: www.iaisweb.org.

International Association of Deposit Insurers

The International Association of Deposit Insurers (IADI), hosted by the BIS since 2002, contributes to the stability of financial systems by promoting

international cooperation and encouraging wide international contact among deposit insurers and other interested parties. In particular, IADI:

- enhances the understanding of common interests and issues related to deposit insurance;
- sets out guidance to foster the effectiveness of deposit insurance systems;
- facilitates the sharing of expertise on deposit insurance issues through training, development and educational programmes; and
- provides advice on the establishment of effective deposit insurance systems, and the enhancement of existing systems.

Currently, 66 organisations (of which 47 are members) from around the world are involved in IADI's activities, including a number of central banks that have an interest in promoting the adoption or operation of effective deposit insurance systems. One of the main thrusts of IADI's efforts to improve the effectiveness of deposit insurance systems is the development of IADI principles and best practices which focus on what is working particularly well in various jurisdictions and the reasons why.

During its fifth year of operation, IADI continued to provide many forums for deposit insurers and others with related interests. Highlights were:

- the Fifth Annual Conference, with the theme "Raising the bar", held in Rio de Janeiro in November 2006 and attended by 160 deposit insurers and policymakers from 46 countries;
- an exposition organised by IADI, at which 32 organisations from systems around the world provided information on the key characteristics of their depositor protection arrangements;
- a two-day international seminar on enterprise risk management, held in Kuala Lumpur in September 2006; and
- the conference on "International financial instability: cross-border banking and national regulation" held in Chicago in October 2006, in conjunction with the Federal Reserve Bank of Chicago.

In 2006, IADI published *Guidance on interrelationships among safety net players*, the latest in a series of guidance papers following the initial publication of *Guidance for developing effective deposit insurance systems* by the FSF Working Group on Deposit Insurance in 2001, and a guidance paper on dealing with bank resolutions. Furthermore, the IADI Research and Guidance Committee is finalising other guidance papers on claims and recovery, governance, funding and effective deposit insurance mandates, to be published in mid-2007.

In October 2006, a special issue on deposit insurance was published by the *Journal of Banking Regulation*, co-authored by academics, the IADI Secretary General and deposit insurance practitioners.

Recent regional activities have included conferences, seminars and Committee meetings in Abuja, Prague, Marrakesh, Rio de Janeiro, Washington DC, Kuala Lumpur and Hanoi.

A new interactive web portal has been launched to facilitate research and to provide information on deposit insurance topics and activities to members and participants.

IADI website: www.iadi.org.

Financial services of the Bank

Banking services

The BIS offers a wide range of financial services designed specifically to assist central banks and other monetary authorities in the management of their foreign reserves. Some 130 such authorities, as well as a number of international institutions, make active use of these services.

In response to the diverse – and constantly evolving – needs of central banks, the BIS offers an extensive array of investment possibilities in terms of currency denomination, liquidity and maturity. In addition to traditional money market placements such as sight/notice accounts and fixed-term deposits, the Bank offers two instruments that can be traded (bought and sold back) directly with it: the Fixed-Rate Investment at the BIS (FIXBIS), available in maturities from one week to one year; and the BIS Medium-Term Instrument (MTI), with maturities from one year up to 10 years. A series of callable MTI structures, as well as other instruments with embedded optionality, are also part of the standard product range.

Safety and liquidity are the key features of these credit intermediation services, which are supported by a rigorous internal risk management framework. In accordance with best practice, a separate risk control unit reporting directly to the Deputy General Manager – and through him to the General Manager – monitors the Bank's credit, liquidity and market risks. Similarly, a compliance and operational risk unit monitors the Bank's operational risks.

The BIS makes spot, forward and option transactions in foreign exchange and gold on behalf of its customers.

From time to time, the Bank extends short-term credits to central banks, usually on a collateralised basis. It also acts as trustee and collateral agent (see below).

The BIS provides asset management services in sovereign securities or high-grade assets. These may take the form of either a specific portfolio mandate negotiated between the BIS and a central bank or an open-end fund structure – the BIS Investment Pool (BISIP) – allowing customers to invest in a common pool of assets. Two Asian Bond Funds (ABF1 and ABF2) are administered by the BIS under the BISIP umbrella: ABF1 is managed by the BIS and ABF2 by a group of external fund managers.

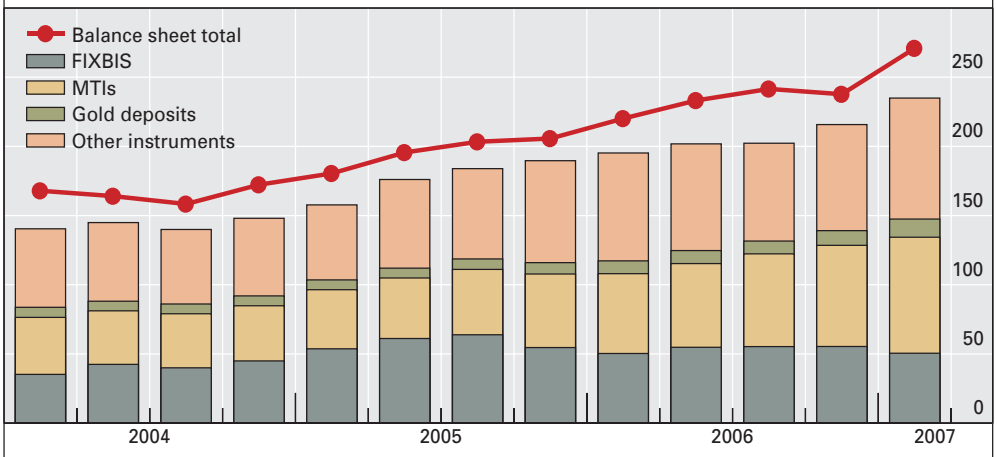
BIS financial services are provided out of two linked trading rooms: one at its Basel head office and one at its Asian Office in Hong Kong SAR.

Operations of the Banking Department in 2006/07

The BIS balance sheet continued to expand in 2006/07 to reach a financial year-end record at 31 March 2007 of SDR 270.9 billion, a substantial year-on-year increase of SDR 50.8 billion, or 23%. Of this increase, SDR 1.0 billion was attributable to a higher market price of gold. On the other hand, if exchange rates had remained constant, the increase would have been SDR 1.7 billion greater.

Balance sheet total and customer placements by product

End-quarter figures, in billions of SDR



The sum of the bars indicates total customer placements.

Liabilities

The size of the BIS balance sheet is mainly driven by placements from customers, which constitute the vast majority of total liabilities (see graph). On 31 March 2007, customer placements amounted to SDR 234.9 billion, compared with SDR 195.2 billion at the end of the previous financial year.

Around 95% of customer placements are denominated in currencies, with the remainder in gold. Currency deposits rose from SDR 186.0 billion a year ago to SDR 221.8 billion at end-March 2007, representing some 6% of the world's total foreign exchange reserves of nearly SDR 3.5 trillion, up from SDR 3.0 trillion at end-March 2006. The share of currency placements denominated in US dollars was 62%, whereas euro-denominated funds accounted for 21%. Gold deposits amounted to SDR 13.1 billion at end-March 2007, an increase of SDR 3.9 billion over the financial year, of which valuation effects (ie a higher gold price) accounted for SDR 0.8 billion.

In terms of products, the expansion in customer currency placements was mainly attributable to a 45% increase in investments in MTIs, the single largest BIS instrument held by customers.

A breakdown by geographical region of placements with the BIS over the financial year shows a relatively stable pattern, with Asian customers accounting for the highest share.

Assets

Most of the assets of the BIS consist of investments with top-quality commercial banks of international standing as well as in government and quasi-government securities, and reverse repurchase agreements. In addition, the Bank owned 150 tonnes of fine gold at 31 March 2007, having disposed of 15 tonnes during the financial year. The credit exposure is managed in a very conservative manner, with 99.7% of the Bank's credit

exposure rated A– or higher as at 31 March 2007 (see note 4D to the financial statements).

The Bank's holdings of currency deposits and securities, including reverse repurchase agreements, totalled SDR 247.9 billion on 31 March 2007, up from SDR 199.2 billion at the end of the previous financial year. These additional funds were for the most part invested in top-quality commercial bank deposits, high-grade securities and reverse repurchase agreements against government collateral.

The Bank uses various derivative instruments in order to manage its assets and liabilities efficiently (see note 9 to the financial statements).

Agent and trustee functions

Trustee for international government loans

The Bank continued during the year to perform its functions as trustee for the funding bonds 1990–2010 of the Dawes and Young Loans (for details, see the *63rd Annual Report* of June 1993). The Deutsche Bundesbank, as paying agent, notified the Bank that in 2006 the Bundesamt für zentrale Dienste und offene Vermögensfragen (BADV – German Federal Office for Central Services and Unresolved Property Issues) had arranged for payment of approximately €4.9 million for redemption of funding bonds and interest. Redemption values and other details were published by the BADV in the *Bundesanzeiger* (*Federal Gazette*).

The Bank maintained its reservations regarding the application by the BADV of the exchange guarantee clause for the Young Loan (stated in detail in its *50th Annual Report* of June 1980), which also extend to the funding bonds 1990–2010.

Escrow agent functions

The Bank performed its functions as escrow agent under a Depository and Escrow Agreement with the Central Bank of Nigeria dated 31 October 2005 (described in the *76th Annual Report* of June 2006). Its obligations under this Agreement ceased with the last release of funds in February 2007, ie three months ahead of the scheduled termination date of 31 May 2007.

Collateral agent functions

Under a number of agreements the BIS acts as collateral agent to hold and invest collateral for the benefit of the holders of certain foreign currency denominated bonds issued by countries under external debt restructuring arrangements. During 2006/07, collateral pledge agreements included those for Peruvian bonds (see the *67th Annual Report* of June 1997) and Côte d'Ivoire bonds (see the *68th Annual Report* of June 1998). The functions of the BIS as collateral agent under the collateral pledge agreements for Brazilian bonds (described in the *64th Annual Report* of June 1994) terminated in June 2006 upon Brazil's early repurchase of all outstanding bonds.

Institutional and administrative matters

The Bank's administration

Budget policy

The process of formulating the Bank's expenditure budget for the coming financial year starts about six months in advance with the setting by Management of a broad business orientation and financial framework. Within this context, business areas specify their plans and the corresponding resource requirements. The process of reconciling detailed business plans, objectives and overall resource availability culminates in the determination of a draft financial budget. This must be approved by the Board before the start of the financial year.

In drawing up the budget, a distinction is made between administrative and capital expenditures. In common with other organisations of a similar nature to the BIS, expenditures for management and staff, including remuneration, pensions and health and accident insurance, amount to around 70% of administrative costs. The other major expenditure categories, each accounting for around 10% of administrative spending, are IT and telecommunications and building and equipment expenditure. Capital spending mainly relates to building and IT investment expenditure, and can vary significantly from year to year. Most of the Bank's administrative and capital expenditure is incurred in Swiss francs.

Administrative expenses before depreciation during the financial year 2006/07 amounted to 227.3 million Swiss francs, 2.0% below the budget of 232.0 million Swiss francs,[2] while capital expenditure, at 21.3 million Swiss francs, was 4.9 million below budget. The underspending in administrative expenses was attributable principally to lower expenditure on staff expatriation allowances, personnel-related costs and IT and telecommunications expenses.

Administrative and capital expenditure also reflected the priorities set in the 2006/07 budget, which were to:

- expand BIS services to deepen relations with shareholding member central banks in the Asia-Pacific region. This initiative involves a three-year policy-oriented research programme on monetary and financial sector issues in Asia, which began in autumn 2006;
- implement the results of the activity review undertaken during 2005/06. This review identified a number of areas where efficiency gains can be realised. The implementation of the activity review will, over the next few years, produce efficiency gains that will allow staff positions to be reallocated to priority areas, particularly to enhance services to central banks; and
- reinforce building safety, renew meeting facilities in the Tower building in Basel and renovate the BIS Sports Club buildings.

[2] The Bank's budgetary accounting is cash-based and excludes certain financial accounting adjustments, principally relating to retirement benefit obligations, which take into account financial market and actuarial developments. These additional factors are included under "Operating expense" disclosed in the profit and loss account (see "Net profit and its distribution").

In March 2007, the Board approved an increase in the administrative budget for the financial year 2007/08 of 2.9% to 238.8 million Swiss francs. The capital budget foresees a decrease of 1.2 million Swiss francs to 24.7 million. The main emphasis in the budget for 2007/08 is on strengthening existing business activities further. In addition to continuing the priorities of the 2006/07 budget mentioned above, the Bank has two further objectives for the financial year 2007/08. These are to:

- strengthen financial reporting and control, principally in the General Secretariat and the back office and support functions in the Banking Department. This initiative complements the enhancements made in recent years to the Bank's risk management, internal audit and compliance functions; and
- plan for the enhanced business continuity facilities and arrangements that will be implemented in 2008/09 at a site in Europe remote from Basel.

Remuneration policy

The jobs performed by BIS staff members are assessed on the basis of a number of objective criteria, including qualifications, experience and responsibilities, and are classified into distinct job grades. The job grades are associated with a structure of salary ranges. Regular salary surveys are conducted in which the structure of BIS salaries is assessed against that in comparable institutions or market segments. The analysis takes into account differences in the taxation of salaries of the staff of the surveyed institutions. When applying the market data to BIS salaries, the Bank focuses on the upper half of market salaries in order to attract highly qualified staff.

In those years in which no comprehensive salary survey is undertaken, the salary structure is adjusted for the rate of inflation in Switzerland and the average rise in real salaries in the business sector of major industrial countries. In July 2006 the salary structure was increased by 1.5% in nominal terms. Movements of salaries of individual staff members within the ranges of the salary structure are based on merit, subject to a regular evaluation of performance. In 2006, the performance review process was revised and a new electronic system was put in place in February 2007.

Non-Swiss and non-locally hired staff, including senior management, are entitled to an expatriation allowance. This currently amounts to 14% or 18% of annual salary depending on family status, subject to a ceiling. Expatriate staff are also entitled to receive an education allowance.[3] In addition, BIS staff members have access through the Bank to a contributory health insurance scheme and a defined benefit contributory pension plan. Compensation and benefits of staff members transferred between Basel and one of the Representative Offices are determined in accordance with the Bank's international assignment policy.

It was decided in early 2005 to conduct regular surveys to benchmark senior officials' salaries against conditions in comparator institutions. Between

[3] Certain staff members who joined the Bank before 1997 receive an expatriation allowance of 25%, but are not entitled to receive education allowances.

surveys, salaries of senior officials are adjusted for Swiss inflation. As of 1 July 2006, the annual remuneration of senior officials, before expatriation allowances, is based on the following salary structure:

- General Manager[4] 726,990 Swiss francs
- Deputy General Manager 615,140 Swiss francs
- Heads of Department 559,220 Swiss francs

The Annual General Meeting approves the remuneration of members of the Board of Directors, with adjustments taking place every three years. The overall fixed annual remuneration paid to the Board of Directors amounts to a total of 992,760 Swiss francs as at 1 April 2007. In addition, Board members receive an attendance fee for each Board meeting in which they participate. Assuming the full Board is represented in all Board meetings, the annual total of these attendance fees amounts to 921,120 Swiss francs.

Net profit and its distribution

Net profit

The net profit for the 77th financial year, 2006/07, amounted to SDR 639.4 million, compared with SDR 599.2 million in the preceding year.

Total operating income

Total operating income was SDR 682.3 million in the financial year 2006/07, compared with SDR 573.4 million in 2005/06. There were three principal reasons for this development:

- Interest income from investment securities benefited from higher interest yields and, to a lesser extent, from the growth in the Bank's equity denominated in currencies, which increased as a result of retained earnings and sales of own gold holdings.
- Net income from the Bank's deposit-taking business benefited from the continued increase in deposits from customers, which outweighed a decline in borrowed funds margins.
- In 2006/07, a small net exchange gain (SDR 0.9 million) was incurred. This compared to an exchange loss of SDR 25.2 million in 2005/06, which was mainly attributable to the impact of an appreciating gold price on the market value of forward contracts for the sale of own gold in that financial year.

