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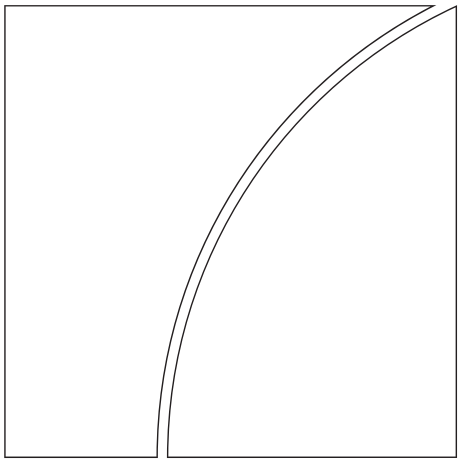

80th Annual Report

1 April 2009–31 March 2010

Basel, 28 June 2010

Copies of publications are available from:

Bank for International Settlements
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 92-9131-173-1 (print)
ISBN 92-9197-173-1 (online)

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

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The chapters of this Report went to press between 7 and 11 June 2010.

Graphs

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Conventions used in this Report

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

Differences in totals are due to rounding.

80th Annual Report

submitted to the Annual General Meeting
of the Bank for International Settlements
held in Basel on 28 June 2010

Ladies and Gentlemen,

It is my pleasure to submit to you the 80th Annual Report of the Bank for International Settlements for the financial year which ended on 31 March 2010.

The net profit for the year amounted to SDR 1,859.8 million, compared with SDR 446.1 million for the preceding year. Details of the results for the financial year 2009/10 may be found on pages 144–7 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 374.1 million in payment of a normal dividend of SDR 285 per share costing SDR 155.6 million and a supplementary dividend of SDR 400 per share costing SDR 218.5 million. These dividends would be payable in any constituent currency of the SDR, or in Swiss francs.

The Board further recommends that SDR 148.6 million be transferred to the general reserve fund, SDR 12.0 million be transferred to the special dividend reserve fund and the remainder – amounting to SDR 1,325.1 million – to the free reserve fund.

If these proposals are approved, the Bank's dividend for the financial year 2009/10 will be payable to shareholders on 8 July 2010.

Basel, 11 June 2010

JAIME CARUANA
General Manager

Overview of the economic chapters

Chapter I

The financial crisis has left policymakers with a daunting legacy, especially in industrial countries. In setting policies, they must adopt a medium- to long-term perspective while they cope with the still fragile and uneven recovery. Households have only just begun to reduce their indebtedness and therefore continue to curb spending. Extraordinary support measures helped to contain contagion across markets, preventing the worst. But some measures have delayed the needed adjustments in the real economy and financial sector, where the reduction of leverage and balance sheet repair are far from complete. All this continues to weigh on confidence. The combination of remaining vulnerabilities in the financial system and the side effects of ongoing intensive care threaten to send the patient into relapse and to undermine reform efforts.

Macroeconomic support has its limits. Recent market reactions demonstrate that the limits to fiscal stimulus have been reached in a number of countries. Immediate, front-loaded fiscal consolidation is required in several industrial countries. Such policies need to be accompanied by structural reforms to facilitate growth and ensure long-term fiscal sustainability. In monetary policy, despite the fragility of the macroeconomy and low core inflation in the major advanced economies, it is important to bear in mind that keeping interest rates near zero for too long, with abundant liquidity, leads to distortions and creates risks for financial and monetary stability.

Fundamental reform of the financial system must be completed to put it on more stable foundations that would support high sustainable growth for the future. Above all, reform should produce more effective regulatory and supervisory policies as part of an integrated policy framework. A new global framework for financial stability should bring together contributions from regulatory, supervisory and macroeconomic policies. Supported by strong governance arrangements and international cooperation, such a framework would promote the combined goals of financial and macroeconomic stability.

Chapter II

While some emerging market economies are in danger of overheating, GDP in most advanced economies is still well below pre-crisis levels despite strong monetary and fiscal stimulus. The rapid increase of government debt raises urgent questions about the sustainability of public finances.

Banks have increased their capital buffers, and profits have been boosted by a number of temporary factors. But banks still remain vulnerable to further loan losses. As recent disruptions in funding markets have shown, banks can face significant refinancing pressures when sentiment turns adverse. Although banks in the crisis countries have made some progress in repairing their balance sheets, this process is far from complete. Efforts to restructure and strengthen the financial system should continue.

Central banks cut policy rates sharply during the crisis in order to stabilise the financial system and the real economy. Those essential cuts, reinforced by unconventional policy measures to address financial market malfunctioning, helped to forestall an economic meltdown. But there are limits to how long monetary policy can remain expansionary. Low interest rates can distort investment decisions. The financial stability risks that could arise from a prolonged period of extremely low policy rates also need to be very carefully weighed. An extended period of such low policy rates can encourage borrowers to shorten the duration of their debts, facilitate the increased leverage of risky positions and delay necessary balance sheet adjustments. While policymakers can and should address such risks with other tools, they may still need to tighten monetary policy sooner than consideration of macroeconomic prospects alone might suggest. Chapter III

Emerging market economies (EMEs) are recovering strongly and inflation pressures there are rising. Given low policy rates in the major financial centres, many EMEs are concerned that their stronger growth prospects could attract destabilising capital inflows, leading to currency appreciation. Some continue to keep policy rates low and resist exchange rate appreciation by conducting large-scale intervention in foreign exchange markets. Such policies tend to be associated with a sizeable expansion in bank balance sheets, rapid credit growth and asset price overshooting. The risks of domestic overheating thus increase. To promote more balanced domestic and global growth, some EMEs could rely more on exchange rate flexibility and on monetary policy tightening. In addition, prudential tools have an important role to play in enhancing the resilience of the financial system to domestic and external financial shocks. In contrast, while capital controls may have a limited and temporary role, they are unlikely to be effective over the medium term. Chapter IV

The level of public debt in many industrial countries is on an unsustainable path. Current budget deficits, partly cyclical but also swollen by policy responses to the crisis, are large in relation to GDP. And expenditures related to ageing populations are set to increase considerably over the next few decades. Recent events in Greece and other southern European countries have shown how quickly investors' doubts about the sustainability of public finances in one country can spill over to others. In addition, high levels of public debt may lower long-term economic growth and ultimately endanger monetary stability. Chapter V

These risks underscore the urgent need for credible measures to reduce current fiscal deficits in several industrial countries. Tackling the long-term fiscal imbalances requires structural reforms aimed at boosting the growth of potential output and containing the future increase in age-related expenditures. Such measures may have adverse effects on output growth in the short term, but the alternative of having to cope with a sudden loss in market confidence would be much worse. A programme of fiscal consolidation – cutting deficits by several percentage points of GDP over a number of years – would offer significant benefits of low and stable long-term interest rates, a less fragile financial system and, ultimately, better prospects for investment and long-term growth.

Chapter VI

The crisis revealed that some business models of financial firms were seriously flawed. For a long time, financial firms earned comparatively low returns on assets but used high leverage to meet targets for returns on equity. They also took full advantage of cheap short-term funding. This strategy made their profits more volatile, especially during periods of market stress. Since the crisis, investors have become more discriminating in their treatment of financial firms, rewarding those with more prudent and resilient models. The priority of policymakers now is to incorporate in the regulatory framework the stronger standards being imposed by the marketplace. Higher-quality capital, lower leverage and more stable funding should buttress the sector's future resilience. This need not undermine medium-term profitability, particularly if restructuring continues and excess capacity is progressively eliminated. In addition, more sound business models should restrain funding costs, thus contributing to strong, stable and sustainable performance in the sector.

Chapter VII

The stability of the financial system is undermined by distorted incentives and procyclical feedback effects. Macroprudential policy, which broadens the perspective of traditional prudential policy, can readily strengthen the resilience of the financial system to procyclicality by adapting conventional prudential tools. Countercyclical capital buffers, for example, can be built up when credit growth rises above trend during a boom, and released during the downturn. Other measures such as ceilings on loan-to-value (LTV) ratios for mortgage lending can act as automatic stabilisers because they will bind more during a boom when banks typically seek to expand property loans by accepting high LTV ratios. Such approaches could help to restrain credit and asset price excesses and thus mitigate the build-up of systemic financial vulnerabilities.

Addressing procyclicality is closely linked to traditional macroeconomic stabilisation policy. A more resilient financial system complements countercyclical monetary and fiscal policy, helping address threats to financial stability in the downturn. That said, monetary policy does need to lean more against the build-up of systemic financial vulnerabilities during the boom. That can be done by lengthening the policy horizon, thereby promoting long-term price stability more effectively.

I. Beyond the rescue: exiting intensive care and finishing the reforms

Three years after the onset of the crisis, expectations for recovery and reform are high but patience is wearing thin. Policymakers face a daunting legacy: the side effects of the ongoing financial and macroeconomic support measures, combined with the unresolved vulnerabilities of the financial sector, threaten to short-circuit the recovery; and the full suite of reforms necessary to improve the resilience of the financial system has yet to be completed.

When the transatlantic financial crisis began nearly three years ago, policymakers responded with emergency room treatment and strong medicine: large doses of direct support to the financial system, low interest rates, vastly expanded central bank balance sheets and massive fiscal stimulus. But such powerful measures have strong side effects, and their dangers are beginning to become apparent.

Here are the worst problems arising now from the continued use of the extraordinary programmes: Direct support is delaying vital post-crisis adjustment and runs the risk of creating zombie financial and non-financial firms. Low interest rates at the centre of the global economy are discouraging needed reductions in leverage, thereby adding to the distortions in the financial system and creating problems elsewhere. The sustained bloat in their balance sheets means that central banks still dominate some segments of financial markets, thereby distorting the pricing of some important bonds and loans, discouraging necessary market-making by private individuals and institutions, and increasing moral hazard by making it clear that there is a buyer of last resort for some instruments. And the fiscal stimulus is spawning high and growing government debt that, in a number of countries, is now clearly on an unsustainable path.

The time has come to ask when and how these powerful measures can be phased out. We cannot ignore the fact that the cumulating side effects themselves pose a danger that, at the very least, implies exiting sooner than may be comfortable for many. That said, exit from a number of these measures is hindered by the state of the financial sector and the macroeconomic outlook, which are fragile in many parts of the industrial world and make policy tightening risky.