Operating expense

Operating expenses (see note 28 to the financial statements) amounted to SDR 149.8 million, 2.0% above the preceding year's figure of SDR 146.9 million. Administrative expenses before depreciation amounted to SDR 137.7 million, 3.1% above the previous year's figure of SDR 133.6 million. The depreciation charge decreased from SDR 13.3 million to SDR 12.1 million.

[4] In addition to the basic salary, the General Manager receives an annual representation allowance and enhanced pension rights.

Operating profit and other profit items

The Bank's operating profit, which reflects the profits of its ongoing business, amounted to SDR 532.5 million, 24.9% higher than the equivalent figure of SDR 426.5 million recorded in 2005/06.

A net loss of SDR 27.0 million was incurred on the sale of investment securities during the year. This resulted from the realignment of the Bank's investment portfolio to its underlying benchmark position and reflected the sale of securities acquired when interest rates were lower. In 2005/06, a gain of SDR 58.2 million had been recorded for the sale of investment securities.

The realised gain of SDR 133.9 million on sales of gold investment assets during 2006/07 arose from the sale of 15 tonnes from the Bank's total holdings of 165 tonnes at 31 March 2006. In 2005/06, a lower gain (SDR 114.5 million) had been recorded, also on the sale of 15 tonnes of the Bank's own gold.

Dividend policy

During the financial year 2005/06, the Board reviewed the dividend policy of the BIS, taking into consideration the Bank's capital needs and the interests of BIS shareholders in obtaining a fair and sustainable return on their investments in BIS shares. The Board concluded that the approach of increasing the dividend by SDR 10 each year continued to be broadly consistent with these considerations. This approach resulted in an increase in the dividend from SDR 235 per share in 2004/05 to SDR 245 in 2005/06. The Board also decided to review the dividend policy every two to three years, taking into account changing circumstances where necessary.

The Board proposes that the dividend for 2006/07 be increased again by SDR 10 to SDR 255 per share. The next Board review of the level of the dividend will take place in the financial year 2007/08.

Proposed distribution of the net profit for the year

On the basis of Article 51 of the Statutes, the Board of Directors recommends to the Annual General Meeting that the net profit of SDR 639.4 million for the financial year 2006/07 be applied by the General Meeting in the following manner:

1. SDR 139.3 million in payment of a dividend of SDR 255 per share;
2. SDR 50.0 million to be transferred to the general reserve fund;[5]
3. SDR 6.0 million to be transferred to the special dividend reserve fund;
4. SDR 444.1 million, representing the remainder of the available net profit, to be transferred to the free reserve fund. This fund can be used by the Board of Directors for any purpose that is in conformity with the Statutes.

If approved by the Annual General Meeting, the dividend will be paid on 2 July 2007 according to each shareholder's instructions in any constituent

[5] Since the general reserve fund exceeded four times the Bank's paid-up capital at 31 March 2006, Article 51 of the Bank's Statutes requires that 10% of the profit after payment of the dividend shall be paid into this fund, until its balance equals five times the paid-up capital.

currency of the SDR, or in Swiss francs, to the shareholders named in the Bank's share register on 31 March 2007. The proposed dividend of SDR 255 per share for the financial year 2006/07 represents a 4.1% increase over the dividend for 2005/06.

The full dividend will be paid on 546,125 shares. The number of issued and paid-up shares is 547,125. Of these shares, 1,000 were held in treasury at 31 March 2007, namely the suspended shares of the Albanian issue. No dividend will be paid on these treasury shares.

Report of the auditors

The Bank's financial statements have been duly audited by Deloitte AG, who have confirmed that they give a true and fair view of the Bank's financial position at 31 March 2007 and the results of its operations for the year then ended. Their report is to be found immediately following the financial statements.

Board of Directors

Jean-Pierre Roth, Zurich
Chairman of the Board of Directors

Hans Tietmeyer, Frankfurt am Main
Vice-Chairman

Ben S Bernanke, Washington
David Dodge, Ottawa
Mario Draghi, Rome
Toshihiko Fukui, Tokyo
Timothy F Geithner, New York
Lord George, London
Stefan Ingves, Stockholm
Mervyn King, London
Christian Noyer, Paris
Guillermo Ortiz, Mexico City
Guy Quaden, Brussels
Fabrizio Saccomanni, Rome
Jean-Claude Trichet, Frankfurt am Main
Alfons Vicomte Verplaetse, Brussels
Axel A Weber, Frankfurt am Main
Nout H E M Wellink, Amsterdam
Zhou Xiaochuan, Beijing

Alternates

Giovanni Carosio or Ignazio Visco, Rome
Donald L Kohn or Karen H Johnson, Washington
Peter Praet or Jan Smets, Brussels
Hermann Remsperger or Wolfgang Mörke, Frankfurt am Main
Marc-Olivier Strauss-Kahn or Michel Cardona, Paris
Paul Tucker or Paul Fisher, London

Committees of the Board of Directors

Consultative Committee
Audit Committee

both chaired by Hans Tietmeyer

Senior officials

Malcolm D Knight	General Manager
Hervé Hannoun	Deputy General Manager
Peter Dittus	Secretary General, Head of General Secretariat
William R White	Economic Adviser, Head of Monetary and Economic Department
Günter Pleines	Head of Banking Department
Daniel Lefort	General Counsel
Már Gudmundsson	Deputy Head of Monetary and Economic Department
Jim Etherington	Deputy Secretary General
Louis de Montpellier	Deputy Head of Banking Department
Josef Tošovský	Chairman, Financial Stability Institute

Changes among the Board of Directors and senior officials

As mentioned above, at its meeting in June 2006, the Board elected three new members of the Board of Directors for a term of office of three years, commencing on 1 July 2006: Guillermo Ortiz, Governor of the Bank of Mexico; Jean-Claude Trichet, President of the European Central Bank; and Zhou Xiaochuan, Governor of the People's Bank of China.

At the same meeting the Board re-elected Nout Wellink, President of the Netherlands Bank, as a member of the Board of Directors for a further period of three years ending on 30 June 2009.

At its meeting in September 2006, the Board re-elected David Dodge, Governor of the Bank of Canada, and Toshihiko Fukui, Governor of the Bank of Japan, as members of the Board of Directors for further periods of three years expiring on 12 September 2009.

By letter dated 20 July 2006, Ben Bernanke, Chairman of the Board of Governors of the Federal Reserve System, reappointed Timothy Geithner, President of the Federal Reserve Bank of New York, as a member of the Board of Directors for a period of three years ending on 12 September 2009.

In November 2006, Pierluigi Ciocca resigned from his position as Deputy Director General of the Bank of Italy and vacated his seat on the Board. By letter dated 7 November 2006, Mario Draghi, Governor of the Bank of Italy, appointed Fabrizio Saccomanni, Director General of the Bank of Italy, as a member of the Board of Directors to fill the seat vacated by Mr Ciocca, for the

unexpired period of Mr Ciocca's term of office until 22 December 2008. Jean-Pierre Landau, Second Deputy Governor of the Bank of France, stepped down from the Board of Directors at the end of his term of appointment on 27 November 2006.

At its meeting in March 2007, the Board re-elected Jean-Pierre Roth, Chairman of the Governing Board of the Swiss National Bank, as a member of the Board of Directors for a further period of three years ending on 31 March 2010. For the sake of good order, the term of office for which Mr Roth had been elected Chairman of the Board of Directors, from 1 March 2006 to 28 February 2009, was confirmed at the same meeting.

Axel Weber, President of the Deutsche Bundesbank, appointed Hermann Remsperger as his first Alternate from June 2006 to succeed Jürgen Stark. From July 2006, Ben Bernanke, Chairman of the Board of Governors of the Federal Reserve System, appointed Donald Kohn as his first Alternate to replace Roger Ferguson.

There were no changes among the senior officials of the BIS.

BIS member central banks[6]

Bank of Algeria

Central Bank of Argentina

Reserve Bank of Australia

Austrian National Bank

National Bank of Belgium

Central Bank of Bosnia and Herzegovina

Central Bank of Brazil

Bulgarian National Bank

Bank of Canada

Central Bank of Chile

People's Bank of China

Croatian National Bank

Czech National Bank

National Bank of Denmark

Bank of Estonia

European Central Bank

Bank of Finland

Bank of France

Deutsche Bundesbank (Germany)

Bank of Greece

Hong Kong Monetary Authority

Magyar Nemzeti Bank (Hungary)

Central Bank of Iceland

Reserve Bank of India

Bank Indonesia

Central Bank & Financial Services Authority of Ireland

Bank of Israel

Bank of Italy

Bank of Japan

Bank of Korea

Bank of Latvia

Bank of Lithuania

National Bank of the Republic of Macedonia

Central Bank of Malaysia

Bank of Mexico

Netherlands Bank

Reserve Bank of New Zealand

Central Bank of Norway

Bangko Sentral ng Pilipinas

National Bank of Poland

Bank of Portugal

National Bank of Romania

Central Bank of the Russian Federation

Saudi Arabian Monetary Agency

Monetary Authority of Singapore

National Bank of Slovakia

Bank of Slovenia

South African Reserve Bank

Bank of Spain

Sveriges Riksbank (Sweden)

Swiss National Bank

Bank of Thailand

Central Bank of the Republic of Turkey

Bank of England

Board of Governors of the Federal Reserve System

[6] In accordance with Article 15 of its Statutes, the Bank's capital is held by central banks only. The legal status of the Yugoslav issue of the capital of the BIS is currently under review following the constitutional changes in February 2003 that transformed the Federal Republic of Yugoslavia into the State Union of Serbia and Montenegro, with two separate central banks, and the Republic of Montenegro's subsequent declaration of independence from the State Union in May 2006.

Financial statements

as at 31 March 2007

The financial statements on pages 192–231 for the financial year ended 31 March 2007 were approved on 7 May 2007. They are presented in a form approved by the Board of Directors pursuant to Article 49 of the Bank's Statutes and are subject to approval by the shareholders at their Annual General Meeting on 24 June 2007.

Jean-Pierre Roth
Chairman

Malcolm D Knight
General Manager

Balance sheet

As at 31 March 2007

SDR millions	Notes	**2007**	2006
Assets			
Cash and sight accounts with banks	5	92.4	33.0
Gold and gold deposits	6	15,457.6	11,348.0
Treasury bills	7	43,159.3	47,311.9
Securities purchased under resale agreements	7	61,193.5	19,519.2
Time deposits and advances to banks	8	91,266.0	87,898.5
Government and other securities	7	52,244.0	44,436.4
Derivative financial instruments	9	1,850.8	1,956.0
Accounts receivable	10	5,473.6	7,444.7
Land, buildings and equipment	11	188.0	188.4
Total assets		**270,925.2**	220,136.1
Liabilities			
Currency deposits	12	221,790.1	185,991.5
Gold deposits	13	13,134.9	9,235.6
Securities sold under repurchase agreements	14	1,062.5	1,222.4
Derivative financial instruments	9	2,816.2	2,674.9
Accounts payable	15	19,584.1	9,251.3
Other liabilities	16	373.8	169.4
Total liabilities		**258,761.6**	208,545.1
Shareholders' equity			
Share capital	17	683.9	683.9
Statutory reserves	18	9,538.5	9,071.7
Profit and loss account		639.4	599.2
Less: shares held in treasury	20	(1.7)	(1.7)
Other equity accounts	21	1,303.5	1,237.9
Total equity		**12,163.6**	11,591.0
Total liabilities and equity		**270,925.2**	220,136.1

Profit and loss account

For the financial year ended 31 March 2007

SDR millions	Notes	**2007**	2006
Interest income	23	8,858.0	6,239.1
Interest expense	24	(8,241.2)	(5,569.1)
Net valuation movement	25	63.3	(74.1)
Net interest income		**680.1**	595.9
Net fee and commission income	26	1.3	2.7
Net foreign exchange gain / (loss)	27	0.9	(25.2)
Total operating income		**682.3**	573.4
Operating expense	28	(149.8)	(146.9)
Operating profit		**532.5**	426.5
Net (loss) / gain on sales of securities available for sale	29	(27.0)	58.2
Net gain on sales of gold investment assets	30	133.9	114.5
Net profit for the financial year		**639.4**	599.2
Basic and diluted earnings per share (in SDR per share)	31	**1,170.8**	1,108.5

Statement of cash flows

For the financial year ended 31 March 2007

SDR millions	Notes	**2007**	2006
Cash flow from / (used in) operating activities			
Operating profit		532.5	426.5
Non-cash flow items included in operating profit			
Depreciation of land, buildings and equipment	11	12.0	13.3
Net change in operating assets and liabilities			
Currency deposit liabilities at fair value through profit and loss		36,225.6	23,216.8
Currency banking assets		(39,242.3)	(30,719.4)
Sight and notice deposit account liabilities		2,106.3	8,515.2
Gold deposit liabilities		3,899.3	2,124.8
Gold and gold deposit banking assets		(4,063.0)	(2,118.0)
Accounts receivable		(15.8)	0.3
Other liabilities / accounts payable		205.6	19.6
Net derivative financial instruments		246.4	(533.7)
Net cash flow from / (used in) operating activities		**(93.4)**	945.4
Cash flow from / (used in) investment activities			
Net change in currency investment assets available for sale	7B	105.5	(1,676.9)
Net change in currency investment assets held at fair value through profit and loss		(548.9)	–
Securities sold under repurchase agreements		(159.9)	63.0
Net change in gold investment assets	6B	208.4	187.9
Net purchase of land, buildings and equipment	11	(11.6)	(12.6)
Net cash flow from / (used in) investment activities		**(406.5)**	(1,438.6)
Cash flow from / (used in) financing activities			
Dividends paid		(132.4)	(114.4)
Redistribution of shares held in treasury		–	468.2
Shares repurchased in 2001 – payments to former shareholders	16	(1.3)	(1.5)
Net cash flow from / (used in) financing activities		**(133.7)**	352.3
Total net cash flow		**(633.6)**	(140.9)
Net effect of exchange rate changes on cash and cash equivalents		(85.8)	108.0
Net movement in cash and cash equivalents		(547.8)	(248.9)
Net increase / (decrease) in cash and cash equivalents		**(633.6)**	(140.9)
Cash and cash equivalents, beginning of year	32	**2,864.6**	3,005.5
Cash and cash equivalents, end of year	32	**2,231.0**	2,864.6

Statement of proposed profit allocation

For the financial year ended 31 March 2007

SDR millions	Notes	2007
Net profit for the financial year		**639.4**
Transfer to legal reserve fund	18	–
Proposed dividend:		
SDR 255 per share on 546,125 shares		139.3
Proposed transfers to reserves:		
General reserve fund	18	50.0
Special dividend reserve fund	18	6.0
Free reserve fund	18	444.1
Balance after allocation to reserves		**–**

The proposed profit allocation is in accordance with Article 51 of the Bank's Statutes.

Movements in the Bank's statutory reserves

For the financial year ended 31 March 2007

						2007
SDR millions	Notes	Legal reserve fund	General reserve fund	Special dividend reserve fund	Free reserve fund	Total statutory reserves
Balance at 31 March 2006		**68.3**	**2,913.1**	**136.0**	**5,954.3**	**9,071.7**
Allocation of 2005/06 profit	18	–	46.7	6.0	414.1	466.8
Balance at 31 March 2007 per balance sheet before proposed profit allocation		**68.3**	**2,959.8**	**142.0**	**6,368.4**	**9,538.5**
Proposed transfers to reserves	18	–	50.0	6.0	444.1	500.1
Balance at 31 March 2007 after proposed profit allocation		**68.3**	**3,009.8**	**148.0**	**6,812.5**	**10,038.6**

Movements in the Bank's equity

For the financial year ended 31 March 2007

SDR millions	Notes	Share capital	Statutory reserves	Profit and loss	Shares held in treasury	Other equity accounts	Total equity
Equity at 31 March 2005		**683.9**	**8,743.2**	**370.9**	**(396.2)**	**851.5**	**10,253.3**
Income:							
Net profit for 2005/06		–	–	599.2	–	–	599.2
Net valuation movement on gold investment assets	21B	–	–	–	–	582.9	582.9
Net valuation movement on securities available for sale	21A	–	–	–	–	(196.5)	(196.5)
Total recognised income		**–**	**–**	**599.2**	**–**	**386.4**	**985.6**
Payment of 2004/05 dividend		–	–	(114.4)	–	–	(114.4)
Allocation of 2004/05 profit		–	256.5	(256.5)	–	–	–
Redistribution of shares held in treasury	20	–	72.0	–	396.2	–	468.2
Reclassification of loan to a consortium of central banks	20	–	–	–	(1.7)	–	(1.7)
Equity at 31 March 2006		**683.9**	**9,071.7**	**599.2**	**(1.7)**	**1,237.9**	**11,591.0**
Income:							
Net profit for 2006/07		–	–	639.4	–	–	639.4
Net valuation movement on gold investment assets	21B	–	–	–	–	41.8	41.8
Net valuation movement on securities available for sale	21A	–	–	–	–	23.8	23.8
Total recognised income		**–**	**–**	**639.4**	**–**	**65.6**	**705.0**
Payment of 2005/06 dividend		–	–	(132.4)	–	–	(132.4)
Allocation of 2005/06 profit		–	466.8	(466.8)	–	–	–
Equity at 31 March 2007 per balance sheet before proposed profit allocation		**683.9**	**9,538.5**	**639.4**	**(1.7)**	**1,303.5**	**12,163.6**
Proposed dividend		–	–	(139.3)	–	–	(139.3)
Proposed transfers to reserves		–	500.1	(500.1)	–	–	–
Equity at 31 March 2007 after proposed profit allocation		**683.9**	**10,038.6**	**–**	**(1.7)**	**1,303.5**	**12,024.3**

At 31 March 2007 statutory reserves included share premiums of SDR 811.7 million (2006: SDR 811.7 million).

Notes to the financial statements

1. Introduction

The Bank for International Settlements (BIS, "the Bank") is an international financial institution which was established pursuant to the Hague Agreements of 20 January 1930, the Bank's Constituent Charter and its Statutes. The headquarters of the Bank are at Centralbahnplatz 2, 4002 Basel, Switzerland. The Bank maintains representative offices in Hong Kong, Special Administrative Region of the People's Republic of China (for Asia and the Pacific) and in Mexico City, Mexico (for the Americas).

The objectives of the BIS, as laid down in Article 3 of its Statutes, are to promote cooperation among central banks, to provide additional facilities for international financial operations and to act as trustee or agent for international financial settlements. Fifty-five central banks are currently members of the Bank. Rights of representation and voting at General Meetings are exercised in proportion to the number of BIS shares issued in the respective countries. The Board of Directors of the Bank is composed of the Governors and appointed Directors from the Bank's founder central banks, being those of Belgium, France, Germany, Italy, the United Kingdom and the United States of America, as well as the Governors of the central banks of Canada, China, Japan, Mexico, the Netherlands, Sweden and Switzerland, and the President of the European Central Bank.

These financial statements incorporate the balance sheet and profit and loss account, as required by Article 49 of the Bank's Statutes.

2. Significant accounting policies

The accounting policies set out below have been applied to both of the financial years presented unless otherwise stated.

A. Scope of the financial statements

These financial statements contain all assets and liabilities that are controlled by the Bank and in respect of which the economic benefits as well as the rights and obligations lie predominantly with the Bank.

Assets and liabilities in the name of but not controlled by the Bank are not included in these financial statements. Information on off-balance sheet assets and liabilities is disclosed in Note 35.

B. Functional and presentation currency

The functional and presentation currency of the Bank is the Special Drawing Right (SDR) as defined by the International Monetary Fund (IMF).

The SDR is calculated from a basket of major trading currencies according to Rule O–1 as adopted by the Executive Board of the IMF on 30 December 2005 and effective 1 January 2006. As currently calculated, one SDR is equivalent to the sum of USD 0.632, EUR 0.410, JPY 18.4 and GBP 0.0903. Prior to 1 January 2006, the SDR was calculated as equivalent to the sum of USD 0.577, EUR 0.426, JPY 21 and GBP 0.0984. The change in composition of the SDR basket was such that the values of the SDR under the old and new baskets were equivalent at 31 December 2005 and no significant gains or losses resulted from the change in the weights of the currencies. The composition of this currency basket is subject to review every five years by the IMF; the next review is due to be undertaken in December 2010.

All figures in these financial statements are presented in SDR millions unless otherwise stated.

C. Currency translation

Monetary assets and liabilities are translated into SDR at the exchange rates ruling at the balance sheet date. Other assets and liabilities are recorded in SDR at the exchange rates ruling at the date of the transaction. Profits and losses are translated into SDR at an average rate. Exchange differences arising from the retranslation of monetary assets and liabilities and from the settlement of transactions are included as net foreign exchange gains or losses in the profit and loss account.

D. Designation of financial instruments

Upon initial recognition the Bank allocates each financial instrument to one of the following categories:

- Loans and receivables
- At fair value through profit and loss
- Available for sale

The allocation to these categories is dependent on the nature of the financial instrument and the purpose for which it was entered into, as described in section E below.

The resulting designation of each financial instrument determines the accounting methodology that is applied, as described in the accounting policies below. Where the financial instrument is designated at fair value through profit and loss, the Bank does not subsequently change this designation.

E. Asset and liability structure

Assets and liabilities are organised into two sets of portfolios:

1. Banking portfolios

These comprise currency and gold deposit liabilities and related banking assets and derivatives.

The Bank operates a banking business in currency and gold on behalf of central bank customers. In this business the Bank takes limited gold price, interest rate and foreign currency risk.

The Bank designates all currency financial instruments in its banking portfolios (other than cash and sight accounts with banks, call and notice accounts and sight and notice deposit account liabilities) as held at fair value through profit and loss. The use of fair values in the currency banking portfolios is described in Section I below.

All gold financial instruments in these portfolios are designated as loans and receivables.

2. Investment portfolios

These comprise assets, liabilities and derivatives relating principally to the investment of the Bank's equity.

The Bank holds most of its equity in financial instruments denominated in the constituent currencies of the SDR, which are managed using a fixed duration benchmark of bonds.

The relevant currency assets (other than cash and sight accounts with banks, and call and notice accounts) are designated as available for sale. Related securities sold under repurchase agreements are designated as loans and receivables.

In addition, the Bank maintains some of its equity in more actively managed portfolios. The currency assets in these portfolios are trading assets and as such are designated as held at fair value through profit and loss.

The remainder of the Bank's equity is held in gold. The Bank's own gold holdings are designated as available for sale.

F. Cash and sight accounts with banks

Cash and sight accounts with banks are included in the balance sheet at their principal value plus accrued interest where applicable.

G. Call and notice accounts

Call and notice accounts are short-term monetary assets. They typically have notice periods of three days or less and are included under the balance sheet heading "Time deposits and advances to banks".

Due to their short-term nature, these financial instruments are designated as loans and receivables. They are included in the balance sheet at their principal value plus accrued interest. Interest is included in interest income on an accruals basis.

H. Sight and notice deposit account liabilities

Sight and notice deposit accounts are short-term monetary liabilities. They typically have notice periods of three days or less and are included under the balance sheet heading "Currency deposits".

Due to their short-term nature, these financial instruments are designated as loans and receivables. They are included in the balance sheet at their principal value plus accrued interest. Interest is included in interest expense on an accruals basis.

I. Use of fair values in the currency banking portfolios

In operating its currency banking business, the Bank acts as a market-maker in certain of its currency deposit liabilities. As a result of this activity the Bank incurs realised profits and losses on these liabilities.

In accordance with the Bank's risk management policies the market risk inherent in this activity is managed on an overall fair value basis, combining all the relevant assets, liabilities and derivatives in its currency banking portfolios. The realised and unrealised profits or losses on currency deposit liabilities are thus largely offset by realised and unrealised losses or profits on the related currency assets and derivatives, or on other currency deposit liabilities.

To reduce the accounting inconsistency that would arise from recognising realised and unrealised gains and losses on different bases, the Bank designates the relevant assets, liabilities and derivatives in its currency banking portfolios as held at fair value through profit and loss.

J. Currency deposit liabilities held at fair value through profit and loss

As described above, all currency deposit liabilities, with the exception of sight and notice deposit account liabilities, are designated as held at fair value through profit and loss.

These currency deposit liabilities are initially included in the balance sheet on a trade date basis at cost. The subsequent accrual of interest to be paid and amortisation of premiums paid and discounts received are included in "Interest expense".

After trade date, the currency deposit liabilities are revalued to fair value, with all realised and unrealised movements in fair value included under the profit and loss account heading "Net valuation movement".

K. Currency assets held at fair value through profit and loss

Currency assets include treasury bills, securities purchased under resale agreements, time deposits and advances to banks and government and other securities.

As described above, the Bank designates all of the relevant assets in its currency banking portfolios as held at fair value through profit and loss. In addition, the Bank maintains certain actively managed investment portfolios. The currency assets in these portfolios are trading assets and as such are designated as held at fair value through profit and loss.

These currency assets are initially included in the balance sheet on a trade date basis at cost. The subsequent accrual of interest and amortisation of premiums paid and discounts received are included in "Interest income".

After trade date, the currency assets are revalued to fair value, with all realised and unrealised movements in fair value included under the profit and loss account heading "Net valuation movement".

L. Currency assets available for sale

Currency assets include treasury bills, securities purchased under resale agreements, time deposits and advances to banks, and government and other securities.

As described above, the Bank designates as available for sale all of the relevant assets in its currency investment portfolios, except for those assets in the Bank's more actively managed investment portfolios.

These currency assets are initially included in the balance sheet on a trade date basis at cost. The subsequent accrual of interest and amortisation of premiums paid and discounts received are included in "Interest income".

After trade date, the currency assets are revalued to fair value, with unrealised gains or losses included in the securities revaluation account, which is reported under the balance sheet heading "Other equity accounts". Realised profits on disposal are included under the profit and loss heading "Net gain on sales of securities available for sale".

M. Short positions in currency assets

Short positions in currency assets are included in the balance sheet under the heading "Other liabilities" at market value on a trade date basis.

N. Gold

Gold comprises gold bars held in sight accounts. Gold is considered by the Bank to be a financial instrument.

Gold is included in the balance sheet at its weight in gold (translated at the gold market price and USD exchange rate into SDR). Purchases and sales of gold are accounted for on a settlement date basis. Forward purchases or sales of gold are treated as derivatives prior to the settlement date.

The treatment of realised and unrealised gains or losses on gold is described in Section Q below.

O. Gold deposit assets

Gold deposit assets comprise fixed-term gold loans to commercial banks. Gold is considered by the Bank to be a financial instrument.

Gold deposit assets are included in the balance sheet on a trade date basis at their weight in gold (translated at the gold market price and USD exchange rate into SDR) plus accrued interest.

Interest on gold deposit assets is included in interest income on an accruals basis. The treatment of realised and unrealised gains or losses on gold is described in Section Q below.

P. Gold deposit liabilities

Gold deposit liabilities comprise sight and fixed-term deposits of gold from central banks. Gold is considered by the Bank to be a financial instrument and gold deposit liabilities are designated as loans and receivables.

Gold deposit liabilities are included in the balance sheet on a trade date basis at their weight in gold (translated at the gold market price and USD exchange rate into SDR) plus accrued interest.

Interest on gold deposit liabilities is included in interest expense on an accruals basis. The treatment of realised and unrealised gains or losses on gold is described in Section Q below.

Q. Realised and unrealised gains or losses on gold

The treatment of realised and unrealised gains or losses on gold depends on the designation as described below:

1. Banking portfolios, comprising gold deposit liabilities and related gold banking assets

The Bank designates all the gold financial instruments in its banking portfolios as loans and receivables.

Gains or losses on these transactions in gold are included under the profit and loss account heading "Net foreign exchange gain or loss" as net transaction gains or losses.

Gains or losses on the retranslation of the net position in gold in the banking portfolios are included under the profit and loss account heading "Net foreign exchange gain or loss" as net translation gains or losses.

2. Investment portfolios, comprising gold investment assets

The Bank's own holdings of gold are designated and accounted for as available for sale assets.

Unrealised gains or losses on the Bank's gold investment assets over their deemed cost are taken to the gold revaluation account in equity, which is reported under the balance sheet heading "Other equity accounts".

For gold investment assets held on 31 March 2003 (when the Bank changed its functional and presentation currency from the gold franc to the SDR) the deemed cost is approximately SDR 151 per ounce, based on the value of USD 208 that was applied from 1979 to 2003 following a decision by the Bank's Board of Directors, translated at the 31 March 2003 exchange rate.

Realised gains or losses on disposal of gold investment assets are included in the profit and loss account as "Net gain on sales of gold investment assets".

R. Securities sold under repurchase agreements

Where these liabilities are associated with the management of currency assets at fair value through profit and loss, they are designated as financial instruments held at fair value through profit and loss. Where these liabilities are associated with currency assets available for sale, they are designated as loans and receivables.

They are initially included in the balance sheet on a trade date basis at cost. The subsequent accrual of interest is included in "Interest expense".

After trade date, those liabilities that are designated as at fair value through profit and loss are revalued to fair value, with unrealised gains or losses included under the profit and loss account heading "Net valuation movement".

S. Derivatives

Derivatives are used either to manage the Bank's market risk or for trading purposes. They are designated as financial instruments held at fair value through profit and loss.

They are initially included in the balance sheet on a trade date basis at cost. The subsequent accrual of interest and amortisation of premiums paid and discounts received are included in "Interest income".

After trade date, derivatives are revalued to fair value, with all realised and unrealised movements in value included under the profit and loss account heading "Net valuation movement".

Derivatives are included as either assets or liabilities, depending on whether the contract has a positive or a negative fair value for the Bank.

T. Valuation policy

As described in these accounting policies, the Bank includes most of its financial instruments in its balance sheet at fair value, and includes most changes in fair value in profit and loss. The fair value of a financial instrument is defined as the amount at which the instrument could be exchanged between knowledgeable, willing parties in an arm's length transaction. Key judgments affecting this accounting policy relate to how the Bank determines fair value for financial instruments.

To derive fair value for financial instruments that are quoted in active markets, the Bank uses market quotes that are regularly available from market participants, such as market prices, or interest rates and volatilities that are used as inputs to commonly used valuation techniques. Where no active market exists, or where reliable and regularly quoted market prices are not otherwise available, the Bank determines fair values based on financial models using a discounted cash flow analysis. A discounted cash flow analysis is dependent on estimates of future cash flows, interest rates, exchange rates and prepayment speeds, and upon credit, liquidity and volatility factors.

Although a significant degree of judgment is, in some cases, required in establishing fair values, the Bank believes the fair values recorded in the balance sheet and the changes in fair values recorded in the profit and loss account are appropriate and reflect the underlying economic situation.

U. Accounts receivable and accounts payable

Accounts receivable and accounts payable are principally very short-term amounts relating to the settlement of financial transactions. They are included in the balance sheet at cost.

V. Land, buildings and equipment

The cost of the Bank's buildings and equipment is capitalised and depreciated on a straight line basis over the estimated useful lives of the assets concerned, as follows:

- Buildings – 50 years
- Building installations and machinery – 15 years
- Information technology equipment – up to 4 years
- Other equipment – 4 to 10 years

The Bank's land is not depreciated. The Bank undertakes an annual review of impairment of land, buildings and equipment. Where the carrying amount of an asset is greater than its estimated recoverable amount, it is written down to that amount.

W. Provisions

Provisions are recognised when the Bank has a present legal or constructive obligation as a result of events arising before the balance sheet date and it is probable that economic resources will be required to settle the obligation, provided that a reliable estimate can be made of the amount of the obligation. Best estimates and assumptions are used when determining the amount to be recognised as a provision.

X. Post-employment benefit obligations

The Bank operates three post-employment benefit arrangements for staff pensions, directors' pensions and health and accident insurance for current and former staff members. An independent actuarial valuation is performed annually for each arrangement.

Staff pensions

The Bank provides a final salary defined benefit pension arrangement for its staff, based on a fund without separate legal personality, out of which benefits are paid. The fund assets are administered by the Bank for the sole benefit of current and former members of staff who participate in the arrangement. The Bank remains ultimately liable for all benefits due under the arrangement.