On the reform front, work is proceeding apace. Detailed and wide-ranging proposals are taking aim at the multifarious causes of the crisis and at the effects of threats that could yet develop. Such reforms will make the next crisis less likely and, when it does come, less severe. But as we argued a year ago, success requires that everyone contribute.[1] Regulators need to

[1] BIS, *79th Annual Report*, June 2009, Chapter VII.

reform their approach to the safety of the financial system's three essential elements: instruments, markets and institutions. They must establish a macroprudential framework to promote the stability of the financial system as a whole, over and above the soundness of each of its components. Fiscal authorities must work to maintain long-term sustainability, ensuring that their policies absorb rather than amplify shocks by building reserves in good times that will be available for response in the bad times. And central banks must confront booms in asset prices and credit as being the threat to stable prices and growth that they are. The programme for reform on all these fronts – regulatory, fiscal and monetary – must be put in place and seen through to completion.

The first part of this introductory chapter briefly outlines the extraordinary policy measures undertaken during the crisis and discusses the risks arising from the now prolonged administering of that medicine, which primarily addressed symptoms. In the subsequent parts, we examine the underlying causes of the crisis, survey the work that is under way to reform the financial system and consider what still needs to be done.

In the emergency room: initial responses to the crisis

As the crisis intensified with the collapse of Lehman Brothers, authorities implemented an escalating series of emergency measures aimed at shoring up their financial systems and the real economy. These were essentially emergency room treatments, which meant that consideration of any side effects would have to wait.

Depending on the structure of their economies and financial systems, policymakers chose varying measures, including: guarantees of bank assets and liabilities aimed at averting potential bank runs; direct lending from fiscal authorities and central banks, as well as from international financial institutions, to allow rollover and prevent default; capital injections to ward off insolvency; nationalisations to allow failed institutions to continue to serve their customers; removal of low-quality loans from private sector balance sheets and support of prices of assets for which liquid markets had disappeared, and thereby ballooning of central bank balance sheets; and supervisors' public certification of the capital adequacy of large banks. A comprehensive list of the actions taken would include dozens of specific programmes in virtually every advanced economy and many emerging market economies as well.[2]

Unprecedented macroeconomic policies accompanied the large array of direct actions to support the financial system. The extremely accommodative monetary and fiscal policies put in place were a reaction to the consequences of the crisis. In the United States, Europe and Japan, public deficits are now in excess of 5% of GDP and policy rates are near zero. And as the conventional monetary easing ran its course, central banks in a number of core countries

[2] Details discussed in BIS, *79th Annual Report*, June 2009, and in Chapters II and VI of the present Annual Report.

shifted their focus from prices to quantities. Over the past two years, the total quantity of assets owned by those central banks about doubled and remains at or near that bloated level.

Intensive care: the problem of dangerous side effects

The emergency policies were essential at the time and have been largely successful in meeting their short-term objectives. Many of them are still in effect today, however – three years after the onset of the crisis. To put it bluntly, the combination of remaining vulnerabilities in the financial system and the side effects of such a long period of intensive care threaten to send the patient into relapse.

The crisis has left the global macroeconomic situation far worse than it was three years ago. In Europe and the United States, unemployment is high and demand prospects are poor. Support programmes for markets and institutions have created a dependency from which the financial system may have a hard time withdrawing without a continuation of very easy monetary policy. And some banks and banking systems remain highly leveraged and still appear to be on life support.

The Greek sovereign debt crisis shows just how fragile the financial system still is. In mid-May, the escalating difficulties surrounding Greece's creditworthiness resulted in funding problems for a number of banks, especially in Europe, reminiscent of those following the collapse of Lehman. These funding difficulties reflected not only the new problem of sovereign debt but also the lingering doubts about the quality of commercial bank balance sheets. In reaction to these difficulties, the ECB moved into new territory and announced it would buy sovereign bonds. And as with the earlier crisis, central banks opened emergency swap lines to address some of the funding problems.

Leverage remains high in the non-financial sectors of many countries at the centre of the crisis. As discussed in Chapter II, households in these economies have started to reduce their leverage. But including the large increases by the public sector, debt levels of the non-financial sector have risen substantially since 2007; they are expected to be higher by 20–40% of GDP by the end of 2010 in France, Germany, Spain, the United Kingdom and the United States. Not only does the continued high leverage imply fragility of private and public sector balance sheets, which will take years to resolve, but it also severely limits the scope for fiscal policy intervention if another bailout – public or private – is needed.

Indeed, the events coming out of Greece highlight the possibility that highly indebted governments may not be able to act as buyer of last resort to save banks in a crisis. That is, in late 2008 and early 2009, governments provided the backstop when banks began to fail. But if the debt of the government itself becomes unmarketable, any future bailout of the banking system would have to rely on external help.

The Greek sovereign debt crisis may have delayed any monetary tightening, but the longer that policy rates in the major advanced economies

remain low, the larger will be the distortions they create, both domestically and internationally. As discussed in Chapter III, a prolonged period of exceptionally low real interest rates alters investment decisions, postpones the recognition of losses, increases risk-taking in the ensuing search for yield, and encourages high levels of borrowing. Our recent experience with exactly those consequences a mere five years ago should make us extremely wary this time around. True, the current environment is very different from what it was in the first half of the past decade, but the 2007–09 crisis suggests that the financial binges promoted by such low policy rates – booms in asset prices and credit, the underpricing of risk and the like – ultimately have devastating effects.

For those economies that are growing strongly and require higher policy rates, the low interest rates at the centre of the global financial system are unhelpful, to say the least – the interest differentials induce capital movements. As discussed in Chapters III and IV, those flows put pressure on exchange rates, encourage credit booms and asset price bubbles, and destabilise the economy when interest rate differentials normalise and cause the flows to reverse.

Vast fiscal outlays to support aggregate demand in the wake of the 2007–09 crisis – combined with past promises on health care, pension and social security payments – have sent public debt in many industrial countries rocketing on an unsustainable trajectory. As discussed in Chapter V, ageing populations are beginning to place large burdens on the public finances of most advanced economies. Events during the first half of this year show that it may already be too late for some countries to protect or quickly restore their standing in the debt markets on their own. But in any case, sizeable fiscal consolidation is needed urgently in a number of industrial countries and generally in two forms: cuts to rein in current deficits, and convincing action to ensure that deficits will not surge in the future.

Fiscal consolidation is even more pressing for those countries that entered the crisis with high debts that were a result both of fiscal profligacy and of low potential growth arising from a lack of international competitiveness. Adjustment to the former is straightforward even if painful to implement. But for countries in a currency union with their major trading partners, devaluation is not an option, so improvements in competitiveness can come only through higher productivity or lower nominal wages. As the long history of sovereign debt crises has shown, when investors lose their confidence in a country's ability to service its debt and become unwilling to hold it, rescue packages, bailouts and even debt restructuring for the sovereign remain the only options.

Diagnosis: identifying the causes of the crisis

The adage of every good doctor must be: treat the symptoms of the disease, but never forget its causes. And what is true for medical illness is also true for a financial and economic crisis: policymakers must address its symptoms and at the same time press ahead with reforms aimed at its causes so as

to reduce systemic financial risk as soon as possible. Therefore, to better evaluate how far along we are with these reforms, we first briefly summarise the causes of the crisis. The causes are all surely interrelated, but for ease of exposition we divide them into two broad categories: microeconomic and macroeconomic.[3]

Microeconomic causes

The microeconomic causes fall into three areas: flawed incentives; failures of risk measurement and management; and weaknesses in regulation and supervision. Jointly, these shortcomings allowed the entire financial industry to book profits too early, too easily and without proper risk adjustment.

The crisis revealed distorted incentives for consumers and investors, financial sector employees, and rating agencies alike. Consumers and investors failed to watch out for themselves, borrowing heavily and investing in overly complex and opaque products. Managers of financial firms, encouraged by compensation schemes keyed to short-term returns and business volumes, increased leverage and accumulated huge amounts of risk. Rating agencies, overwhelmed by the avalanche of complex structured products yet unable to resist the profits from taking on the business, failed to correctly evaluate the probability that borrowers would repay.

Measuring, pricing and managing risk all require modern statistical tools, which are based largely on historical experience. Even for data series with a long history, the belief that the world evolves slowly but permanently meant downweighting the importance of the more distant past and its upheavals. So, the long but more recent period of relative stability created the perception that risk had permanently fallen. The result was a willingness to buy and sell risk very cheaply. But as we have learned at great social cost, those ubiquitous statistical methods are especially bad at assessing large-scale, infrequent events. They perform worst when we need them most.

Inadequate governance of risk management created additional problems.[4] Risk managers have the very unpopular job of telling traders to stop making money. A lack of support from top management sidelined the risk managers.

Finally, the regulatory system was too indulgent and, for some activities, too easily evaded altogether. Overreliance by regulators and supervisors on market discipline (including the discipline supposedly imposed by credit rating agencies) led to what can only be characterised as an extremely light touch in some countries at the core of the global financial system. And when even that light touch proved too much to bear, financial institutions found it easy to shift selected activities outside the regulatory perimeter. As a result, by fighting the wrong battles or not fighting at all, weak regulators and supervisors allowed the build-up of enormous risk.

[3] The following section summarises material in BIS, *79th Annual Report*, June 2009, Chapter I.

[4] Counterparty Risk Management Policy Group, *Containing systemic risk: the road to reform*, Report of the CRMPG III, 6 August 2008.

Macroeconomic causes

The macroeconomic causes fall into two broad categories: problems associated with the build-up of imbalances in international claims, and difficulties created by the long period of low real interest rates.

Persistent and large current account surpluses and deficits generated net capital flows from capital-poor emerging market countries to capital-rich industrial economies for most of the decade preceding the crisis. The varying opinions on the origin of these flows and the resulting build-up of cross-country claims – excessive domestic demand in some major advanced economies; a savings glut; a dearth of investment opportunities; demand for international, low-risk assets for portfolio diversification; or the building-up of war chests by emerging market economies – are secondary. The point, rather, is that the symbiotic relationship between export-led growth in one set of countries and leverage-led growth in another generated the large gross flows and huge stocks of claims by residents of the exporting countries on the residents of the importing countries. Those flows and claims contributed to the mispricing of assets and to the global spread of the crisis.

The second set of macroeconomic causes stemmed from the protracted period of low real policy rates and low real long-term interest rates that began in 2001. Those low rates had a number of important effects. Among them was the boom in credit to households in many advanced economies, which fuelled some clearly unsustainable run-ups in housing prices. Another was the search for yield, which drove institutional investors to take on significant additional risk even when it would achieve only modestly higher returns.