The liability in respect of the staff pension fund is based on the present value of the defined benefit obligation at the balance sheet date, less the fair value of the fund assets at the balance sheet date, together with adjustments for unrecognised actuarial gains and losses and past service costs. The defined benefit obligation is calculated using the projected unit credit method. The present value of the defined benefit obligation is determined from the estimated future cash outflows. The rate used to discount the cash flows is determined by the Bank based on the market yield of highly rated corporate debt securities in Swiss francs which have terms to maturity approximating the terms of the related liability.

The amount charged to the profit and loss account represents the sum of the current service cost of the benefits accruing for the year under the scheme, and interest at the discount rate on the defined benefit obligation. In addition, actuarial gains and losses arising from experience adjustments (where the actual outcome is different from the actuarial assumptions previously made), changes in actuarial assumptions and amendments to the pension fund regulations are charged to the profit and loss account over the service period of staff concerned in accordance with the "Corridor accounting" methodology described below. The resulting liabilities are included under the heading "Other liabilities" in the balance sheet.

Directors' pensions

The Bank provides an unfunded defined benefit arrangement for directors' pensions. The liability, defined benefit obligation and amount charged to the profit and loss account in respect of the directors' pension arrangement are calculated on a similar basis to that used for the staff pension fund.

Post-employment health and accident benefits

The Bank provides an unfunded post-employment health and accident benefit arrangement for its staff. The liability, benefit obligation and amount charged to the profit and loss account in respect of the health and accident benefit arrangement are calculated on a similar basis to that used for the staff pension fund.

Corridor accounting

Actuarial gains or losses arise from experience adjustments (where the actual outcome is different from the actuarial assumptions previously made), changes in actuarial assumptions and amendments to the pension fund regulations. Where the cumulative unrecognised actuarial gains or losses exceed the higher of the benefit obligation or any assets used to fund the obligation by more than a corridor of 10%, the resulting excess outside the corridor is amortised over the expected remaining service period of the staff concerned.

Y. Cash flow statement

The Bank's cash flow statement is prepared using an indirect method. It is based on the movements in the Bank's balance sheet, adjusted for changes in financial transactions awaiting settlement.

Cash and cash equivalents consist of cash and sight accounts with banks, and call and notice accounts, which are very short-term financial assets that typically have notice periods of three days or less.

3. Use of estimates

The preparation of the financial statements requires the Bank's Management to make some estimates in arriving at the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of income and expenses during the financial year. To arrive at these estimates the Management uses available information, exercises judgment and makes assumptions.

Judgment is exercised when selecting and applying the Bank's accounting policies. The judgments relating to the designation and valuation of financial instruments are a key element in the preparation of these financial statements.

Assumptions include forward-looking estimates, for example relating to the valuation of assets and liabilities, the assessment of post-employment benefit obligations and the assessment of provisions and contingent liabilities.

Subsequent actual results could differ materially from those estimates.

4. Capital and risk management

A. The risks that the Bank faces

The Bank is exposed to the following categories of risk:

Credit risk. The risk of a financial loss arising from a counterparty's failure to service its debt in a timely manner. This is the largest risk that the Bank faces.

Market risk. The risk of a decline in the total value of the Bank's assets and liabilities due to adverse changes in such market variables as interest rates, exchange rates and gold prices.

Liquidity risk. The risk of being unable to meet its obligations to pay as they fall due without incurring unacceptable losses.

Operational risk. The risk of financial loss, or damage to the Bank's reputation, or both, resulting from one or more risk factors, ie human factors, failed or inadequate processes, failed or inadequate systems, or external events, including legal risk.

B. How the Bank manages these risks

Organisation structure

The Bank is operated to serve the central banking community whilst earning an adequate return to maintain its capital strength.

The Bank manages risk through a framework including an independent risk control function and regular reporting of risk positions to appropriate Management committees. The Bank's risk methodologies and risk policies are documented in a detailed risk manual, which is reviewed on a regular basis.

The finance function and legal service augment the risk control function. The role of the finance function is to produce the Bank's financial statements and to control its expenditure through setting and monitoring the annual budget. The legal service provides legal advice and support covering a wide range of issues relating to the Bank's activities.

The purpose of the Bank's compliance function is to provide reasonable assurance that the activities of the Bank and its staff conform with applicable laws and regulations, the BIS Statutes, the Bank's Code of Conduct and other internal rules, policies and relevant standards of sound practice. The compliance function identifies and assesses compliance risks and guides and educates staff on compliance issues. It also performs a monitoring, reporting and, in cooperation with the legal service, an advisory role.

The internal audit function reviews internal control procedures and reports on how they comply with internal standards and industry best practices. The scope of internal audit work includes the review of risk management procedures, internal control systems, information systems and governance processes. Internal audit is directly responsible to the General Manager and the Deputy General Manager.

The Deputy General Manager is responsible for the Bank's risk control and compliance functions.

The head of compliance and the head of internal audit also report regularly to the Audit Committee of the Board of Directors.

Risk methodologies

The Bank uses a comprehensive range of quantitative methodologies for valuing financial instruments and for measuring risk to the Bank's net profit and its equity. The Bank reassesses its quantitative methodologies in the light of its changing risk environment and evolving best practice.

Economic capital is a key quantitative risk methodology used by the Bank. Economic capital is a measure designed to estimate the amount of equity needed to absorb the potential losses arising from exposures on any given date, to a statistical level of confidence determined by the Bank's aim to remain of the highest creditworthiness. Many of the Bank's internal limits and reports are expressed in terms of economic capital. The Bank calculates economic capital covering credit risk, market risk and operational risk.

To calculate economic capital for credit risk the Bank uses an internal model for credit portfolio value-at-risk that is based on the Bank's assessment of:

- the probability of default of individual counterparties;
- the correlations of losses associated with individual counterparties; and
- the likely loss that the Bank would incur as a result of the default.

The market risk economic capital measure is derived from the Bank's value-at-risk (VaR) methodology. This is discussed in more detail in Section E below.

The Bank's operational risk economic capital measure is based on a model that incorporates the Bank's experience of operational losses and external loss data.

In computing its credit, market and operational risk economic capital measures, the Bank uses as key assumptions a one-year time horizon and a 99.995% level of confidence.

C. Capital adequacy

The Bank maintains a strong capital position, which is measured using its economic capital model and the framework proposed by the Basel Capital Accord of July 1988 (the Basel Accord). The table below shows the Bank's capital as at 31 March 2007:

As at 31 March

SDR millions	**2007**	2006
Share capital	683.9	683.9
Statutory reserves	9,538.5	9,071.7
Less: shares held in treasury	(1.7)	(1.7)
Tier 1 capital	**10,220.7**	9,753.9
Profit and loss account	639.4	599.2
Other equity accounts	1,303.5	1,237.9
Total capital	**12,163.6**	11,591.0

The Basel Accord ratios measure capital adequacy by comparing the Bank's eligible capital with its risk-weighted assets. The risk-weighted assets are derived by applying a series of risk weightings to the Bank's assets and derivatives, based on the Basel Accord. The Bank's capital ratios are high due to the proportion of sovereign debt (which is zero risk-weighted) within the Bank's assets. The Bank's Tier 1 ratio was 29.9% as at 31 March 2007 (2006: 32.4%).

D. Credit risk

Credit risk includes:

Default risk – the risk that a counterparty will not fulfil its obligations in accordance with the agreed terms of a transaction. Default risk arises on financial assets and derivatives, as well as committed facilities that the Bank provides for central banks and international organisations.

Settlement risk – the risk of failure of the settlement or clearing of financial transactions where the exchange of cash, securities or other assets is not simultaneous.

Transfer risk – the risk that a counterparty is unable to meet its foreign currency obligations due to restricted access to foreign currency.

The Bank manages its exposure to credit risk by placing limits on the amount of risk accepted in relation to one borrower or a group of borrowers. Such risks are monitored on a regular basis and are subject to at least an annual review and will be adjusted as deemed appropriate. The main criterion for these reviews is the ability of borrowers and potential borrowers to meet interest and capital repayment obligations. Limits on the level of credit risk are approved by the Bank's Management within a framework set by the Board of Directors.

The Bank also obtains collateral, in addition to reverse repurchase agreements, to mitigate credit risk on derivative financial instruments, and has established bilateral setoff agreements with certain of its counterparties.

1. Default risk

The Bank controls its default risk at both a counterparty and a portfolio level. Credit exposures are restricted using a series of credit limits covering individual counterparties and countries of risk. The Bank conducts its own detailed independent credit analysis resulting in the assignment of internal credit grades. Based on this analysis the Bank sets its credit limits.

Default risk on the Bank's holdings of securities is reduced by the highly liquid nature of most of the assets. Securities are sold when the Bank's Management considers that a counterparty has an unacceptable risk of default.

Default risk on over-the-counter (OTC) derivatives is mitigated using collateral management agreements. As at 31 March 2007 the Bank held as collateral on OTC derivatives SDR 26.2 million nominal of G10 sovereign securities. The Bank held no collateral on OTC derivatives at 31 March 2006.

The vast majority of the Bank's assets are invested with G10 sovereigns or with financial institutions rated A or above. Because of the limited number of such investments, the Bank has significant individual counterparty concentrations within these risk sectors.

The following tables show credit exposure by sector and credit rating:

As at 31 March

Sector of risk *Percentages*	**2007**	2006
Sovereign	31.3	34.1
Financial institution	65.1	63.1
Other	3.6	2.8
	100.0	100.0

As at 31 March

BIS internal credit grade (expressed as equivalent long-term rating) *Percentages*	**2007**	2006
AAA	24.1	26.5
AA	53.8	54.7
A	21.8	18.5
BBB+ and below (including unrated risks)	0.3	0.3
	100.0	100.0

2. Settlement risk

The Bank minimises settlement risk by:

- using established clearing centres;
- where possible settling transactions only once both parties have fulfilled their obligations (the delivery versus payment settlement mechanism);
- where possible requiring net settlement of payments on derivative financial instruments;
- calculating and limiting the settlement risk on a counterparty basis; and
- in respect of foreign exchange transactions, ensuring where possible that these take place subject to setoff arrangements that would apply should a counterparty fail to deliver the counter-currency to such a transaction.

3. Transfer risk

The Bank calculates and sets limits for transfer risk on a per country basis.

E. Market risk

The main components of the Bank's market risk are gold price risk, currency risk and interest rate risk. The Bank incurs market risk primarily through the assets relating to the management of its equity. The Bank measures market risk using the value-at-risk (VaR) methodology, and by computing sensitivities to certain market risk factors. VaR expresses the statistical estimate of the maximum potential loss on the current portfolio assuming a specified time horizon and measured to a specified level of confidence.

Market risk economic capital is measured and managed on an aggregated market risk basis. The Bank's Management limits the Bank's market risk economic capital usage within a framework set by the Board of Directors.

All VaR models, while forward-looking, are based on past events and dependent on the quality of available market data. VaR limits are supplemented with a framework of other limits and reporting, including specific stress tests and detailed monitoring of the largest market risk positions.

1. Gold price risk

Gold price risk is the potential impact on the fair value of assets and liabilities from changes in the SDR price of gold. The Bank is exposed to gold price risk principally through its holdings of gold investment assets, which comprise 150 tonnes (2006: 165 tonnes). This is held in custody or placed on deposit with commercial banks. At 31 March 2007 the Bank's gold position was SDR 2,115.2 million (2006: SDR 2,145.6 million), approximately 17% of its equity (2006: 19%). The Bank can also have small exposures to gold price risk through its banking activities with central and commercial banks. Gold price risk is measured within the Bank's aggregate market risk economic capital framework.

2. Currency risk

Currency risk is the potential impact on the fair value of assets and liabilities from changes in exchange rates. The Bank is exposed to currency risk principally through the assets relating to the management of its equity. The Bank is also exposed to currency risk through managing its customer deposits and through acting as an intermediary in foreign exchange transactions between central and commercial banks. The Bank reduces its currency exposures by matching the assets relating to the management of its equity to the constituent currencies of the SDR on a regular basis, and by allowing only small currency exposures relating to customer deposits and foreign exchange transaction intermediation.

The Bank's functional currency, the SDR, is a composite currency comprising fixed amounts of USD, EUR, JPY and GBP. The following tables show the actual currency and gold composition of the Bank's assets and liabilities. The net currency and gold position shown in these tables therefore includes the Bank's gold investment assets. To arrive at the Bank's net currency exposure an adjustment is made to remove gold amounts. The SDR neutral position is then deducted from the net currency position excluding gold to arrive at the net currency exposure of the Bank on an SDR neutral basis.

As at 31 March 2007

SDR millions	SDR	USD	EUR	GBP	JPY	CHF	Gold	Other currencies	Total
Assets									
Cash and sight accounts with banks	–	10.0	56.0	1.1	–	2.5	–	22.8	92.4
Gold and gold deposits	–	–	–	–	–	–	15,434.3	23.3	15,457.6
Treasury bills	–	2,658.4	22,479.5	–	18,021.4	–	–	–	43,159.3
Securities purchased under resale agreements	–	1,087.3	54,239.3	5,594.8	272.1	–	–	–	61,193.5
Time deposits and advances to banks	73.4	72,868.7	727.3	15,423.5	2.8	936.6	–	1,233.7	91,266.0
Government and other securities	–	18,185.0	23,361.5	3,476.6	1,993.2	61.6	–	5,166.1	52,244.0
Accounts receivable	–	4,657.2	213.6	458.7	28.0	115.8	–	0.3	5,473.6
Land, buildings and equipment	188.0	–	–	–	–	–	–	–	188.0
Total	**261.4**	**99,466.6**	**101,077.2**	**24,954.7**	**20,317.5**	**1,116.5**	**15,434.3**	**6,446.2**	**269,074.4**
Liabilities									
Currency deposits	(2,006.3)	(138,437.4)	(46,371.0)	(22,780.9)	(3,381.3)	(1,068.0)	–	(7,745.2)	(221,790.1)
Gold deposits	–	(12.8)	–	–	–	–	(13,122.1)	–	(13,134.9)
Securities sold under repurchase agreements	–	(889.2)	(173.3)	–	–	–	–	–	(1,062.5)
Accounts payable	–	(1,118.8)	(17,772.5)	(132.2)	(280.6)	–	(182.7)	(97.3)	(19,584.1)
Other liabilities	–	(145.0)	(48.5)	–	–	(173.2)	–	(7.1)	(373.8)
Total	**(2,006.3)**	**(140,603.2)**	**(64,365.3)**	**(22,913.1)**	**(3,661.9)**	**(1,241.2)**	**(13,304.8)**	**(7,849.6)**	**(255,945.4)**
Net derivative financial instruments	118.5	46,085.7	(32,431.4)	(728.0)	(15,366.2)	(40.5)	(14.3)	1,410.8	(965.4)
Net currency and gold position	**(1,626.4)**	**4,949.1**	**4,280.5**	**1,313.6**	**1,289.4**	**(165.2)**	**2,115.2**	**7.4**	**12,163.6**
Adjustment for gold investment assets	–	–	–	–	–	–	(2,115.2)	–	(2,115.2)
Net currency position	**(1,626.4)**	**4,949.1**	**4,280.5**	**1,313.6**	**1,289.4**	**(165.2)**	**–**	**7.4**	**10,048.4**
SDR neutral position	1,626.4	(4,870.0)	(4,227.3)	(1,370.6)	(1,206.9)	–	–	–	(10,048.4)
Net currency exposure on SDR neutral basis	**–**	**79.1**	**53.2**	**(57.0)**	**82.5**	**(165.2)**	**–**	**7.4**	**–**