Addressing the causes of the crisis

If the financial system is to have a more stable foundation, the causes of the global financial crisis must guide the design of reforms we put in place. So, to write effective prescriptions, it is crucial that we draw the correct conclusions from the causes. One might deduce from the crisis that certain activities, like securitisation or over-the-counter trading, and certain financial instruments, like collateralised debt obligations or credit default swaps, should be banned in order to prevent another meltdown. But even if we could do it, fighting the last war would not win the next one. Instead, we must take a flexible and forward-looking approach that addresses the externalities that allowed the specific activities to inflict systemic damage. Rather than attempt the impossible task of eliminating crises, we must seek to reduce both their likelihood and their severity.

As discussed in last year's Annual Report, building a more resilient financial system requires us to address the risks arising from two types of externalities in that system: one is joint failures stemming from common exposures (institutions are all exposed to the same risk) and interlinkages (institutions are inextricably tied together), and the other is procyclicality.[5] The next two

[5] BIS, *79th Annual Report*, June 2009, Chapter VII.

Progress of financial system reform

Reducing the probability of institution failure	Reducing spillovers and procyclicality			
	Institutions	**Markets**	**Instruments**	**Macro policies**
	Reforms (in progress)			
Manage balance sheet size, composition and riskiness: Improve quantity and quality of capital Impose minimum liquidity requirements Improve risk coverage Impose leverage limits Improve governance and incentives: Strengthen risk management Improve compensation practices Improve supervisory and regulatory standards Enhance market discipline: Expand disclosure, including of securitisation exposures Harmonise accounting standards across countries Strengthen oversight of credit rating agencies	Make systemically important financial institutions (SIFIs) safer: Limit scope and extent of activities Impose systemic capital and liquidity charges Limit spillovers if a SIFI fails: Adopt cross-border supervision Develop cross-border crisis management and resolution Make banks' liability holders bear the costs of resolution, even for SIFIs Put all SIFIs within the regulatory perimeter Reduce procyclicality of the financial system: Impose cyclical capital buffers Implement through-the-cycle margins and haircuts Use other instruments, including loan-to-value ratios and limits to currency mismatch	Move over-the-counter (OTC) products to central counterparties Improve transparency of trading, including through increased use of trade repositories		
	Unfinished business			
	Keep regulatory perimeter impermeable for SIFIs	Move OTC products to exchanges or electronic platforms	Registration and risk ratings	Integrating financial stability concerns in policy framework

Table I.1

sections summarise the major reforms required to address those externalities (see also Table I.1) and provide an overview of how they fit together.

Prescription: reducing the risks of common exposures and interlinkages

New and better rules for reducing systemic risk arising from common exposures and interlinkages operate on two fronts: reducing the risk that an individual institution will fail and reducing the chance of a system-wide breakdown.

Reducing the chance of an individual failure

The probability that a financial institution will fail can be reduced with a variety of tools that: (i) affect the size, composition and riskiness of the balance sheet; (ii) improve the governance of the institution and the incentives of its executives; and (iii) enhance market discipline. In combination and properly implemented, these should reduce risk-taking, increase the ability of institutions to absorb losses and make failure less likely.

With the first set of goals in mind, the Basel Committee on Banking Supervision (BCBS) has recommended four types of balance sheet measures, all of which should lead banks to hold capital and liquidity that better reflect their risk exposures.[6]

The first BCBS balance sheet proposal improves the quantity and quality of capital at banks so that they can better withstand unexpected declines in the value of their assets.

The second guards against illiquidity by limiting both the extent of maturity transformation at banks (borrowing short to lend long) and their reliance on wholesale funding. It is worth emphasising the obvious: the more maturity transformation a bank undertakes, the less liquid it is. And as the most recent crisis showed, liquidity is at least as important as capital during times of stress, especially for banks funding themselves in international markets or operating across a variety of jurisdictions.

The third proposal improves risk coverage with respect to counterparty credit exposures arising from derivatives, repurchase agreements, securities lending and complex securitisation activities.

The fourth complements complex, risk-weighted capital requirements with a supplementary backstop – a limit on the leverage ratio. Because leverage amplifies losses as well as profits, it increases the risk of failure in bad times.[7]

[6] In December 2009, the BCBS published two major papers outlining proposals to strengthen capital and liquidity regulation. These included a set of measures to raise the quality, consistency and transparency of the capital base (*Strengthening the resilience of the banking sector* and *International framework for liquidity risk measurement, standards and monitoring*, Consultative Documents, 17 December 2009). Similarly, the IASB has proposed a more forward-looking provisioning approach (International Accounting Standards Board, *Financial instruments: amortised cost and impairment*, Exposure draft ED/2009/12, November 2009).

[7] Our discussion focuses on banks, but efforts to reduce the probability of failure involve other types of financial institutions as well. One example is the global framework devised by international insurance supervisors, Solvency II, which has already been applied in the European Union.

Some jurisdictions – including Switzerland and, more recently, Ireland – have begun to impose more stringent capital requirements and leverage ratios on their banks.[8] Authorities in the United Kingdom and the United States have essentially done the same thing through their stress-testing procedures. In a trend that reinforces those efforts, the anticipation of such requirements in combination with investor demands has already led many institutions to make significant adjustments to their capital base.

The second set of tools aimed at reducing the risk of failure for individual institutions address governance and managerial incentives. National supervisors in many countries have increased their monitoring to ensure better risk management at financial institutions. Numerous measures create special bank resolution regimes (including living wills). A hoped-for side effect of the measures is that management will be more aware of the risks inside their own firms.[9] Related efforts, which attempt to better align compensation structures with prudent risk-taking, will reduce the perverse incentives that drive managers to increase short-term profits without regard to the long-term risks imposed on the firm and the system.[10]

In addition, the BCBS is preparing frameworks to improve supervisory standards, valuation methods, liquidity arrangements and stress testing. Improved adherence to international supervisory and regulatory standards is most certainly a first step. In January 2010, the FSB published a framework on this topic that is currently being implemented. It contains three main elements: leading by example; FSB peer reviews; and promoting global adherence to international financial standards.

The third set of tools seek to increase transparency to enhance market discipline. For example, the enhancements to the Basel II regulatory framework published by the BCBS in July 2009 address weaknesses in the disclosure of securitisation exposures at banks.[11] Other measures include those sought by the IASB and the Financial Accounting Standards Board to increase the international harmonisation of accounting standards; implementation of regulation proposed by the International Organization of Securities Commissions (IOSCO) to address the need for stronger standards

[8] In November 2008, Switzerland's banking regulator introduced cyclical capital buffers and liquidity ratios for the two largest Swiss banks. The capital requirements, to be implemented by 2013, are 50–100% above those set in Pillar 1 of the Basel II standard. In March 2010, Ireland's financial regulator announced that, by the end of 2010, banks in Ireland will be required to hold capital amounting to 8% of core Tier 1 capital, and capital of the highest quality – equity – must account for 7 percentage points of that amount. Further amounts, specific to each institution, are to be added in the calculation of future loan losses.

[9] Special resolution regimes for large financial firms have been proposed or introduced in several jurisdictions, including Germany, Switzerland, the United Kingdom and the United States. Cross-border resolution plans are also being considered, as discussed below.

[10] The Financial Stability Board (FSB) has presented guidelines for the reform of the regulatory and supervisory framework that address these concerns. See *FSB principles for sound compensation practices – implementation standards*, September 2009 (based on an April 2009 report issued by the predecessor organisation, the Financial Stability Forum). The FSB reviewed progress in the implementation of those standards in *Thematic review of compensation*, March 2010.

[11] Basel Committee on Banking Supervision, *Enhancements to the Basel II framework*, Revisions to Pillar 3, July 2009. A peer-reviewed progress report on risk disclosure by market participants is currently being prepared by the FSB.

and oversight for credit rating agencies; and improvements of disclosures more generally.

Reducing the chance of system-wide failure

We want to eliminate unnecessary instabilities in the structure of individual institutions in the ways just described, but we still want a system in which individual institutions can fail.[12] What we do not want is a system in which many fail at once, whether because they have a common exposure to a risk or because a single institution is so large or interconnected that its failure brings on a system-wide failure, creating a cascade of insolvencies.

The problem of common exposures is relatively straightforward. It means that a financial landscape dotted with a large number of small yet identical institutions will be just as prone to collapse as a system with a small number of financial behemoths. To guard against either type of weakness, all that regulators and supervisors have to do in principle is ensure that intermediaries are not all equally subject to the same stresses.

The bigger challenge is preventing a single financial institution from creating a cascade of failures. Doing that involves three tasks: (i) reducing the systemic importance of financial institutions; (ii) minimising spillovers from an institution's failure by ensuring that the costs of failure will be borne by the institution's unsecured liability holders; and (iii) bringing all systemically relevant financial institutions and activities within the regulatory perimeter and keeping them there. In all three of these areas, we see progress both through the regulation and the supervision of individual institutions – in many cases representing welcome steps towards adopting a macroprudential approach – and through the reform of market structures.

Reducing systemic importance. The first task – preventing a financial institution from becoming so big or so interconnected that its failure could not be tolerated – means confronting the systemic risks that its potential failure creates. Systemic risk is like pollution. We employ a variety of means to discourage people from dumping waste into the air or water. Likewise, we have a variety of means that could discourage institutions from contributing to systemic risk; among them are scope constraints and pricing policies.

On scope, policymakers are contemplating rules that would variously limit the extent of financial intermediaries' activities or simply limit the asset size of institutions. An example of the activity limit is the Volcker proposal, which would ban depository banks in the United States from proprietary trading.[13]

Under pricing policies, banks and other institutions could be forced to pay for the privilege of creating systemic risk. Among the several possible approaches, a so-called systemic capital charge in the form of capital or

[12] Nonetheless, in smaller countries with a small number of institutions, all of which are of systemic importance, the only option is to eliminate nearly all possibility of failure.

[13] Statement of Paul A Volcker before the Committee on Banking, Housing and Urban Affairs, US Senate, Washington DC, 2 February 2010.

liquidity charges appears to be the best. The charge would compel systemically important institutions to hold relatively more capital and liquidity, thereby reducing the probability of their failure. In theory a tax system could achieve the same objectives with the same incidence as a systemic capital charge, but the ultimate complexities of the solution make it unappealing.[14]

Containing resolution costs and spillovers. Limiting the systemic importance of institutions will help us achieve the second task – containing spillovers by making an institution's liability holders bear all costs of a failure. We can do that if, before any failure occurs, we are able to identify where risk is concentrated in the system and we have sound and transparent resolution processes in place. This task has obvious international aspects, and the transparency issue has implications for the structure of financial markets.

As the recent crisis taught us, resolution processes must include cross-border crisis management and resolution if we hope to limit spillovers from the failure of a large, globally active financial institution.[15] Measures aimed at coordinating the supervision of such institutions to ensure consistency across national authorities will allow regulators to step in ahead of a crisis.

In a supervisory college, national authorities involved in the supervision of a large, internationally active financial intermediary meet to coordinate their efforts. International progress on creating supervisory colleges for every large, global intermediary is a combined project of the FSB, the BCBS and the International Association of Insurance Supervisors (IAIS). The European Commission has already mandated such a scheme for the European Union.[16]

Regarding the market implications, information asymmetries are the fuel that feeds financial panics. In the 2007–09 crisis, we saw contagion ignited by uncertainty over counterparty exposures – not knowing who will bear losses should they occur. Transparency and information are the keys to any solution, including for markets. One of the core reforms to market infrastructure is the conceptually simple but technically complex move to establish central counterparties (CCPs) and require that more trading take place on registered exchanges. Shifting trading away from a primarily bilateral, over-the-counter system to one dominated by CCPs has a number of clear benefits. It improves the management of counterparty risk because the CCP is the counterparty for both sides of any transaction. It makes multilateral netting of exposures and payments straightforward. And it increases transparency by making information

[14] A third and much less palatable alternative is to tax all financial institutions ex post for the costs that large failures impose on the public treasury. The problem with this tax is that it provides no effective disincentive to take additional risk.

[15] A number of steps are being taken to address this problem. In March 2010, the BCBS published a set of recommendations. An FSB working group is looking at the resolution of financial firms under existing national frameworks and how the frameworks would interact; by October 2010, the FSB expects to issue principles to help harmonise those frameworks. The IMF has also been reviewing means of effective resolution for cross-border financial institutions.

[16] All European cross-border banking groups will need to have a supervisory college in place by end-2010 following requirements in the 2009 amendment to the Capital Requirements Directive (CRD2); and the Solvency II Directive requires that colleges be established for all cross-border insurance groups by end-October 2012.

on market activity and exposures – both prices and quantities – available to regulators and the public.[17]

Fortunately, legislators and regulators see the advantages of CCPs and of centralised clearing and exchange trading and are making significant progress on associated reforms that will improve systemic safety.[18]

Establishing a comprehensive regulatory perimeter. The third task, including and keeping all systemically relevant financial institutions and activities within the regulatory perimeter, arises from the lesson learned at high cost during the financial crisis. Some progress has been made in this area – for instance, the Joint Forum has recommended a broad set of measures that address the consistency and inclusiveness of regulation across financial sectors and products[19] – but much still needs to be done.

Prescription: reducing procyclicality

As noted above, writing prescriptions for a more resilient financial system means addressing the risks arising from two types of externalities. We have covered the first type – joint failures arising from common exposures and linkages. The second type, procyclicality, refers to the amplifying feedback effects between the financial system and the real economy. The basics of the procyclicality problem are straightforward. As the economy booms, lending tends to become easier and cheaper. Banks are flush with funds and capital, borrowers are more creditworthy, and collateral is more valuable. In a downturn, these conditions are reversed. Banks are forced to absorb unexpected losses, which makes them less well capitalised, so they cut back on lending. Borrowers become less creditworthy. And collateral values fall.

Monetary and prudential authorities are developing automatic stabilisers that complement discretionary monetary policy to reduce the natural amplification effects at work in the financial system. As discussed in detail in Chapter VII, these stabilisers are a key element of a macroprudential policy

[17] For details, see S Cecchetti, J Gyntelberg and M Hollanders, "Central counterparties for over-the-counter derivatives", *BIS Quarterly Review*, September 2009, pp 45–58.

[18] A number of steps towards greater use of CCPs have been taken, among them: the establishment of the OTC derivatives regulators forum in September 2009; the commitment, also this past September, by G15 major derivatives dealers to achieve specific target levels for central clearing of OTC credit derivatives; recommendations in January 2010 by the Joint Forum of banking, insurance and securities regulators to strengthen regulatory oversight of credit transfer products; revised standards for CCPs to better address risks associated with clearing OTC derivatives published by the Committee on Payment and Settlement Systems and IOSCO in May 2010; Basel Committee proposals that adjust capital requirements in a way that encourages a shift from OTC exposures to CCPs; and proposed reform legislation in Europe and the United States.

[19] In January 2010, the Joint Forum, composed of the BCBS, IOSCO and the IAIS, published its report *Review of the differentiated nature and scope of financial regulation: key issues and recommendations*. The report recommended a range of measures to address the appropriateness of the regulatory perimeter, including: harmonising regulation across the banking, insurance and securities sectors; strengthening the supervision and regulation of financial groups, particularly those providing cross-border services; establishing consistent and effective underwriting standards for mortgage origination; broadening the scope of regulation to include hedge fund activities; and strengthening regulatory oversight of credit transfer products.

framework. They include: capital buffers that are calibrated to aggregate levels of credit relative to economic activity so that they rise in booms and fall in busts; through-the-cycle provisioning; and margin and haircut practices at lenders that are more stable over the business cycle. Capital buffers and through-the-cycle provisioning are being addressed by the BCBS. Margin and haircut practices are the subject of a recent report by the Committee on the Global Financial System.[20] A variety of countercyclical supervisory instruments under development are also discussed in Chapter VII, including variation in maximum allowable loan-to-value ratios and limits on currency mismatch.

Reforms: key areas of unfinished business

Policymakers have made significant progress towards building a more stable financial system. The reforms in train should be enacted and enforced. But more is needed. On the regulatory side, while work on institutions continues, markets and instruments require more attention. And efforts should be redoubled to ensure that the regulatory perimeter remains robust to the inevitable efforts to erode it. Also needed is a clearer recognition that better regulation will not be enough – macroeconomic policies have an essential role to play, and their frameworks must be expanded to obtain the more stable system needed.

As we wrote last year, success in building a safer financial system means identifying and mitigating systemic risk in all three principal components of the system: markets and instruments, as well as institutions.[21] They must all be made safer and more transparent without impairing productivity-enhancing innovation or their essential function of improving the allocative efficiency of the economy. For markets, initiatives to introduce centralised clearing and settlement for OTC derivatives represent a helpful improvement to infrastructure and a first step towards requiring trading on organised exchanges.

For instruments, as discussed in last year's Annual Report, one approach to balancing innovation and safety is to require some form of product registration that limits investor access to instruments according to their degree of safety. Steps already taken in that direction include efforts to improve instrument standardisation and documentation, including those that facilitate the use of central counterparties, and efforts to better inform consumers by strengthening disclosures on investment products. But those steps should be just the start of more comprehensive reforms.

In a dynamic, market-based economy, in which the primary incentive is to increase profitability, we must expect that financial institutions will always seek to test the boundaries of regulation and escape the perimeter or place some of their activities beyond it, whenever and wherever they can. Regulators should

[20] Committee on the Global Financial System, "The role of margin requirements and haircuts in procyclicality", *CGFS Papers*, no 36, March 2010.

[21] BIS, *79th Annual Report*, June 2009, Chapter VII.

not stifle innovation, but they have to ensure that the ground rules apply to new ways of doing business. In other words, all systemically important financial institutions – no matter how big or small, no matter what their legal form – must be prevented from escaping the view and reach of regulators and supervisors. That is especially true for macroprudential supervision, which – as the crisis showed – must always be on the watch for threats to stability emerging from obscure corners of the financial system.

Yet regulatory reform alone is not enough to deliver financial stability. Monetary and fiscal policies also have a role, but if they are to play it, their frameworks must become broader-gauged and more forward-looking. As emphasised in Chapter VII, interest rates and countercyclical prudential policies are complementary tools for delivering a more resilient financial system. However, improved awareness of the implications of interest rate policy for asset prices and debt need not come at the expense of the traditional central bank objectives. Rather, monetary and prudential policies are essential partners in delivering high and stable growth.

On the fiscal policy front, reform must put authorities in a position where they can offset recessionary deficits with surpluses during booms and still have some ammunition left for emergencies.

Moreover, national authorities must be mindful that they operate in a global environment. For many emerging market economies, this means that they must act knowing that capital flows can be destabilising, foreign exchange reserve accumulation is no panacea, and export-led growth with persistent current account imbalances cannot go on indefinitely. Above all – as Chapter IV concludes – to promote orderly macroeconomic adjustment and balanced global growth, there is no substitute for tighter monetary policy conditions and increased exchange rate flexibility.

Conclusion

The financial disruptions in the first half of 2010 have brought the fragility of the industrial world's financial system into stark relief: a shock of virtually any size risks a replay of the events we saw in late 2008 and early 2009. The sovereign debt crisis in Greece is clearly jeopardising Europe's nascent recovery from the deep recession brought on by the earlier crisis.

Unlike then, however, we have hardly any room for manoeuvre. Policy rates are already at zero and central bank balance sheets are bloated. Although private sector debt has started to decline, public debt has taken its place, with sovereign fiscal positions already on an unsustainable path in a number of countries. In short, macroeconomic policy is in a vastly worse position than it was three years ago, with little capacity to combat a new crisis – it will be difficult to find a source of further treatment should another emergency arise. Regaining the ability to react to economic and financial crises, by putting policies onto sustainable paths, is therefore a priority for macroeconomic policy.

For fiscal policy, the sizeable fiscal consolidation needed urgently in a number of industrial countries should generally take two forms: reductions in

current deficits and action that ensures long-term fiscal sustainability. For monetary policy, the fragility of the macroeconomy may be delaying tightening. But policymakers should not lose sight of the risks to financial and macroeconomic stability arising from a long period of very low interest rates. The side effects will continue to cumulate – eventually reinforcing precisely those factors that contributed to the fragility of the financial system and made it crisis-prone in the first place.

Finishing the reforms to the financial system, particularly those that will quickly increase its resilience, has acquired even greater urgency. They can provide the most immediate protection to the financial system in the event of a new crisis. Moreover, acting now to improve the capital base and the liquidity of bank balance sheets will not jeopardise the recovery. Rather – by making financial institutions sounder – those actions will promote a sustainable recovery.

Those efforts will bring us closer to the long-term goal of making future crises less likely and less severe. Finishing that job means tackling remaining reforms without delay: implementing an impermeable regulatory perimeter for all systemically important financial institutions, addressing systemic weaknesses in financial market infrastructure and instruments, and integrating financial stability concerns in macroeconomic policy frameworks.