As at 31 March 2006

SDR millions	SDR	USD	EUR	GBP	JPY	CHF	Gold	Other currencies	Total
Assets									
Cash and sight accounts with banks	–	5.7	7.3	0.3	–	2.7	–	17.0	33.0
Gold and gold deposits	–	22.7	–	–	–	–	11,325.3	–	11,348.0
Treasury bills	–	4,935.2	22,395.7	–	18,311.1	1,669.9	–	–	47,311.9
Securities purchased under resale agreements	–	2,113.3	12,897.9	1,517.6	2,990.4	–	–	–	19,519.2
Time deposits and advances to banks	116.1	71,052.9	1,301.7	11,935.9	2.0	822.6	–	2,667.3	87,898.5
Government and other securities	–	18,262.0	17,825.8	3,009.6	2,028.8	61.1	–	3,249.1	44,436.4
Accounts receivable	2.8	6,214.3	335.6	771.7	–	6.5	–	113.8	7,444.7
Land, buildings and equipment	188.4	–	–	–	–	–	–	–	188.4
Total	307.3	102,606.1	54,764.0	17,235.1	23,332.3	2,562.8	11,325.3	6,047.2	218,180.1
Liabilities									
Currency deposits	(3,417.8)	(121,722.2)	(36,753.8)	(14,027.3)	(2,596.1)	(914.5)	–	(6,559.8)	(185,991.5)
Gold deposits	–	(10.6)	–	–	–	–	(9,225.0)	–	(9,235.6)
Securities sold under repurchase agreements	–	(1,211.4)	–	(11.0)	–	–	–	–	(1,222.4)
Accounts payable	–	(1,582.5)	(7,334.1)	(60.3)	–	(13.3)	(103.5)	(157.6)	(9,251.3)
Other liabilities	–	–	(0.4)	–	–	(157.9)	–	(11.1)	(169.4)
Total	(3,417.8)	(124,526.7)	(44,088.3)	(14,098.6)	(2,596.1)	(1,085.7)	(9,328.5)	(6,728.5)	(205,870.2)
Net derivative financial instruments	48.7	27,431.5	(6,388.5)	(1,758.2)	(19,360.3)	(1,617.7)	148.8	776.8	(718.9)
Net currency and gold position	(3,061.8)	5,510.9	4,287.2	1,378.3	1,375.9	(140.6)	2,145.6	95.5	11,591.0
Adjustment for gold investment assets	–	–	–	–	–	–	(2,145.6)	–	(2,145.6)
Net currency position	(3,061.8)	5,510.9	4,287.2	1,378.3	1,375.9	(140.6)	–	95.5	9,445.4
SDR neutral position	3,061.8	(5,484.2)	(4,307.2)	(1,361.2)	(1,354.6)	–	–	–	(9,445.4)
Net currency exposure on SDR neutral basis	–	26.7	(20.0)	17.1	21.3	(140.6)	–	95.5	–

The net exposure relating to other currencies comprises:

Net assets as at 31 March

SDR millions	**2007**	2006
Swedish krona	0.9	56.4
Australian dollar	2.6	34.7
Other	3.9	4.4
Total other currencies	**7.4**	95.5

The Swiss franc position in the tables above is attributable principally to the Bank's post-employment benefit obligations (see note 22).

3. Interest rate risk

Interest rate risk is the potential impact on the fair value of assets and liabilities from changes in interest rates. The Bank is exposed to interest rate risk principally through the interest bearing assets relating to the management of its equity. These assets are managed using a fixed duration benchmark of bonds. The Bank is also exposed to limited interest rate risk through its activities in accepting and reinvesting customer deposits.

The Bank closely monitors interest rate risk, including the sensitivity of fair values to movements in interest rates. Market risk is restricted using economic capital, VaR and stress test-based limits.

The tables below show the impact on the Bank's equity of a 1% upward shift in the relevant yield curve:

As at 31 March 2007

SDR millions	Up to 6 months	6 to 12 months	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	Over 5 years
Euro	(10.7)	5.8	(24.9)	(23.1)	(18.1)	(19.6)	(52.9)
Japanese yen	(0.3)	0.2	(4.8)	(5.7)	(6.7)	(6.3)	(13.3)
Pound sterling	(8.0)	8.3	(5.7)	(5.6)	(7.5)	(8.5)	(17.8)
Swiss franc	(0.8)	(0.6)	(0.4)	(0.7)	(0.6)	(0.9)	2.0
US dollar	(25.6)	(2.6)	(29.1)	(14.5)	(13.2)	(26.1)	(68.7)
Other currencies	(0.7)	(6.5)	(13.9)	(10.1)	(2.7)	(13.9)	(0.4)
Total	**(46.1)**	**4.6**	**(78.8)**	**(59.7)**	**(48.8)**	**(75.3)**	**(151.1)**

As at 31 March 2006

SDR millions	Up to 6 months	6 to 12 months	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	Over 5 years
Euro	(3.7)	(4.7)	(5.9)	(9.2)	(22.3)	(19.7)	(70.3)
Japanese yen	0.4	0.1	(5.4)	(5.0)	(7.1)	(6.5)	(14.1)
Pound sterling	–	(5.3)	(3.9)	(4.9)	(6.4)	(9.5)	(12.3)
Swiss franc	(0.5)	(0.9)	(1.3)	–	(0.4)	(0.1)	–
US dollar	(4.7)	(23.9)	(32.3)	(18.4)	(17.8)	(26.2)	(78.3)
Other currencies	(1.8)	7.8	(15.1)	(22.4)	(0.3)	(6.6)	(0.2)
Total	(10.3)	(26.9)	(63.9)	(59.9)	(54.3)	(68.6)	(175.2)

F. Liquidity risk

Net movements in the currency and gold deposits from central banks, international organisations and other public institutions are the key determinants of the size of the Bank's balance sheet. The Bank has undertaken to repurchase at fair value certain of its currency deposit instruments at one or two business days' notice. The Bank is managed to preserve a high degree of liquidity to ensure that it is able to meet the requirements of its customers at all times.

The Bank has developed a liquidity management framework based on a statistical model using prudent assumptions with regard to cash inflows and the liquidity of liabilities. Within this framework, the Board of Directors has set a limit for the Bank's liquidity ratio which requires liquid assets to be equal to at least 100% of the potential liquidity requirement faced by the Bank. In addition, liquidity stress tests are performed which assume extreme withdrawal scenarios considerably beyond the estimated potential liquidity requirement. These stress tests define additional liquidity requirements which must also be met by holdings of liquid assets. The Bank's liquidity has consistently been materially above its minimum liquidity ratio limit.

The following tables (including derivatives on a net basis) show assets and liabilities at carrying amounts based on the remaining period at the balance sheet date to the contractual maturity date:

As at 31 March 2007

SDR millions	Up to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 5 years	Over 5 years	Maturity undefined	Total
Assets									
Cash and sight accounts with banks	92.4	–	–	–	–	–	–	–	92.4
Gold and gold deposits	12,137.6	170.0	56.7	–	199.8	2,596.5	297.0	–	15,457.6
Treasury bills	14,176.3	16,102.3	7,503.2	4,689.8	687.7	–	–	–	43,159.3
Securities purchased under resale agreements	50,007.6	4,525.2	6,660.7	–	–	–	–	–	61,193.5
Time deposits and advances to banks	30,290.6	23,129.9	22,147.3	6,718.5	8,471.2	508.5	–	–	91,266.0
Government and other securities	3,103.2	5,848.3	3,790.7	3,211.3	3,849.0	20,727.2	11,714.3	–	52,244.0
Accounts receivable	5,470.0	–	–	–	–	3.6	–	–	5,473.6
Land, buildings and equipment	–	–	–	–	–	–	–	188.0	188.0
Total	**115,277.7**	**49,775.7**	**40,158.6**	**14,619.6**	**13,207.7**	**23,835.8**	**12,011.3**	**188.0**	**269,074.4**
Liabilities									
Currency deposits									
Deposit instruments repayable at 1–2 days' notice	(13,052.0)	(10,881.0)	(22,729.1)	(14,545.3)	(17,456.0)	(48,927.1)	(6,766.6)	–	(134,357.1)
Other currency deposits	(49,695.0)	(10,994.3)	(9,821.1)	(9,986.2)	(6,931.8)	(4.5)	(0.1)	–	(87,433.0)
Gold deposits	(11,965.9)	(28.3)	(56.6)	–	(72.7)	(897.4)	(114.0)	–	(13,134.9)
Securities sold under repurchase agreements	(959.4)	(103.1)	–	–	–	–	–	–	(1,062.5)
Accounts payable	(19,584.1)	–	–	–	–	–	–	–	(19,584.1)
Other liabilities	(214.6)	–	–	–	–	–	–	(159.2)	(373.8)
Total	**(95,471.0)**	**(22,006.7)**	**(32,606.8)**	**(24,531.5)**	**(24,460.5)**	**(49,829.0)**	**(6,880.7)**	**(159.2)**	**(255,945.4)**
Net derivative financial instruments	(547.3)	(242.5)	(157.2)	(124.3)	(36.6)	1.8	140.7	–	(965.4)
Maturity gap	**19,259.4**	**27,526.5**	**7,394.6**	**(10,036.2)**	**(11,289.4)**	**(25,991.4)**	**5,271.3**	**28.8**	**12,163.6**

As at 31 March 2006

SDR millions	Up to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 5 years	Over 5 years	Maturity undefined	Total
Assets									
Cash and sight accounts with banks	33.0	–	–	–	–	–	–	–	33.0
Gold and gold deposits	7,312.1	329.4	608.0	268.0	156.0	2,569.8	104.7	–	11,348.0
Treasury bills	14,215.7	22,411.8	7,614.5	1,801.6	1,268.3	–	–	–	47,311.9
Securities purchased under resale agreements	19,474.6	44.6	–	–	–	–	–	–	19,519.2
Time deposits and advances to banks	38,682.6	16,856.1	13,981.8	9,046.6	9,264.1	67.3	–	–	87,898.5
Government and other securities	3,535.1	7,919.3	1,771.7	2,203.0	3,938.7	17,327.6	7,741.0	–	44,436.4
Accounts receivable	7,441.1	–	–	–	–	3.6	–	–	7,444.7
Land, buildings and equipment	–	–	–	–	–	–	–	188.4	188.4
Total	90,694.2	47,561.2	23,976.0	13,319.2	14,627.1	19,968.3	7,845.7	188.4	218,180.1
Liabilities									
Currency deposits									
Deposit instruments repayable at 1–2 days' notice	(12,646.4)	(15,448.5)	(17,430.3)	(15,872.5)	(8,429.0)	(34,217.9)	(3,970.7)	–	(108,015.3)
Other currency deposits	(50,941.0)	(5,048.0)	(6,618.4)	(7,604.0)	(7,601.4)	(163.4)	–	–	(77,976.2)
Gold deposits	(7,420.9)	(198.7)	(568.1)	(160.5)	(39.3)	(743.5)	(104.6)	–	(9,235.6)
Securities sold under repurchase agreements	(1,177.6)	(44.8)	–	–	–	–	–	–	(1,222.4)
Accounts payable	(9,251.3)	–	–	–	–	–	–	–	(9,251.3)
Other liabilities	(27.7)	–	–	–	–	–	–	(141.7)	(169.4)
Total	(81,464.9)	(20,740.0)	(24,616.8)	(23,637.0)	(16,069.7)	(35,124.8)	(4,075.3)	(141.7)	(205,870.2)
Net derivative financial instruments	195.8	129.5	(67.4)	(197.3)	(206.2)	(616.5)	43.2	–	(718.9)
Maturity gap	9,425.1	26,950.7	(708.2)	(10,515.1)	(1,648.8)	(15,773.0)	3,813.6	46.7	11,591.0

G. Operational risk

Operational risk is defined by the Bank as the risk of financial loss, or damage to the Bank's reputation, or both, resulting from one or more risk causes, being human factors, failed or inadequate processes, failed or inadequate systems, or external events; it includes legal risk, but excludes strategic risk:

- Human factors: insufficient personnel, lack of requisite knowledge, skills or experience, inadequate training and development, inadequate supervision, loss of key personnel, inadequate succession planning, or lack of integrity or ethical standards;
- Failed or inadequate processes: a process is poorly designed or unsuitable, or is not properly documented, understood, implemented, followed or enforced;
- Failed or inadequate systems: a system is poorly designed, unsuitable or unavailable, or does not operate as intended; and
- External events: the occurrence of an event having an adverse impact on the Bank but outside its control.

In January 2007, the Board approved a framework for the management of operational risk at the BIS. This framework defines the expression "operational risk" and lays down the principles of how operational risk is to be identified, assessed, monitored, mitigated and reported. The Bank manages operational risk through internal controls comprising policies, procedures and organisational structures, designed to reduce the likelihood of an operational risk event occurring or that mitigate the adverse consequences of such an event if it does occur.

The Bank allocates economic capital for operational risk on the basis of a statistical model that incorporates the Bank's experience of operational losses as well as external loss data.

The Bank identifies and assesses operational risks and evaluates the effectiveness of existing controls for its key processes through a Bank-wide Control Self-Assessment (CSA) programme. The results of this annual assessment are taken into account for the management of operational risk.

5. Cash and sight accounts with banks

Cash and sight accounts with banks consist of cash balances with central banks and commercial banks that are available to the Bank on demand.

6. Gold and gold deposits

A. Total gold holdings

The composition of the Bank's total gold holdings was as follows:

As at 31 March

SDR millions	**2007**	2006
Gold bars held at central banks	11,865.8	7,132.0
Total gold time deposits	3,591.8	4,216.0
Total gold and gold deposit assets	**15,457.6**	**11,348.0**
Comprising:		
Gold investment assets	2,306.0	2,259.5
Gold and gold deposit banking assets	13,151.6	9,088.5

B. Gold investment assets

The Bank's gold investment assets are included in the balance sheet at their weight in gold (translated at the gold market price and USD exchange rate into SDR) plus accrued interest. The excess of this value over the deemed cost value is included in the gold revaluation account (reported under the balance sheet heading "Other equity accounts"), and realised gains or losses on the disposal of gold investment assets are recognised in the profit and loss account.

Note 21B provides further analysis of the gold revaluation account. Note 30 provides further analysis of the net gain on sales of gold investment assets.

The table below analyses the movements in the Bank's gold investment assets:

For the financial year ended 31 March

SDR millions	**2007**	2006
Balance at beginning of year	2,259.5	1,646.5
Net change in gold investment assets		
Deposits placed	338.7	382.0
Disposals of gold	(206.7)	(187.2)
Maturities and other net movements	(340.4)	(382.7)
	(208.4)	(187.9)
Net change in transactions awaiting settlement	79.2	103.5
Gold price movement	175.7	697.4
Balance at end of year	**2,306.0**	2,259.5

At 1 April 2006 the Bank's gold investment assets amounted to 165 tonnes of fine gold. During the financial year ended 31 March 2007 15 tonnes were disposed of (see note 30). The balance at 31 March 2007 amounted to 150 tonnes of fine gold.

7. Currency assets

A. Total holdings

Currency assets comprise treasury bills, securities purchased under resale agreements, fixed-term loans, and government and other securities.

Currency assets held at fair value through profit and loss comprise those currency banking assets that represent the reinvestment of customer deposits and those currency investment assets that are part of more actively managed portfolios. Currency assets available for sale comprise the remainder of the Bank's currency investment assets and represent, for most part, the investment of the Bank's equity.

Securities purchased under resale agreements ("reverse repurchase agreements") are transactions under which the Bank makes a fixed-term loan to a counterparty which provides collateral in the form of securities. The rate on the loan is fixed at the beginning of the transaction, and there is an irrevocable commitment to return the equivalent securities subject to the repayment of the loan. During the term of the agreement the fair value of collateral is monitored, and additional collateral is obtained where appropriate to protect against credit exposure.

Fixed-term loans are primarily investments made with commercial banks. Also included in this category are investments made with central banks and international institutions, including advances made as part of committed and uncommitted standby facilities. The balance sheet total "Time deposits and advances to banks" also includes call and notice accounts (see note 8).

Government and other securities are debt securities issued by governments, international institutions, other public institutions, commercial banks and corporates. They include fixed and floating rate bonds and asset-backed securities.