II. From the emergency room to intensive care: the year in retrospect

Asset prices and economic activity have rebounded from the lows they reached during the financial crisis. The slide in financial market prices triggered by the bankruptcy of Lehman Brothers in September 2008 halted in March 2009, when prices of risky assets began rising, in some cases substantially. Global economic activity stabilised in the middle of that year and began to expand thereafter. The financial imbalances that lie behind the crisis have begun to correct. Banks have started to repair their balance sheets and reduce leverage, although the process is far from complete. Households in some of the countries most affected by the crisis have also started to reduce their indebtedness, but debt levels have fallen much less than after previous crises.

Recovery is thus under way, but it is fragile. The unprecedented policy actions taken over the last three years have been successful in preventing another Great Depression, but they are reaching their limits. Government deficits have soared to an extent that raises questions about the sustainability of public finances (see Chapter V). Indeed, public indebtedness has replaced private indebtedness as investors' main concern, as indicated by the turbulence in financial markets in the second quarter of 2010. In response, several countries have announced measures to consolidate their budgets.

In this environment, monetary policy faces a dilemma. On the one hand, raising interest rates and shrinking bloated central bank balance sheets too early could undermine the recovery. Tightening too late, on the other hand, could delay the necessary adjustment process and result in a less stable financial system in the medium term (see Chapter III).

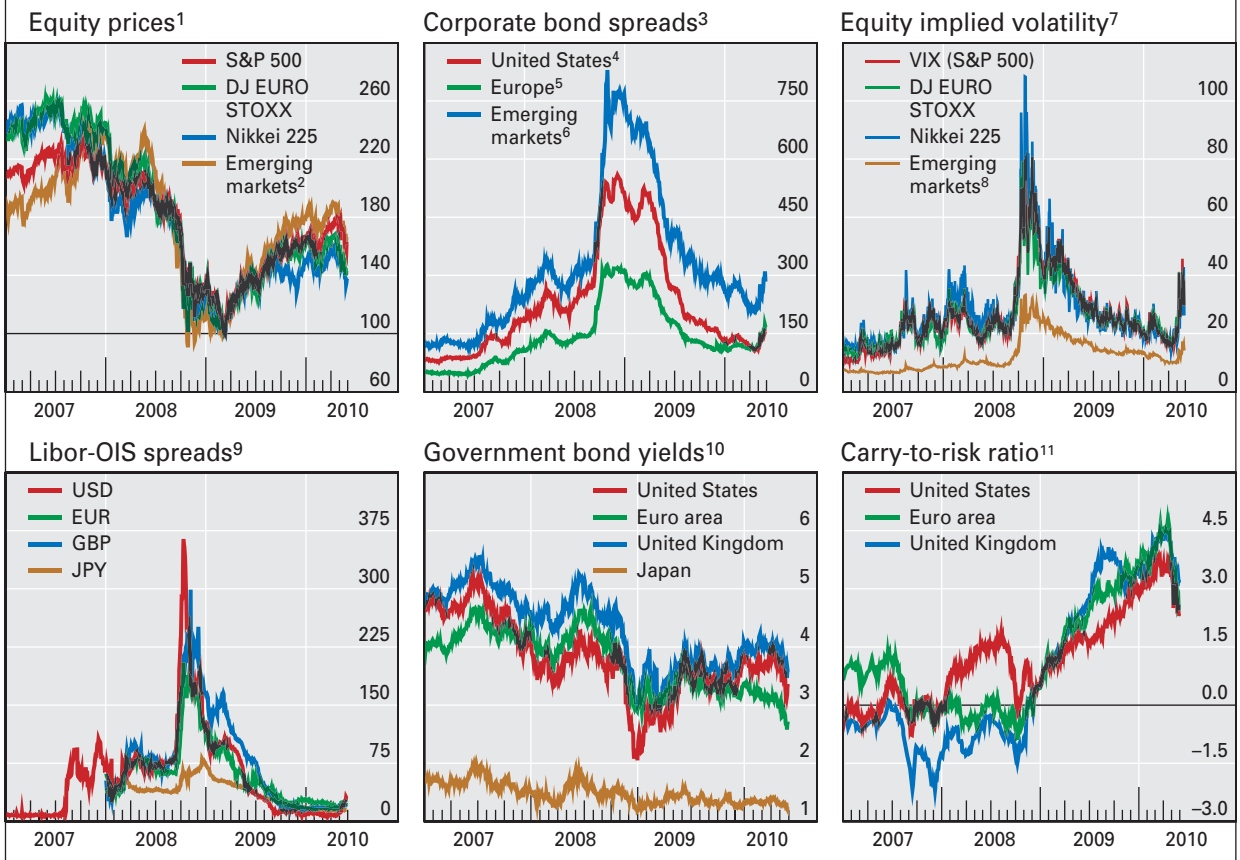
Recovery uncertain

Market rebound

Recovery led by financial markets

Recovery in financial markets preceded the upswing in economic activity in the major advanced economies. Key economic indicators remained at depressed levels in the first quarter of 2009, but investors focused on incipient signs that economic conditions might stabilise sooner rather than later. Between March 2009 and April 2010, equity prices around the world gained strongly, although they remained below their pre-crisis peaks (Graph II.1). Credit spreads narrowed to a level roughly in line with their long-term average, implied volatilities fell to their lowest levels since the middle of 2007, and government bond yields, particularly in the United States, rose from the lows reached in late 2008. As tensions in money markets eased and banks became more willing to lend to each other, the spread of Libor above the overnight index swap (OIS) rate dropped sharply from its late 2008 peak.

Asset prices



[1] 3 March 2009 = 100. [2] Average of Asian, European and Latin American emerging market equity indices. [3] Investment grade indices, in basis points. [4] JPMorgan US Liquid Index (JULI). [5] Morgan Aggregate Index Europe (MAGGIE). [6] Corporate Emerging Markets Bond Index (CEMBI). [7] Volatility implied by the price of at-the-money call option contracts on stock market indices, in per cent. [8] JPMorgan Emerging Market Volatility Index. [9] Three-month rates, in basis points. [10] Ten-year government bond yields, in per cent. [11] Defined as the differential between 10-year swap rates and the three-month money market rate divided by the three-month/10-year swaption implied volatility.

Sources: Bloomberg; Datastream; JPMorgan Chase; BIS calculations. Graph II.1

Many, but not all, of the markets that had seized up during the crisis started to function again. In late 2008, government guarantees had prompted financial institutions to issue bonds, and non-guaranteed issuance followed in 2009. Non-financial corporations placed more bonds in the first half of 2009 than in the six months immediately preceding the crisis, although these gains may have partly reflected the dearth of bank financing. Indeed, bank lending to the private sector in the major advanced economies either stagnated or contracted, and the market for securitised products continued to be weak. In the United States for example, where the bulk of mortgages are securitised, issuance of mortgage-backed securities (MBS) that are not backed by the government remains at depressed levels.

Fears of sovereign risk threaten to derail financial recovery

The financial recovery during much of 2009 and early 2010 has been impressive, but it is under threat. Concerns about the sustainability of public finances and bank health triggered bouts of volatility in late 2009 and again in early 2010. However, these were minor compared with the sell-off that took place in April and May 2010, when risky asset prices fell sharply on investor

worries about the ability of Greece and, to a lesser extent, Portugal and Spain to service their debts. Policymakers responded with the largest rescue package in history and a new set of central bank emergency measures. These measures succeeded in halting contagion in the euro area, but were not able to restore investor confidence more broadly.

Uneven economic recovery

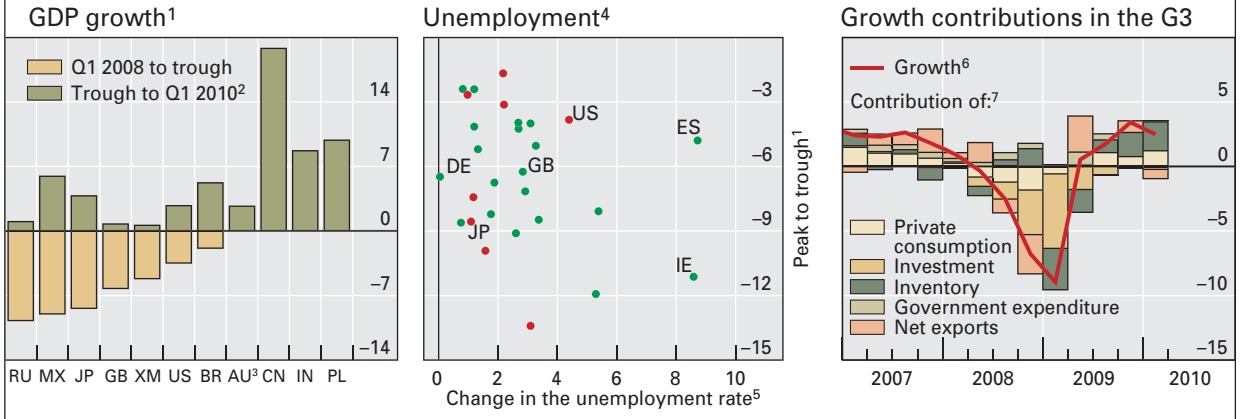
Multi-speed economic recovery

The decline in global economic activity began to slow in the second quarter of 2009 and gave way to growth towards the middle of the year. The size of both the contraction and the expansion varied greatly across countries (Graph II.2, left-hand panel). China, India and Poland avoided a contraction altogether – output growth merely slowed and then soon returned to pre-crisis rates. In Australia and Brazil, output contracted briefly but then grew fast to quickly surpass pre-crisis levels. In contrast, by the first quarter of 2010, output in the United States, the euro area, Japan and the United Kingdom remained below its pre-crisis level.

Unemployment rose sharply in countries with a construction boom ...

The drop in economic activity resulted in a steep rise in unemployment in a number of countries, particularly those in which a construction boom had preceded the crisis. Unemployment shot up by more than 8 percentage points in Spain and Ireland and by almost 5 percentage points in the United States as oversize construction sectors shed workers (Graph II.2, centre panel). In Spain, the high share of temporary employment also contributed to the sensitivity of unemployment to changes in output.[1] Unemployment in the United States rose

Economic recovery



AU = Australia; BR = Brazil; CN = China; DE = Germany; ES = Spain; GB = United Kingdom; IE = Ireland; IN = India; JP = Japan; MX = Mexico; PL = Poland; RU = Russia; US = United States; XM = euro area.

[1] Changes in real GDP, in per cent. [2] For Australia, Brazil, India, Poland and Russia, to Q4 2009. [3] Output contracted in Q4 2008 but remained above its Q1 2008 level. [4] The red dots denote non-European countries; the green dots, European countries. [5] Between the latest available unemployment rate and the unemployment rate in the period corresponding to peak GDP, in percentage points. [6] Quarterly changes in real GDP, seasonally adjusted at annual rates, in per cent. Weighted average based on 2005 GDP and PPP exchange rates of the United States, the euro area and Japan. [7] In percentage points.

Sources: OECD; Bloomberg; Datastream; national data. Graph II.2

[1] See IMF, *World Economic Outlook*, April 2010, Chapter 3; and Bank of Spain, *Boletín Económico*, February 2010, pp 32–43.

to its highest level since the 1930s, even though GDP contracted less than in most other advanced economies.

... but less so elsewhere

The employment consequences in most of the other advanced economies were less severe. Job losses were particularly limited in some continental European economies and in Japan. For example, unemployment in Germany increased by just over 1 percentage point, despite a relatively large (6.5%) drop in GDP. Helping to limit the job losses were measures that allow reductions in hours by individual workers without laying them off. In Japan, a combination of the Employment Adjustment Subsidy Programme and a decline in hourly wages reduced incentives to lay off workers. Unemployment rose by less than 2 percentage points, despite a fall in GDP of more than 8%.

Fragile recovery in major advanced economies ...

The recovery in the large advanced economies is still far from self-sustained. In the G3, inventory rebuilding accounted for most of the 2.5% annualised rate of growth in the first quarter of 2010 (Graph II.2, right-hand panel). Private investment remained in negative territory for the eighth quarter in a row, thus continuing to be a drag on economic growth. That said, few of the adverse growth scenarios identified by forecasters during the period under review have materialised.

... but signs of overheating in large EMEs

A completely different picture has arisen in a number of emerging market economies (EMEs). Expansionary policies at home, combined with the impact of loose monetary and fiscal policies in the large advanced economies, have resulted in signs of overheating in some cases (see Chapter IV). Wholesale price inflation in India approached 10% in early 2010, and inflationary pressures are also appearing in other EMEs.

Rapidly growing fiscal deficits raise sovereign risk concerns

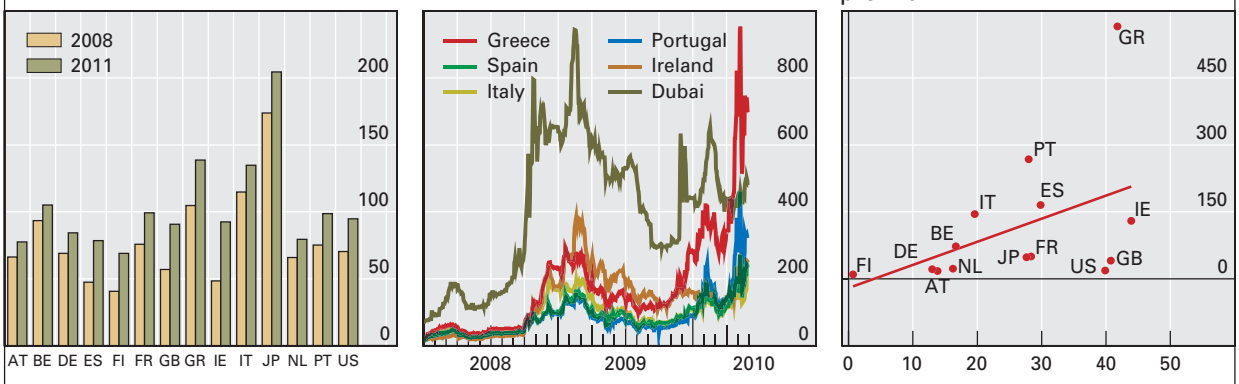
Build-up of government debt fuelled concerns about sovereign risk ...

The combination of large-scale fiscal stimulus plans, financial rescue packages and falling tax revenues has led to historically large government budget deficits and record levels of actual and projected public debt in most industrial countries (Graph II.3, left-hand panel). These burdens come at a time when governments in advanced economies are already facing the rapid growth of unfunded implicit obligations related to their ageing populations. That confluence of factors has raised serious concerns about the sustainability of fiscal policy in the industrial world (see Chapter V), thus heightening worries about sovereign risk. As a consequence, bond yields and credit default swap (CDS) spreads on the government debt of several countries rose significantly during the past year (Graph II.3, centre panel), prompting unprecedented policy responses on several fronts.

Sovereign risk concerns first arose following the large financial rescue packages and substantial fiscal stimulus programmes announced in late 2008 and early 2009. Those worries then remained relatively subdued for much of 2009, overshadowed by concerns about the slowdown in global economic activity and the associated rise in unemployment. Sovereign risk first came to the fore in November 2009, when sovereign CDS spreads on Dubai rose sharply after Dubai World, one of the country's three strategic investment vehicles, unexpectedly announced that it was seeking a moratorium on its debt payments.

Government debt, deficits and sovereign credit premia

Government debt[1] | Sovereign CDS spreads[2] | Deficits vs changes in CDS premia[3]



AT = Austria; BE = Belgium; DE = Germany; ES = Spain; FI = Finland; FR = France; GB = United Kingdom; GR = Greece; IE = Ireland; IT = Italy; JP = Japan; NL = Netherlands; PT = Portugal; US = United States.

[1] As a percentage of GDP; for 2011, projections. [2] In basis points. [3] The horizontal axis shows cumulative government deficits as a percentage of GDP for 2007–11 (for 2010–11, projections); the vertical axis represents the change in CDS premia between 26 October 2009 and 27 May 2010, in basis points.

Sources: OECD; Markit; national data. Graph II.3

... particularly in some euro area economies

In late 2009, the spotlight shifted to the euro area, where large budget deficits in several countries led to the prospect of rapidly increasing government debt/GDP ratios. Worries centred on the fiscal situation in Greece, but also extended to other countries facing a toxic combination of high fiscal deficits and lack of competitiveness, such as Portugal and Spain. Greek sovereign bond yields and CDS spreads started to drift upwards in December 2009 and then exploded at the end of April 2010, when Standard & Poor's downgraded Greek debt to "junk" status. Within the same week, the agency went on to lower its ratings of Portugal and Spain, triggering sharp increases in their CDS spreads as well. In early May, euro area member countries and the IMF undertook to provide a joint €110 billion emergency loan package for Greece after its government pledged to implement severe austerity measures. Within days of the announcement, however, it became clear that this was not sufficient to calm investors' nerves. In response to soaring bond and CDS spreads, EU and IMF policymakers announced a €750 billion joint fiscal stabilisation package. In the wake of this announcement, sovereign bond and CDS spreads declined substantially from the highs they had reached during the previous week.

Governments that pre-emptively announced consolidation measures were more immune to market pressures. Overall, the magnitudes of the changes in sovereign CDS spreads in the euro area were positively, albeit not perfectly, correlated with the budget deficits of the respective governments (Graph II.3, right-hand panel). But in the case of Ireland, government debt spreads remained relatively stable during 2009 and early 2010, although the country's budget deficit for the 2007–11 period is projected to be higher than those of Portugal and Spain and close to that of Greece.[2] The stability of the spreads

[2] Sovereign CDS spreads for Japan, the United Kingdom and the United States also increased much less than those for the highly indebted euro area countries, despite their comparable fiscal positions.

most likely reflected a combination of credible austerity measures announced pre-emptively by Ireland's government in March 2009 and a more favourable outlook for economic growth.

The importance of timely fiscal consolidation was underscored in May, when the austerity measures announced by the governments of Greece, Portugal and Spain met with a lukewarm response in financial markets. Bond and CDS spreads declined on the announcement of the fiscal tightening packages, but by less than they did in reaction to the €750 billion joint EU-IMF fiscal stabilisation package. Investors apparently regarded the austerity measures, which included public sector wage cuts, tax hikes and increases in the retirement age, as merely the initial steps on a long but inevitable journey of fiscal consolidation. And they continue to harbour serious questions about the ability and resolve of governments to carry out these austerity measures.

Spillovers to the banking sector

Worries about sovereign risk quickly spilled over into the banking sector. Not surprisingly, they had the greatest impact on equity prices and credit spreads for banks headquartered in the countries whose perceived creditworthiness had deteriorated the most (Greece, Portugal and Spain). Nevertheless, other euro area banks were also significantly affected because of their higher relative exposures to the public sectors of these countries. At the end of 2009, five euro area banking systems (those of Belgium, France, Germany, Italy and the Netherlands) held roughly 17% of all outstanding Greek government debt, equivalent to some 6.5% of these banking systems' combined Tier 1 capital. Similarly, their exposures to the public sectors of Spain and Portugal stood at 8.9% and 4.1% of their Tier 1 capital, respectively.[3]

Monetary policy still highly stimulative

Highly expansionary monetary policy

Monetary policy remains highly expansionary almost everywhere, although central banks in some of the faster-growing countries have started to withdraw the stimulus put in place during the crisis. Policy rates in the larger advanced economies remain at record lows, and central bank balance sheets have barely shrunk from the bloated levels reached during the crisis (Graph II.4). Short-term interest rates close to zero are holding down the cost of funding and propping up the net present value of future payment streams. In addition, central bank asset purchases have pushed up asset prices directly and indirectly.

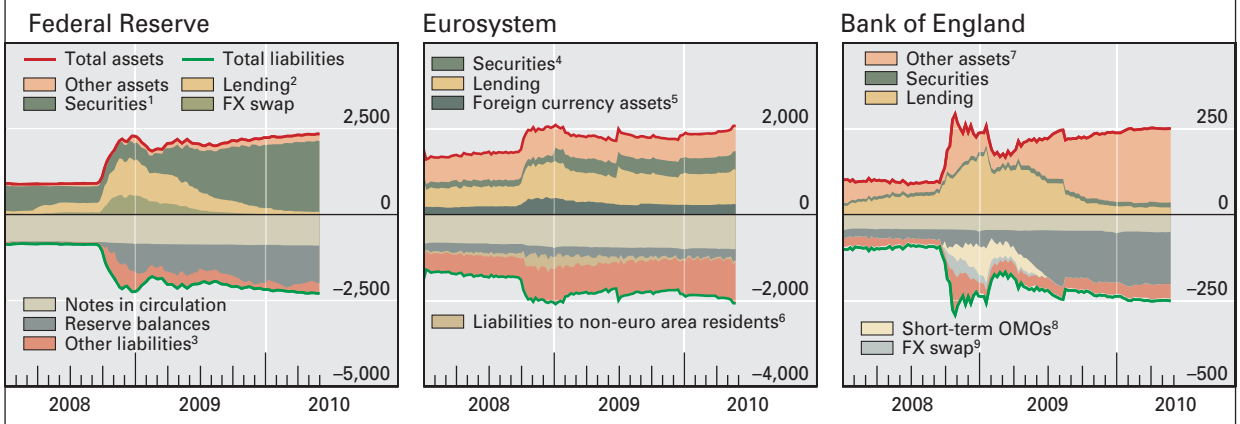
Tightening in some faster-growing countries …

The unevenness of the economic recovery left its imprint on central bank policy. In late 2008 and early 2009, the key challenge for central banks worldwide had been to prevent the complete collapse of the financial system and to limit the contraction in economic activity. As the recovery progressed, the challenges started to diverge across regions. The central banks of Australia, Brazil, India, Israel, Malaysia and Norway all increased policy rates

[3] Numbers based on BIS consolidated banking statistics on an ultimate risk basis and OECD government debt statistics.