The tables below analyse the Bank's holdings of currency assets:

As at 31 March 2007	Banking assets	Investment assets			**Total currency assets**
SDR millions	Held at fair value through profit and loss	Available for sale	Held at fair value through profit and loss	Total	
Treasury bills	**43,135.1**	**–**	**24.2**	**24.2**	**43,159.3**
Securities purchased under resale agreements	**60,131.0**	**1,062.5**	**–**	**1,062.5**	**61,193.5**
Fixed-term loans and advances to banks	**89,127.4**	**–**	**–**	**–**	**89,127.4**
Government and other securities					
Government	3,397.3	6,717.6	–	6,717.6	10,114.9
Financial institutions	27,866.0	953.6	598.4	1,552.0	29,418.0
Other (including public sector securities)	11,601.0	1,110.1	–	1,110.1	12,711.1
	42,864.3	**8,781.3**	**598.4**	**9,379.7**	**52,244.0**
Total currency assets	**235,257.8**	**9,843.8**	**622.6**	**10,466.4**	**245,724.2**

As at 31 March 2006	Banking assets	Investment assets			Total currency assets
SDR millions	Held at fair value through profit and loss	Available for sale	Held at fair value through profit and loss	Total	
Treasury bills	47,311.9	–	–	–	47,311.9
Securities purchased under resale agreements	18,296.8	1,222.4	–	1,222.4	19,519.2
Fixed-term loans and advances to banks	85,066.9	–	–	–	85,066.9
Government and other securities					
Government	3,469.0	6,717.5	–	6,717.5	10,186.5
Financial institutions	24,617.4	957.5	–	957.5	25,574.9
Other (including public sector securities)	7,578.4	1,096.6	–	1,096.6	8,675.0
	35,664.8	8,771.6	–	8,771.6	44,436.4
Total currency assets	186,340.4	9,994.0	–	9,994.0	196,334.4

B. Currency assets available for sale

The table below analyses the movements in the Bank's currency assets available for sale:

For the financial year ended 31 March

SDR millions	**2007**	2006
Balance at beginning of year	9,994.0	8,412.2
Net change in currency assets available for sale		
Additions	16,800.7	21,358.5
Disposals	(2,265.5)	(3,214.1)
Maturities and other net movements	(14,640.7)	(16,467.5)
	(105.5)	1,676.9
Net change in transactions awaiting settlement	(41.5)	43.2
Fair value and other movements	(3.2)	(138.3)
Balance at end of year	**9,843.8**	9,994.0

Note 21A provides further analysis of the securities revaluation account. Note 29 provides further analysis of the net gain on sales of securities categorised as available for sale.

8. Time deposits and advances to banks

Time deposits and advances to banks comprise fixed-term loans and call and notice accounts.

Fixed-term loans are designated as fair value through profit and loss.

Call and notice accounts are designated as loans and receivables and are included as cash and cash equivalents. These are very short-term financial assets, typically having a notice period of three days or less. These are included in the balance sheet at amortised cost.

As at 31 March

SDR millions	**2007**	2006
Fixed-term loans and advances to banks	89,127.4	85,066.9
Call and notice accounts	2,138.6	2,831.6
Total time deposits and advances to banks	**91,266.0**	87,898.5

9. Derivative financial instruments

The Bank uses the following types of derivative instruments for economic hedging and trading purposes.

Interest rate and bond futures are contractual obligations to receive or pay a net amount based on changes in interest rates or bond prices on a future date at a specified price established in an organised market. Futures contracts are collateralised by cash or marketable securities and changes in the futures contract value are settled daily with the exchange.

Currency and bond options are contractual agreements under which the seller grants the purchaser the right, but not the obligation, to either buy (call option) or sell (put option), by or on a set date, a specific amount of a currency, a bond or gold at a predetermined price. In consideration, the seller receives a premium from the purchaser.

Options on futures are contractual agreements that confer the right, but not the obligation, to buy or sell a futures contract at a predetermined price during a specified period of time.

Currency and gold swaps, cross-currency interest rate swaps and interest rate swaps are commitments to exchange one set of cash flows for another. Swaps result in an economic exchange of currencies, gold or interest rates (for example, fixed rate for floating rate) or a combination of interest rates and currencies (cross-currency interest rate swaps). Except for certain currency and gold swaps and cross-currency interest rate swaps, no exchange of principal takes place.

Currency and gold forwards represent commitments to purchase foreign currencies or gold at a future date. This includes undelivered spot transactions.

Forward rate agreements are individually negotiated interest rate forward contracts that result in cash settlement at a future date for the difference between a contracted rate of interest and the prevailing market rate.

Swaptions are options under which the seller grants the purchaser the right, but not the obligation, to enter into a currency or interest rate swap at a predetermined price by or on a set date.

The table below analyses the fair value of derivative financial instruments:

As at 31 March	2007			2006		
	Notional amounts	Fair values		Notional amounts	Fair values	
SDR millions		Assets	Liabilities		Assets	Liabilities
Bond futures	809.5	0.6	(0.4)	381.3	–	(0.4)
Bond options	–	–	–	168.0	–	(1.5)
Cross-currency interest rate swaps	5,262.3	99.4	(657.8)	8,058.3	189.2	(803.8)
Currency and gold forwards	1,830.7	9.9	(13.9)	4,212.5	18.8	(29.4)
Currency options	9,180.9	42.4	(60.0)	213.3	–	(0.3)
Currency and gold swaps	62,829.9	210.7	(497.5)	38,674.9	460.5	(142.4)
Forward rate agreements	48,018.6	6.2	(6.7)	37,290.0	11.9	(7.5)
Interest rate futures	43,239.3	–	(1.3)	42,923.3	0.1	(0.3)
Interest rate swaps	406,871.3	1,480.7	(1,570.3)	250,096.2	1,274.3	(1,668.6)
Options on futures	396.0	0.5	–	15,228.8	1.2	(0.2)
Swaptions	4,159.1	0.4	(8.3)	1,803.2	–	(20.5)
Total derivative financial instruments at end of year	**582,597.6**	**1,850.8**	**(2,816.2)**	399,049.8	1,956.0	(2,674.9)
Net derivative financial instruments at end of year			**(965.4)**			(718.9)

10. Accounts receivable

As at 31 March		
SDR millions	**2007**	2006
Financial transactions awaiting settlement	5,449.5	7,436.4
Other assets	24.1	8.3
Total accounts receivable	**5,473.6**	7,444.7

"Financial transactions awaiting settlement" relates to short-term receivables (typically due in three days or less) where transactions have been effected but cash has not yet been transferred. This includes assets that have been sold and liabilities that have been issued.

11. Land, buildings and equipment

For the financial year ended 31 March				2007	2006
SDR millions	Land	Buildings	IT and other equipment	Total	Total
Historical cost					
Balance at beginning of year	**41.2**	**185.1**	**98.2**	**324.5**	312.5
Capital expenditure	–	1.5	10.1	11.6	12.6
Disposals and retirements	–	–	(1.7)	(1.7)	(0.6)
Balance at end of year	**41.2**	**186.6**	**106.6**	**334.4**	324.5
Depreciation					
Accumulated depreciation at beginning of year	–	**76.5**	**59.6**	**136.1**	123.3
Depreciation	–	4.0	8.0	12.0	13.3
Disposals and retirements	–		(1.7)	(1.7)	(0.5)
Balance at end of year	**–**	**80.5**	**65.9**	**146.4**	136.1
Net book value at end of year	**41.2**	**106.1**	**40.7**	**188.0**	188.4

The depreciation charge for the financial year ended 31 March 2007 includes an additional charge of SDR 0.8 million for IT and other equipment following an impairment review (2006: SDR 1.0 million).

12. Currency deposits

Currency deposits are book entry claims on the Bank. The Bank acts as a market-maker in certain of its currency deposit liabilities, and has undertaken to repay at fair value these financial instruments, in whole or in part, at one to two business days' notice. The applicable currency deposit instruments are analysed in the table below:

As at 31 March

SDR millions	**2007**	2006
Deposit instruments repayable at one to two days' notice		
Medium-Term Instruments (MTIs)	83,843.9	57,688.3
FIXBIS	50,513.2	50,327.0
	134,357.1	108,015.3
Other currency deposits		
FRIBIS	3,465.2	3,247.1
Fixed-term deposits	59,314.0	52,181.5
Sight and notice deposit accounts	24,653.8	22,547.6
	87,433.0	77,976.2
Total currency deposits	**221,790.1**	185,991.5
Comprising:		
Designated as held at fair value through profit and loss	197,136.3	163,443.9
Designated as loans and receivables	24,653.8	22,547.6

Medium-Term Instruments (MTIs) are fixed rate investments at the BIS for quarterly maturities of up to 10 years. The Bank also offers MTIs which are callable at an exercise price of par at the option of the Bank (callable MTIs), with call dates between April 2007 and May 2008 (2006: April 2006 and March 2007). The amount of callable MTIs in the balance sheet as at 31 March 2007 was SDR 7,740.5 million (2006: SDR 6,262.9 million).

FIXBIS are fixed rate investments at the BIS for any maturities between one week and one year.

FRIBIS are floating rate investments at the BIS with maturities of one year or longer for which the interest rate is reset in line with prevailing market conditions.

Fixed-term deposits are fixed rate investments at the BIS, typically with a maturity of less than one year. The Bank also takes fixed-term deposits that are repayable on the maturity date either in the original currency or at a fixed amount in a different currency at the option of the Bank (dual currency deposits). The amount of dual currency deposits included in the balance sheet at 31 March 2007 was SDR 6,654.9 million (2006: SDR 231.1 million). The maturity dates of these deposits are between April and June 2007 (2006: April and June 2006).

Sight and notice deposit accounts are very short-term financial liabilities, typically having a notice period of three days or less. They are designated as loans and receivables and are included in the balance sheet at amortised cost.

Currency deposits (other than sight and notice deposit accounts) are included in the balance sheet at fair value. This value differs from the amount that the Bank is contractually required to pay at maturity to the holder of the deposit. For total currency deposits the amount that the Bank is contractually required to pay at maturity to the holder of the deposit, plus accrued interest to 31 March 2007, is SDR 224,059.0 million (2006: SDR 187,896.6 million).

The Bank uses financial models to estimate the fair value of its currency deposits. These models value the expected cash flows of financial instruments using discount factors that are derived partly from quoted interest rates (eg Libor and swap rates) and partly from assumptions about spreads. The Bank determines these spreads based on recent market transactions. In the financial year ended 31 March 2007, changes to the assumptions about spreads used for valuing currency deposits increased the Bank's profit by SDR 3.2 million (2006: decreased profit by SDR 6.0 million).

13. Gold deposit liabilities

Gold deposits placed with the Bank originate entirely from central banks. They are all designated as loans and receivables.

14. Securities sold under repurchase agreements

Securities sold under repurchase agreements ("repo" liabilities) are transactions under which the Bank receives a fixed-term deposit from a counterparty to which it provides collateral in the form of securities. The rate on the deposit is fixed at the beginning of the transaction, and there is an irrevocable commitment to repay the deposit subject to the return of equivalent securities. They originate entirely from commercial banks.

As at 31 March 2007 and 2006 all of the securities sold under repurchase agreements were associated with the management of currency assets available for sale. They are therefore all designated as loans and receivables and are included in the balance sheet at amortised cost.

15. Accounts payable

Accounts payable consist of financial transactions awaiting settlement, relating to short-term payables (typically payable within three days or less) where transactions have been effected but cash has not yet been transferred. This includes assets that have been purchased and liabilities that have been repurchased.

16. Other liabilities

As at 31 March

SDR millions	**2007**	2006
Post-employment benefit obligations (see note 22)		
Directors' pensions	4.3	4.1
Health and accident benefits	152.1	135.1
Short positions in currency assets	142.4	–
Other	73.9	27.8
Payable to former shareholders	1.1	2.4
Total other liabilities	**373.8**	169.4

17. Share capital

The Bank's share capital consists of:

As at 31 March

SDR millions	**2007**	2006
Authorised capital: 600,000 shares, each of SDR 5,000 par value	3,000.0	3,000.0
Issued capital: 547,125 shares	2,735.6	2,735.6
Paid-up capital (25%)	**683.9**	683.9

The number of shares eligible for dividend is:

As at 31 March	**2007**	2006
Issued shares	547,125	547,125
Less: shares held in treasury	(1,000)	(1,000)
Outstanding shares eligible for dividend	**546,125**	546,125
Of which:		
Eligible for full dividend	546,125	510,192
Eligible for dividend pro rata from the value date of subscription	–	35,933
Dividend per share (in SDR)	**255**	245

The shares eligible for dividend pro rata from the value date of subscription in 2006 reflect the redistribution of shares held in treasury (see note 19).

18. Statutory reserves

The Bank's Statutes provide for application of the Bank's annual net profit by the Annual General Meeting on the proposal of the Board of Directors to three specific reserve funds: the legal reserve fund, the general reserve fund and the special dividend reserve fund; the remainder of the net profit after payment of any dividend is generally allocated to the free reserve fund.

Legal reserve fund. This fund is currently fully funded at 10% of the Bank's paid-up capital.

General reserve fund. After paying any dividend, 10% of the remainder of the Bank's annual net profit currently must be allocated to the general reserve fund. When the balance of this fund equals five times the Bank's paid-up capital, such annual contribution will decrease to 5% of the remainder of the annual net profit.

Special dividend reserve fund. A portion of the remainder of the annual net profit may be allocated to the special dividend reserve fund, which shall be available, in case of need, for paying the whole or any part of a declared dividend. Dividends are normally paid out of the Bank's net profit.

Free reserve fund. After the above allocations have been made, any remaining unallocated net profit is generally transferred to the free reserve fund.

Receipts from the subscription of BIS shares are allocated to the legal reserve fund as necessary to keep it fully funded, with the remainder being credited to the general reserve fund.

The free reserve fund, general reserve fund and legal reserve fund are available, in that order, to meet any losses incurred by the Bank. In the event of liquidation of the Bank, the balances of the reserve funds (after the discharge of the liabilities of the Bank and the costs of liquidation) would be divided among the Bank's shareholders.

19. Repurchase and subsequent redistribution of shares

The Extraordinary General Meeting on 8 January 2001 amended the Bank's Statutes to restrict the right to hold shares in the BIS exclusively to central banks, thereby effecting a mandatory repurchase from private (ie non-central bank) shareholders of 72,648 shares on which the American, Belgian and French central banks exercise voting rights. At the same time the Bank repurchased 2,304 shares of these three issues from other central banks. The total compensation paid was CHF 23,977.56 per share plus interest thereon.

The Bank held these shares in treasury and redistributed 40,119 of them, corresponding to the shares of the Belgian and French issues held in treasury, during the financial year ended 31 March 2005 to the central banks of those countries. The Bank redistributed the remaining 35,933 shares of the American issue held in treasury by selling them to shareholding central banks on 31 May 2005 (see note 20).

20. Shares held in treasury

For the financial year ended 31 March	**2007**	2006
Balance at beginning of year		
Repurchase of shares in the financial year ended 31 March 2001	–	34,833
Others	1,000	2,100
Total at beginning of year	**1,000**	36,933
Redistribution to shareholding central banks	–	(35,933)
Balance at end of year	**1,000**	1,000

In accordance with the Bank's Statutes, the BIS shares repurchased in early 2001 and subsequently held in treasury (see note 19) may be redistributed by the Board of Directors by way of sale to shareholding central banks against payment of an amount equal to that of the compensation paid to the former shareholders (ie CHF 23,977.56 per share).

Consistent therewith, on 31 May 2005 the Bank redistributed the remaining 35,933 shares of the American issue held in treasury by selling them to shareholding central banks at a price of CHF 23,977.56 per share. The proceeds of this sale amounted to CHF 861.6 million, equivalent to SDR 468.2 million at the transaction date.

These amounts were credited to the Bank's equity accounts as follows:

For the financial year ended 31 March

SDR millions	2006
Shares held in treasury	396.2
General reserve fund – exchange adjustment	72.0
Total	468.2

The figure of SDR 396.2 million in 2006 represents the SDR equivalent of the cost of the compensation in Swiss francs paid to the former shareholders of the shares at the time of the shares repurchase in January 2001 and the final award of the Hague Arbitral Tribunal in September 2003. For more information on the Hague Arbitral Tribunal, see the financial statements 2004/05, note 17. When the sale proceeds of these shares were received in 2006, an exchange gain of SDR 72.0 million was realised. This resulted from the appreciation of the Swiss franc against the SDR during the period from 2001 to the dates of sale.

The remaining shares held in treasury consist of 1,000 suspended shares of the Albanian issue.