Central bank assets and liabilities

In billions of respective currency units



[1] Securities held outright, including Term Securities Lending Facility (TSLF). [2] Repurchase agreements, term auction credit, other loans and Commercial Paper Funding Facility (CPFF). [3] Including to central banks. [4] Securities of euro area residents and general government debt, in euros. [5] Including US dollar liquidity auctions. [6] In euros. [7] Including US dollar liquidity auctions and asset purchase facility. [8] Open market operations, including issuance of Bank of England sterling bills. [9] Swap lines with the Federal Reserve.

Sources: Datastream; national data. Graph II.4

as the threat of a severe contraction receded and inflationary pressures emerged, although rates remain low by historical standards. The Reserve Bank of India also raised reserve requirements for its banks. A similar step was taken by the People's Bank of China to rein in rapid credit growth.

... but rates maintained near zero in the major advanced economies

By contrast, the Federal Reserve, ECB, Bank of Japan and Bank of England all kept policy rates at the lows reached during the crisis. Exit from the extraordinary policy measures of the past couple of years had been under way until May 2010, when the turbulence in euro area government bond markets led to a number of new measures as well as the reinstatement of some previous ones. By this time, the Bank of Japan and the Federal Reserve had terminated most of the liquidity facilities that were introduced during the crisis. The Federal Reserve's swap lines with other central banks formally expired in February 2010, though some partner central banks had already discontinued some or all of their dollar auctions well before that. The Federal Reserve and the Bank of England had stopped buying securities under their massive asset purchase programmes, although they did not reduce the accumulated holdings.[4] The ECB had discontinued its special three-month, six-month and 12-month refinancing operations.

The deterioration of financial conditions, especially in the euro area, in April and May 2010 led to the introduction of yet another round of

[4] These holdings can have expansionary effects even though actual purchases have ended, since they influence the relative supply of securities and thus their relative price, given that assets are imperfect substitutes. To empirically identify the magnitude of this "portfolio balance effect" is difficult. Nevertheless, a recent study indicates that the portfolio balance effect was responsible for most of the significant decline in long-term yields on a wide range of securities that followed Federal Reserve asset purchases. See J Gagnon, M Raskin, J Remache and B Sack, "Large-scale asset purchases by the Federal Reserve: did they work?", Federal Reserve Bank of New York, *Staff Reports*, no 441, March 2010.

unconventional policy measures. As part of the giant rescue package approved on 10 May, the ECB announced that it would purchase securities issued by euro area member states in an effort to provide liquidity and support market functioning. It also reintroduced six-month tenders. The Federal Reserve brought back the swap lines with other central banks to address resurgent concerns about dollar funding shortages of non-US banks (see below).

The generally very expansionary stance of monetary policy will have to be tightened at some point, for a number of reasons. First, although output in the countries most affected by the crisis is still well below potential, the amount of slack could be smaller than suggested by conventional measures of the output gap. The build-up of imbalances in the run-up to the crisis suggests that potential output growth during that period may not have been as high as believed at the time. Moreover, the financial disruptions caused by the crisis and the lost skills of the long-term unemployed could reduce potential output for some time to come. Inflationary pressures could therefore reappear earlier than anticipated. Second, low interest rates cause distortions that could have unpleasant side effects (see Chapter III). That said, the consolidation of public finances in a number of countries implies less fiscal stimulus, which in turn will affect monetary policy.

Fragile banks

Following a devastating 2008, balance sheets improved at many of the major US and European banks. After capital injections pulled the banking system back from the brink, rising asset prices and a steepening yield curve helped banks return to profitability in 2009 (Table II.1). As investors' fears of imminent

Profitability of major banks[1]

As a percentage of total assets

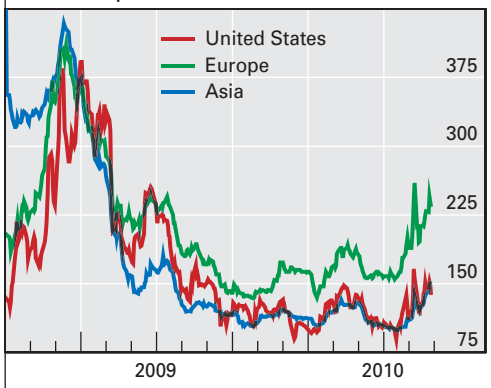
	Pre-tax profits			Net interest margin			Net gains from trading			Net fee income		
	2007	2008	2009[2]	2007	2008	2009[2]	2007	2008	2009[2]	2007	2008	2009[2]
Australia (4)	1.40	0.99	0.93	1.68	1.64	1.87	0.12	0.07	0.11	0.50	0.48	0.47
Austria (3)	1.12	0.46	0.63	1.95	2.44	2.46	0.17	–0.08	0.34	1.01	1.00	0.92
Canada (5)	1.08	0.45	0.68	1.43	1.38	1.69	…	–0.31	0.13	1.09	0.81	0.93
France (6)	0.41	0.04	0.18	0.49	0.68	1.05	0.56	–0.24	0.25	0.47	0.39	0.44
Germany (7)	0.26	–0.45	–0.03	0.52	0.62	0.78	0.05	–1.01	0.19	0.43	0.34	0.38
Italy (5)	0.88	0.27	0.37	1.73	2.02	1.92	0.09	–0.26	0.11	0.95	0.85	0.82
Japan (13)	0.59	–0.16	0.28	0.95	0.93	0.96	0.23	0.04	0.12	0.41	0.36	0.34
Netherlands (5)	0.16	–0.57	–0.08	0.68	0.97	1.24	0.15	–0.61	0.01	0.34	0.30	0.35
Spain (5)	1.44	1.07	0.93	1.72	1.85	2.27	0.15	0.19	0.12	0.82	0.74	0.73
Sweden (4)	0.89	0.67	0.34	0.97	0.99	1.02	0.16	0.15	0.27	0.58	0.44	0.41
Switzerland (6)	0.38	–1.75	0.21	0.53	0.61	0.56	0.28	–0.68	0.58	1.01	0.93	0.92
United Kingdom (8)	0.76	–0.05	–0.05	1.02	0.87	0.94	0.49	–0.07	0.51	0.58	0.40	0.47
United States (8)	0.96	0.28	0.41	2.23	2.30	2.70	0.05	0.02	0.27	…	…	0.68

[1] The number of banks in the 2009 sample is indicated in parentheses. [2] Latest available data.

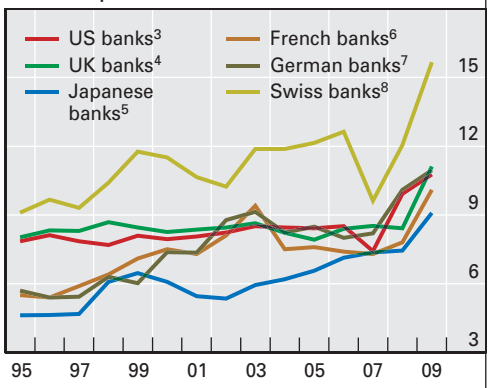
Source: Bankscope. Table II.1

Indicators of bank health

Credit spreads[1]



Tier 1 capital ratio[2]



[1] Equally weighted average senior five-year CDS spreads for the banking sector, in basis points. [2] Tier 1 capital as a percentage of risk-weighted assets, weighted by asset size. [3] Bank of America, Citigroup, JPMorgan Chase, Wachovia Corporation (to Q3 2008) and Wells Fargo & Company. [4] Barclays, HSBC and Lloyds TSB. [5] Mitsubishi UFJ Financial Group, Mizuho Financial Group and Sumitomo Mitsui Financial Group. [6] BNP Paribas. [7] Commerzbank and Deutsche Bank. [8] Credit Suisse and UBS.

Sources: Bloomberg; JPMorgan Chase. Graph II.5

collapse abated throughout the year, banks' CDS spreads and bond spreads narrowed considerably (Graph II.5, left-hand panel).

New capital drove up Tier 1 capital ratios

Overall, the new capital injected into banks, much of it from governments, has almost matched banks' revealed losses during the crisis. Total revealed losses and writedowns reached $1,306 billion by mid-April 2010, compared with $1,236 billion in new capital raised by banks.[5] At the end of 2009, the new capital acquired by US and European banks – combined with slower credit growth and their shift into safer government securities and liquid assets – helped push their Tier 1 capital ratios to the highest levels in 15 years (Graph II.5, right-hand panel).

Bank profitability may prove unsustainable …

Despite the improvement in banks' balance sheets, several factors raise doubts about the sustainability of bank profits. First, for many European and US banks, profits in 2009 were based heavily on revenues from trading in fixed income and currency markets, which tend to be volatile (Table II.1). Loan-to-deposit ratios for many large international banks fell in 2009. And aggregate data for the United States, the euro area and Japan show that credit extended to the private sector (Graph II.7, left-hand panel) shrank in 2009, following its slowdown in mid-2008 as banks tightened lending standards.

… if the yield curve flattens …

Second, low volatility and the steep yield curve, particularly at the short end, provided incentives for banks to take on duration risk. Carry-to-risk ratios for such strategies increased substantially until April 2010 (Graph II.1, bottom right-hand panel). Amid stagnant corporate and residential lending, banks were able to generate profits simply by channelling funds into longer-dated default-free securities. As a consequence, they became exposed to the risk that a

[5] By mid-April 2010, North American banks had raised $518 billion in new capital, amounting to 72% of their recorded losses. European banks had raised $341 billion, roughly the same amount as their revealed losses. The capital raised by Asian banks totalled more than three times their $34 billion in revealed losses.

flattening of the yield curve could raise their funding costs or result in mark to market losses on their assets side.