During the financial year ended 31 March 2006 a loan from the Bank to a consortium of central banks that related to the suspended shares of the Albanian issue was reclassified from accounts receivable to shares held in treasury. The amount reclassified was SDR 1.7 million.

21. Other equity accounts

Other equity accounts represent the revaluation accounts of the currency assets available for sale and gold investment assets, which are further described in notes 6 and 7.

Other equity accounts comprise:

As at 31 March

SDR millions	**2007**	2006
Securities revaluation account	(80.5)	(104.3)
Gold revaluation account	1,384.0	1,342.2
Total other equity accounts	**1,303.5**	1,237.9

A. Securities revaluation account

This account contains the difference between the fair value and the amortised cost of the Bank's currency assets available for sale.

The movements in the securities revaluation account were as follows:

For the financial year ended 31 March

SDR millions	**2007**	2006
Balance at beginning of year	(104.3)	92.2
Net valuation movement		
Net loss / (gain) on sales	27.0	(58.2)
Fair value and other movements	(3.2)	(138.3)
	23.8	(196.5)
Balance at end of year	**(80.5)**	(104.3)

The tables below analyse the balance in the securities revaluation account:

As at 31 March 2007 *SDR millions*	Fair value of assets	Historical cost	Securities revaluation account	Gross gains	Gross losses
Securities purchased under resale agreements	1,062.5	1,062.5	–	–	–
Government and other securities	8,781.3	8,861.8	(80.5)	37.2	(117.7)
Total	**9,843.8**	**9,924.3**	**(80.5)**	**37.2**	**(117.7)**

As at 31 March 2006 *SDR millions*	Fair value of assets	Historical cost	Securities revaluation account	Gross gains	Gross losses
Securities purchased under resale agreements	1,222.4	1,222.5	(0.1)	–	(0.1)
Government and other securities	8,771.6	8,875.8	(104.2)	48.6	(152.8)
Total	9,994.0	10,098.3	(104.3)	48.6	(152.9)

B. Gold revaluation account

This account contains the difference between the book value and the deemed cost of the Bank's gold investment assets. For gold investment assets held on 31 March 2003 (when the Bank changed its functional and presentation currency from the gold franc to the SDR) the deemed cost is approximately SDR 151 per ounce, based on the value of USD 208 that was applied from 1979 to 2003 in accordance with a decision by the Bank's Board of Directors, translated at the 31 March 2003 exchange rate.

The movements in the gold revaluation account were as follows:

For the financial year ended 31 March

SDR millions	**2007**	2006
Balance at beginning of year	1,342.2	759.3
Net valuation movement		
Net gain on sales	(133.9)	(114.5)
Gold price movement	175.7	697.4
	41.8	582.9
Balance at end of year	**1,384.0**	1,342.2

22. Post-employment benefit obligations

The Bank operates three post-employment arrangements:

1. A final salary defined benefit pension arrangement for its staff. The pension arrangement is based on a fund without separate legal personality, out of which benefits are paid. The fund assets are administered by the Bank for the sole benefit of current and former members of staff who participate in the arrangement. The Bank remains ultimately liable for all benefits due under the arrangement.

2. An unfunded defined benefit arrangement for its directors, whose entitlement is based on a minimum service period of four years.

3. An unfunded post-employment health and accident benefit arrangement for its staff. Entitlement to this arrangement is based in principle on the employee remaining in service up to 50 years of age and the completion of a minimum service period of 10 years.

All arrangements are valued annually by independent actuaries.

In addition, the Bank operates a blocked personal deposit account for certain staff members who were previously members of the Bank's savings fund, which closed on 1 April 2003. The terms of these blocked accounts are such that staff members cannot make further deposits and balances are paid out when they leave the Bank. The accounts bear interest at a rate determined by the Bank based on the rate offered by the Swiss National Bank on similar staff accounts. The total balance of blocked accounts at 31 March 2007 was SDR 18.9 million (2006: SDR 19.4 million). They are reported under the balance sheet heading "Currency deposits".

A. Amounts recognised in the balance sheet

As at 31 March	Staff pensions		Directors' pensions		Post-employment health and accident benefits	
SDR millions	**2007**	2006	**2007**	2006	**2007**	2006
Present value of obligation	(653.7)	(606.4)	(4.6)	(4.5)	(186.3)	(183.8)
Fair value of fund assets	648.6	602.2	–	–	–	–
Funded status	(5.1)	(4.2)	(4.6)	(4.5)	(186.3)	(183.8)
Unrecognised actuarial losses	47.3	46.8	0.3	0.3	42.0	57.2
Unrecognised past service cost	(42.2)	(42.6)	–	–	(7.8)	(8.6)
Liability at end of year	**–**	–	**(4.3)**	(4.2)	**(152.1)**	(135.2)

B. Present value of benefit obligation

The reconciliation of the opening and closing amounts of the present value of the benefit obligation is as follows:

As at 31 March	Staff pensions		Directors' pensions		Post-employment health and accident benefits	
SDR millions	**2007**	2006	**2007**	2006	**2007**	2006
Present value of obligation at beginning of year	606.4	596.4	4.5	4.3	183.8	179.8
Current service cost	28.3	26.3	0.2	0.2	7.9	7.5
Employee contributions	3.4	3.2	–	–	–	–
Interest cost	19.8	18.5	0.1	0.1	6.1	5.7
Actuarial loss / (gain)	3.5	9.8	–	–	(13.9)	–
Benefit payments	(21.8)	(23.3)	(0.3)	(0.3)	(1.9)	(1.8)
Exchange differences	14.1	(24.5)	0.1	0.2	4.3	(7.4)
Present value of obligation at end of year	**653.7**	606.4	**4.6**	4.5	**186.3**	183.8

C. Fair value of fund assets for staff pensions

The reconciliation of the opening and closing amounts of the fair value of fund assets for the staff pension arrangement is as follows:

For the financial year ended 31 March

SDR millions	**2007**	2006
Fair value of fund assets at beginning of year	602.2	566.6
Expected return on fund assets	30.6	27.4
Actuarial gain	4.1	36.8
Employer contributions	15.9	15.0
Employee contributions	3.4	3.2
Benefit payments	(21.8)	(23.3)
Exchange differences	14.2	(23.5)
Fair value of fund assets at end of year	**648.6**	602.2

D. Amounts recognised in the profit and loss account

For the financial year ended 31 March	Staff pensions		Directors' pensions		Post-employment health and accident benefits	
SDR millions	**2007**	2006	**2007**	2006	**2007**	2006
Current service cost	28.3	26.3	0.2	0.2	7.9	7.5
Interest cost	19.8	18.5	0.1	0.1	6.1	5.7
Less: expected return on fund assets	(30.7)	(27.4)	–	–	–	–
Less: past service cost	(1.5)	(3.4)	–	–	(1.0)	(1.0)
Net actuarial losses recognised in year	–	1.2	–	–	2.6	2.8
Total included in operating expense	**15.9**	15.2	**0.3**	0.3	**15.6**	15.0

The Bank expects to make a contribution to its post-employment arrangements of SDR 30.8 million in 2007/08.

E. Major categories of fund assets as a percentage of total fund assets

As at 31 March

Percentages	**2007**	2006
European equities	16.4	16.1
Other equities	28.4	28.5
European fixed income	25.8	26.9
Other fixed income	26.6	24.0
Other assets	2.8	4.5
Actual return on fund assets	5.4%	10.7%

The staff pension fund does not invest in financial instruments issued by the Bank.

F. Principal actuarial assumptions used in these financial statements

As at 31 March

	2007	2006
Applicable to all three post-employment benefit arrangements		
Discount rate – market rate of highly rated Swiss corporate bonds	3.25%	3.25%
Applicable to staff and directors' pension arrangements		
Assumed increase in pensions payable	1.50%	1.50%
Applicable to staff pension arrangement only		
Expected return on fund assets	5.00%	5.00%
Assumed salary increase rate	4.10%	4.10%
Applicable to directors' pension arrangement only		
Assumed directors' pensionable remuneration increase rate	1.50%	1.50%
Applicable to post-employment health and accident benefit arrangement only		
Long-term medical inflation assumption	5.00%	5.00%

The assumed increases in staff salaries, directors' pensionable remuneration and pensions payable incorporate an inflation assumption of 1.5%.

The expected rate of return on fund assets is based on long-term expectations for inflation, interest rates, risk premiums and asset allocations. The estimate takes into consideration historical returns and is determined in conjunction with the fund's independent actuaries.

The assumption for medical inflation has a significant effect on the amounts recognised in the profit and loss account. A 1% change in the assumption for medical inflation compared to that used for the 2006/07 calculation would have the following effects:

For the financial year ended 31 March

SDR millions	**2007**	2006
Increase / (decrease) of the total service and interest cost		
6% medical inflation	4.6	4.3
4% medical inflation	(3.3)	(3.2)

As at 31 March

SDR millions	**2007**	2006
Increase / (decrease) of the benefit obligation		
6% medical inflation	47.0	46.4
4% medical inflation	(35.4)	(37.8)

23. Interest income

For the financial year ended 31 March

SDR millions	**2007**	2006
Currency assets available for sale		
Securities purchased under resale agreements	59.2	39.9
Government and other securities	328.9	287.1
	388.1	327.0
Currency assets held at fair value through profit and loss		
Treasury bills	816.0	465.3
Securities purchased under resale agreements	811.4	104.8
Time deposits and advances to banks	4,179.3	3,221.3
Government and other securities	1,727.2	1,058.4
	7,533.9	4,849.8
Assets designated as loans and receivables		
Call and notice accounts	105.6	96.6
Gold investment assets	15.4	20.4
Gold banking assets	6.7	7.0
	127.7	124.0
Derivative financial instruments held at fair value through profit and loss	**805.6**	936.7
Other interest	**2.7**	1.6
Total interest income	**8,858.0**	6,239.1
Of which:		
Interest received during the financial year	8,260.0	6,392.4

24. Interest expense

For the financial year ended 31 March

SDR millions	**2007**	2006
Liabilities held at fair value through profit and loss		
Currency deposits	7,596.9	5,064.3
Securities sold under repurchase agreements	–	0.3
	7,596.9	5,064.6
Liabilities designated as loans and receivables		
Gold deposits	5.2	5.4
Sight and notice deposit accounts	581.6	462.1
Securities sold under repurchase agreements	57.5	37.0
	644.3	504.5
Total interest expense	**8,241.2**	5,569.1
Of which:		
Interest paid during the financial year	7,824.7	5,434.9

25. Net valuation movement

The net valuation movement arises entirely on financial instruments designated as held at fair value through profit and loss.

For the financial year ended 31 March

SDR millions	**2007**	2006
Unrealised valuation movements on currency assets held at fair value through profit and loss	(6.8)	(332.9)
Realised gains / (losses) on currency assets held at fair value through profit and loss	(30.2)	4.3
Unrealised valuation movements on financial liabilities	(510.6)	498.2
Realised gains on financial liabilities	132.4	63.0
Valuation movements on derivative financial instruments	478.5	(306.7)
Net valuation movement	**63.3**	(74.1)

26. Net fee and commission income

For the financial year ended 31 March

SDR millions	**2007**	2006
Fee and commission income	6.1	5.8
Fee and commission expense	(4.8)	(3.1)
Net fee and commission income	**1.3**	2.7

27. Net foreign exchange gain / (loss)

For the financial year ended 31 March

SDR millions	**2007**	2006
Net transaction gain / (loss)	6.7	(23.4)
Net translation loss	(5.8)	(1.8)
Net foreign exchange gain / (loss)	**0.9**	(25.2)

The net loss in the financial year ended 31 March 2006 resulted principally from the impact of an appreciating gold price on the market value of forward contracts for the sale of gold investment assets. This loss was offset by a corresponding increase in the realised gain on the Bank's sales of gold investment assets (see note 30) when these transactions were settled.

28. Operating expense

The following table analyses the Bank's operating expense in Swiss francs (CHF), the currency in which most expenditure is incurred:

For the financial year ended 31 March

CHF millions	**2007**	2006
Board of Directors		
Directors' fees	1.9	1.7
Pensions to former directors	0.6	0.6
Travel, external Board meetings and other costs	1.7	1.1
	4.2	3.4
Management and staff		
Remuneration	106.6	102.3
Pensions	32.5	31.4
Other personnel-related expense	45.6	42.6
	184.7	176.3
Office and other expense	**64.6**	68.9
Administrative expense in CHF millions	**253.5**	248.6
Administrative expense in SDR millions	137.8	133.6
Depreciation in SDR millions	12.0	13.3
Operating expense in SDR millions	**149.8**	146.9

The average number of full-time equivalent employees during the financial year ended 31 March 2007 was 530 (2006: 520).

29. Net gain on sales of securities available for sale

For the financial year ended 31 March

SDR millions	**2007**	2006
Disposal proceeds	2,265.5	3,214.1
Amortised cost	(2,292.5)	(3,155.9)
Net gains / (losses)	**(27.0)**	58.2
Comprising:		
Gross realised gains	63.0	64.1
Gross realised losses	(90.0)	(5.9)

30. Net gain on sales of gold investment assets

The profits on the sales of gold investment assets for the financial year ended 31 March 2007 were as follows:

For the financial year ended 31 March		
SDR millions	**2007**	2006
Disposal proceeds	206.7	187.2
Deemed cost (see note 21B)	(72.8)	(72.7)
Gross realised gains	**133.9**	114.5

31. Earnings per share

For the financial year ended 31 March	**2007**	2006
Net profit for the financial year (SDR millions)	639.4	599.2
Weighted average number of shares entitled to dividend	546,125	540,535
Basic and diluted earnings per share (SDR per share)	**1,170.8**	1,108.5

The dividend proposed for the financial year ended 31 March 2007 is SDR 255 per share (2006: SDR 245).

32. Cash and cash equivalents

For the purposes of the cash flow statement, cash and cash equivalents comprise:

As at 31 March		
SDR millions	**2007**	2006
Cash and sight accounts with banks	92.4	33.0
Call and notice accounts	2,138.6	2,831.6
Total cash and cash equivalents	**2,231.0**	2,864.6

33. Taxes

The Bank's special legal status in Switzerland is set out principally in its Headquarters Agreement with the Swiss Federal Council. Under the terms of this document the Bank is exempted from virtually all direct and indirect taxes at both federal and local government level in Switzerland.

Similar agreements exist with the government of the People's Republic of China for the Asian Office in Hong Kong SAR and with the Mexican government for the Office of the Americas.

34. Exchange rates

The following table shows the principal rates and prices used to translate balances in foreign currency and gold into SDR:

	Spot rate as at 31 March		Average rate for the financial year ended	
	2007	2006	**2007**	2006
USD	0.660	0.694	0.673	0.687
EUR	0.883	0.840	0.863	0.835
JPY	0.00562	0.00589	0.00576	0.00607
GBP	1.300	1.205	1.274	1.225
CHF	0.544	0.532	0.544	0.539
Gold	438.3	404.4	422.8	327.7

35. Off-balance sheet items

Fiduciary transactions are effected in the Bank's name on behalf of, and at the risk of, the Bank's customers without recourse to the Bank.

They are not included in the Bank's balance sheet and comprise:

As at 31 March

SDR millions	**2007**	2006
Nominal value of securities held under:		
Safe custody arrangements	11,189.6	10,413.8
Collateral pledge agreements	223.6	2,220.5
Portfolio management mandates	5,535.4	5,012.1
Total	**16,948.6**	17,646.4

The financial instruments held under the above arrangements are deposited with external custodians, either central banks or commercial institutions.

36. Commitments

The Bank provides a number of committed standby facilities for its central bank and international institution customers. As at 31 March 2007 the outstanding commitments to extend credit under these committed standby facilities amounted to SDR 7,211.8 million (2006: SDR 7,470.4 million), of which SDR 336.0 million was uncollateralised (2006: SDR 344.0 million).

37. Effective interest rates

The effective interest rate is the rate that discounts the expected future cash flows of a financial instrument to the current book value.

The tables below summarise the effective interest rate by major currency for applicable financial instruments:

As at 31 March 2007

Percentages	USD	EUR	GBP	JPY	Other currencies
Assets					
Gold deposits	–	–	–	–	0.85
Treasury bills	5.27	3.48	–	0.52	–
Securities purchased under resale agreements	5.23	3.75	–	–	–
Time deposits and advances to banks	5.44	3.92	5.46	0.49	4.14
Government and other securities	5.13	3.83	5.36	0.78	6.41
Liabilities					
Currency deposits	5.04	3.79	5.21	0.36	6.56
Gold deposits	–	–	–	–	0.54
Securities sold under repurchase agreements	5.42	3.88	5.36	0.54	–
Short positions in currency assets	5.51	–	–	–	–

As at 31 March 2006

Percentages	USD	EUR	GBP	JPY	Other currencies
Assets					
Gold deposits	–	–	–	–	0.61
Treasury bills	4.77	2.39	–	0.02	1.06
Securities purchased under resale agreements	4.78	2.63	4.57	–	–
Time deposits and advances to banks	4.75	2.51	4.59	–	4.25
Government and other securities	4.76	3.41	4.80	0.60	4.99
Liabilities					
Currency deposits	4.23	2.55	4.32	–	4.85
Gold deposits	–	–	–	–	0.28
Securities sold under repurchase agreements	4.63	–	4.27	–	–

38. Concentration analysis

A. Total liabilities

As at 31 March

SDR millions	**2007**	2006
Africa	24,526.0	18,260.7
Asia-Pacific	99,322.0	84,594.8
Europe	75,225.9	60,380.7
North and South America	51,769.1	41,394.6
International organisations	7,918.6	3,914.3
Total	**258,761.6**	208,545.1

The Bank's currency and gold deposits, principally from central banks and international institutions, comprise 90.8% (2006: 93.6%) of its total liabilities. At 31 March 2007 currency and gold deposits originated from 152 depositors (2006: 154). Within these deposits there are significant individual customer concentrations, with four customers each contributing in excess of 5% of the total on a settlement date basis (2006: five customers). Note 4 provides details of how the Bank manages the concentration risk in its funding base.

B. Credit commitments

As at 31 March

SDR millions	**2007**	2006
Africa	13.0	–
Asia-Pacific	6,817.8	7,166.4
Europe	315.0	304.0
Americas	66.0	–
Total	**7,211.8**	7,470.4

Note 36 provides further analysis of the Bank's credit commitments.

C. Off-balance sheet items

As at 31 March

SDR millions	**2007**	2006
Africa	1,573.7	975.2
Asia-Pacific	14,325.4	13,410.4
Europe	318.4	560.2
Americas	731.1	2,700.6
Total	**16,948.6**	17,646.4

Note 35 provides further analysis of the Bank's off-balance sheet items.

D. Total assets

The Bank invests the majority of its funds in the interbank market (with G10-based global financial institutions) and in G10 sovereign debt. A geographical analysis of the Bank's total assets is not provided because Management believes that this would not present a fair impression of the economic effect of the Bank's investments.

39. Related parties

The Bank considers the following to be its related parties:

- the members of the Board of Directors;
- the senior officials of the Bank;
- close family members of the above individuals;
- enterprises which could exert significant influence over a member of the Board of Directors or senior official, and enterprises over which one of these individuals could exert significant influence;
- the Bank's post-employment benefit arrangements; and
- central banks whose governor is a member of the Board of Directors and institutions that are connected with these central banks.

A listing of the members of the Board of Directors and senior officials is shown in the section of the Annual Report entitled "Board of Directors and senior officials". Note 22 provides details of the Bank's post-employment benefit arrangements.

A. Related party individuals

The total compensation of senior officials recognised in the profit and loss account amounted to:

For the financial year ended 31 March

CHF millions	**2007**	2006
Salaries, allowances and medical cover	6.7	6.4
Post-employment benefits	1.8	1.8
Total compensation in CHF millions	**8.5**	8.2
SDR equivalent	4.6	4.4

Note 28 provides details of the total compensation of the Board of Directors.

The Bank offers personal deposit accounts for all staff members and its Directors. In addition, the Bank operates a blocked personal deposit account for certain staff members who were previously members of the Bank's savings fund, which was discontinued in 2003. The terms of these blocked accounts are such that staff members cannot make further deposits and balances are paid out when they leave the Bank. The personal deposit accounts and the blocked accounts bear interest at a rate determined by the Bank based on the rate offered by the Swiss National Bank on similar staff accounts. The movements and total balance on personal deposit and blocked accounts relating to members of the Board of Directors and the senior officials of the Bank were as follows:

For the financial year ended 31 March

CHF millions	**2007**	2006
Balance at beginning of year	13.3	18.7
Deposits taken including interest income (net of withholding tax)	3.5	6.6
Withdrawals	(1.2)	(12.0)
Balance at end of year in CHF millions	**15.6**	13.3
SDR equivalent	8.5	7.1
Interest expense on deposits in CHF millions	0.4	0.5
SDR equivalent	0.2	0.3

Balances related to individuals who are appointed as members of the Board of Directors or as senior officials of the Bank during the financial year are included in the table above along with other deposits taken. Balances related to individuals who cease to be members of the Board of Directors or senior officials of the Bank during the financial year are included in the table above along with other withdrawals.

B. Related party central banks and connected institutions

The BIS provides banking services to central banks, international organisations and other public institutions. In fulfilling this role, the Bank in the normal course of business enters into transactions with related party central banks and connected institutions. These transactions include making advances, and taking currency and gold deposits.

It is the Bank's policy to enter into transactions with related party central banks and connected institutions on similar terms and conditions to transactions with other, non-related party customers.

Currency deposits from related party central banks and connected institutions

For the financial year ended 31 March

SDR millions	**2007**	2006
Balance at beginning of year	53,280.0	39,806.9
Deposits taken	184,721.8	175,323.0
Maturities, repayments and fair value movements	(182,058.0)	(156,074.1)
Net movement on call / notice accounts	(2,703.7)	(5,775.8)
Balance at end of year	**53,240.1**	53,280.0
Percentage of total currency deposits at end of year	24.0%	28.6%

Gold deposit liabilities from related party central banks and connected institutions

For the financial year ended 31 March

SDR millions	**2007**	2006
Balance at beginning of year	6,267.3	4,808.6
Deposits taken	83.3	–
Net withdrawals and gold price movements	3,773.2	1,458.7
Balance at end of year	**10,123.8**	6,267.3
Percentage of total gold deposits at end of year	77.1%	67.9%

Securities purchased under resale transactions with related party central banks and connected institutions

For the financial year ended 31 March

SDR millions	**2007**	2006
Balance at beginning of year	3,198.5	4,917.3
Collateralised deposits placed	680,101.7	1,095,001.1
Maturities and fair value movements	(682,830.0)	(1,096,719.9)
Balance at end of year	**470.2**	3,198.5
Percentage of total securities purchased under resale agreements at end of year	0.8%	16.4%

Other balances with related party central banks and connected institutions

The Bank maintains sight accounts in currencies with related party central banks and connected institutions, the total balance of which was SDR 144.7 million as at 31 March 2007 (2006: SDR 10.8 million). Gold held in sight accounts with related party central banks and connected institutions totalled SDR 11,837.7 million as at 31 March 2007 (2006: SDR 7,132.0 million).

Derivative transactions with related party central banks and connected institutions

The BIS enters into derivative transactions with its related party central banks and connected institutions, including foreign exchange deals and interest rate swaps. The total nominal value of these transactions with related party central banks and connected institutions during the year ended 31 March 2007 was SDR 17,005.8 million (2006: SDR 10,948.1 million).

40. Contingent liabilities

The Bank is indirectly involved in legal proceedings in France arising out of the mandatory repurchase in 2001 of the shares in the BIS held by private shareholders.

A damages claim was initiated in September 2004 before the Commercial Court in Paris by a group of claimants who allegedly sold BIS shares in the market during the period between the announcement of the proposed mandatory share repurchase on 11 September 2000 and the resolution on 8 January 2001 by the Extraordinary General Meeting effectuating the repurchase. The claim was brought not against the BIS, but rather against JP Morgan & Cie SA and Barbier Frinault, who advised the Bank on the appropriate compensation for the repurchase. That notwithstanding, the Bank faces indirect liability through an indemnification clause in its contract with JP Morgan & Cie SA with respect to litigation and costs that might arise in connection with the advisory services performed. No provision has been made for this claim.

In its judgment of 9 October 2006, the Commercial Court in Paris rejected the claim. A number of claimants have, however, requested review of this decision by the Paris Court of Appeals.

The BIS is not currently involved in any other significant legal proceedings.

Report of the auditors

Report of the auditors
to the Board of Directors and to the General Meeting
of the Bank for International Settlements, Basel

We have audited the accompanying financial statements (pages 192–231) of the Bank for International Settlements. These financial statements incorporate the balance sheet as at 31 March 2007, profit and loss account for the year then ended as required by the Bank's Statutes, and the notes thereto. The financial statements have been prepared by the Management of the Bank in accordance with the Statutes and with the principles of valuation described under significant accounting policies in the notes. The Management of the Bank is responsible for designing, implementing and maintaining internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances. Our responsibility under the Statutes of the Bank is to form an independent opinion on the balance sheet and profit and loss account based on our audit and to report our opinion to you.

We conducted our audit in accordance with International Standards on Auditing. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risk of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We have received all the information and explanations which we have required to obtain assurance that the balance sheet and profit and loss account are free of material misstatement, and believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements, including the notes thereto, have been properly drawn up and give a true and fair view of the financial position of the Bank for International Settlements at 31 March 2007 and the results of its operations for the year then ended in conformity with the accounting principles described in the notes to the financial statements and the Statutes of the Bank.

Deloitte AG

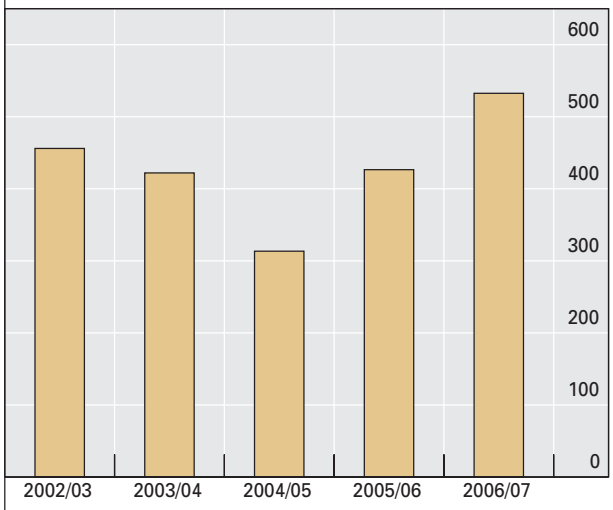
Dr. Philip Göth
Zurich, 7 May 2007

Pavel Nemecek

Five-year graphical summary

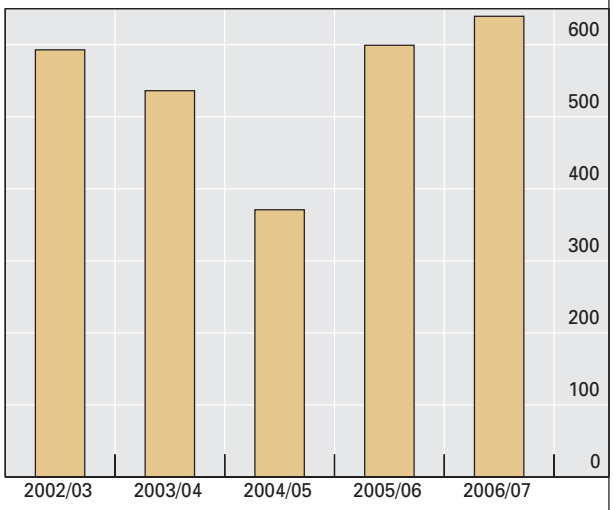
Operating profit

SDR millions



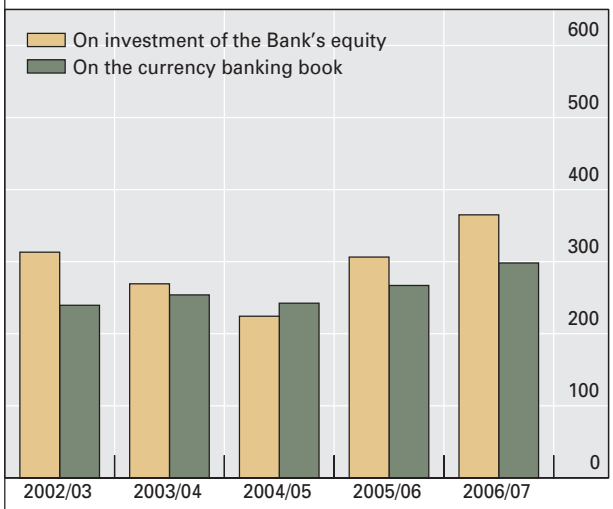
Net profit

SDR millions



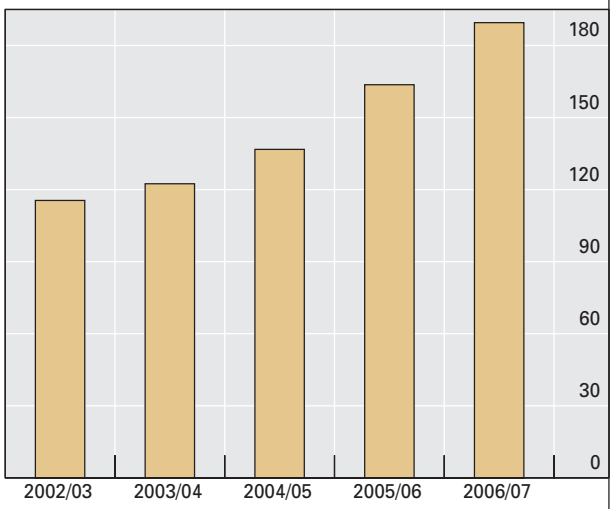
Net interest earned on currency investments

SDR millions



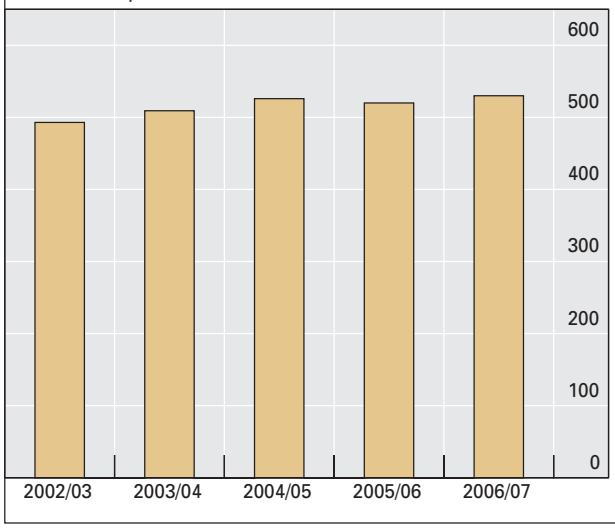
Average currency deposits (value date accruals basis)

SDR billions



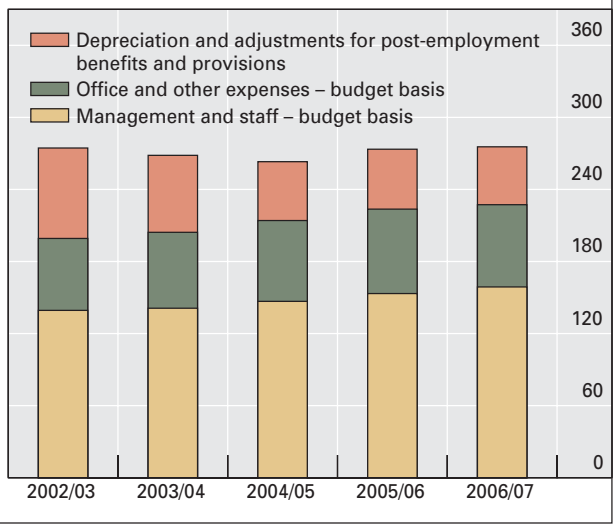
Average number of employees

Full-time equivalent



Operating expense

CHF millions



Printed in Switzerland Werner Druck AG, Basel