... and asset writedowns continue

Third, it is not clear whether all crisis-related losses have been recognised. For example, less stringent and less timely reporting requirements for banks in Europe have made it more difficult to ascertain the extent of future writedowns by these institutions. In addition, there is growing evidence that further losses can be expected from exposure to the commercial real estate sector. Commercial property values in the United States are down by more than one third from their peak, and the delinquency rate on commercial real estate loans has risen to more than 8%, double the rate at end-2008 and more than four times the rate at end-2006. Commercial property markets in many European countries have not fared much better. In Ireland and the United Kingdom, in particular, commercial property prices have fallen by 39% and 46% respectively since their peak, and losses on European bank balance sheets are expected to mount over the next few years. Anecdotal evidence suggests that some banks have taken to rolling over existing loans rather than inducing foreclosure, thus delaying loss recognition.

Sovereign risk in advanced economies as well as EMEs

Fourth, banks are highly exposed to sovereign risk, as was highlighted by the sharp drop in the equity prices of banks with particularly high holdings of Greek, Portuguese and Spanish government debt in the second quarter of 2010. The risk of such exposures had been long recognised in the case of banks in EMEs but had been ignored in the advanced economies.

Short-term liabilities are raising funding needs

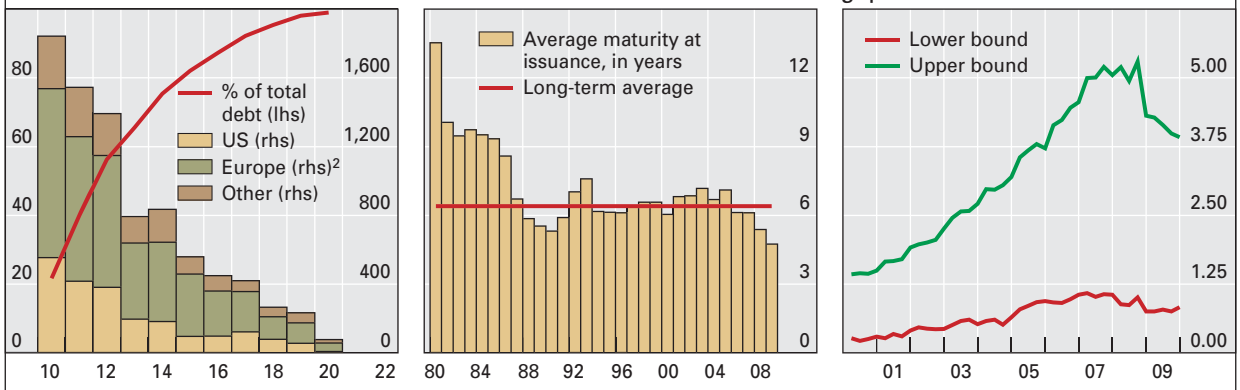
Fifth, banks may find it difficult to refinance given the expected demand for funds by governments with significant borrowing needs. Funding maturities have shortened to the lowest in 30 years (Graph II.6, centre panel), which raises refinancing needs. Moreover, some 60% of banks' long-term debt flows come due over the next three years (Graph II.6, left-hand panel). Indeed, widening Libor-OIS spreads after April 2010 (Graph II.1, bottom left-hand panel) provide evidence that unsecured wholesale funding has become more expensive. That said, these spreads are still tiny compared with their levels at the height of the crisis in late 2008.

Dollar funding difficulties have resurfaced

Finally, many banks in Europe and elsewhere still rely heavily on the foreign exchange swap market to finance US dollar assets. Overall, European banks still have an estimated $7 trillion in dollar-denominated assets on their balance sheets, which tend to have long maturities. And those European banking systems which had long dollar positions going into the crisis (German-, Dutch-, Swiss- and UK-headquartered banks) still have substantial funding needs. Lower bound estimates of their required short-term US dollar funding stood at just over $500 billion at end-2009 (Graph II.6, right-hand panel). With heightened credit risk concerns surrounding these banks' exposures to Greek and other European sovereign debt, providers of short-term funds have once again become reluctant to extend dollar funding. On 9 May 2010, as part of a comprehensive policy package to address the growing risk of contagion among euro area sovereigns and financial institutions, the Federal Reserve and other major central banks re-established temporary foreign exchange swap facilities to alleviate the growing strains.

Banks' funding pressures

Bank debt, by residual maturity[1] | Average debt maturities | European banks' dollar funding gap[3]



[1] Syndicated debt securities placed in domestic and international markets with original maturity above one year, in billions of US dollars; excluding preferred shares and convertible bonds. [2] The euro area, Switzerland and the United Kingdom. [3] Estimates of short-term funding needs of internationally active banks headquartered in Germany, the Netherlands, Switzerland and the United Kingdom, in trillions of US dollars. For the construction of the measures, see I Fender and P McGuire, "European banks' US dollar funding pressures", *BIS Quarterly Review*, June 2010.

Sources: Dealogic; Moody's; BIS consolidated banking statistics (immediate borrower and ultimate risk basis); BIS locational banking statistics by nationality. Graph II.6

Household debt levels: where do we stand?

Before the crisis, household debt had increased substantially in a number of advanced economies.[6] The historical record suggests that financial crises associated with credit booms have often been followed by a long period of debt reduction in the private sector as firms and households repair their balance sheets. Indeed, in most of the 24 systemic banking crises analysed in the box on the following page, the ratio of private sector credit to GDP fell substantially for several years after the crisis, reversing most of the increase which had occurred during the preceding credit boom.[7] That record suggests that household debt ratios, which increased rapidly in many countries in the run-up to the current crisis, will have to adjust further.

Credit to the private sector has decelerated

The private debt reduction process has already begun. Credit to the private sector in the major advanced economies (except Japan) had expanded strongly in the years before the crisis but contracted markedly in 2009 and early 2010 as banks tightened lending standards (Graph II.7).[8]

Household debt ratios have started to decline ...

Households in the countries that experienced real estate-related credit booms have started to reduce their debt levels. By the end of 2009, the ratio of household debt to disposable income in the United States and Spain had declined by 7 percentage points from its respective peaks in 2007 and 2008

[6] See BIS, *79th Annual Report*, June 2009, pp 4–7.

[7] The analysis of the historical episodes looks at credit to the private sector, since data on household debt are not available for most of the episodes.

[8] By contrast, credit continued to expand – or even accelerated – in many emerging market economies. For a discussion of the most extreme case, see E Chan and H Zhu, "Analysing bank lending data in China", *BIS Quarterly Review*, December 2009, pp 20–1.

Credit dynamics after crises: the historical record

Financial crises are often followed by protracted debt reduction. In a sample of 24 systemic banking crises,[1] 15 were followed by substantial declines in the ratio of credit to GDP. The average such peak-to-trough decline was 39 percentage points, or roughly 8 percentage points per year. The decline in the ratio was only slightly smaller than the preceding increase (48 percentage points on average). Perhaps surprisingly, the degree of debt reduction did not differ much across emerging market and advanced economies. After their banking crises of the early 1990s, the ratio of credit to GDP dropped 44 percentage points in Finland, 38 points in Norway and 35 points in Sweden, roughly in line with the sample average. In Japan, the private sector credit ratio fell 25 percentage points after peaking in the late 1990s. In most countries, the initial decline in debt ratios was driven primarily by a drop in real credit outstanding; in the later years of deleveraging, GDP growth was the main driver.

The economic costs of deleveraging are hard to discern at such an aggregate level. Output grew at an average annual rate of 2.4% during the post-crisis debt reduction phase, moderately below the average growth rate during the preceding credit boom. But output growth varied widely across countries during the post-crisis period: in Indonesia, Malaysia, Mexico and Thailand, for example, output slowed considerably; in other countries, growth accelerated.

[1] The sample is taken from S Cecchetti, M Kohler and C Upper, "Financial crises and economic activity", paper presented at the symposium on *Financial stability and economic policy* organised by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, 20–22 August 2009. Of the 40 crises analysed in the paper, six were dropped because of the poor quality of the credit data. Another 10 cases – the two that took place in periods of hyperinflation and the eight that occurred during transitions from socialism to a market economy – were discarded as being unlikely to offer any insights relevant to the current situation.

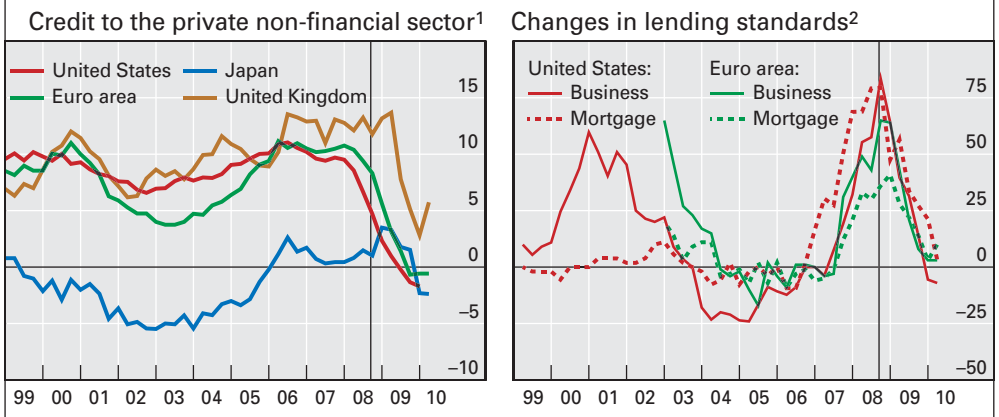
Private sector credit/GDP ratio[1]

	Crisis date	Extreme credit/ GDP ratio dates			Change in credit/GDP[2]		Annual real GDP growth	
		Previous trough	Peak	Next trough	Trough to peak	Peak to trough	Trough to peak	Peak to trough
Argentina	Dec 01	Sep 95	Jun 02	Sep 05	20	–30	2.3	1.1
Colombia	Jun 98	Mar 92	Dec 98	Mar 05	19	–24	3.8	2.4
Dominican Republic	Apr 03	Jun 95	Jun 03	Mar 07	29	–26	5.2	5.9
Finland	Sep 91	Mar 80	Mar 92	Mar 98	51	–44	2.0	2.6
Indonesia	Nov 97	Mar 93	Jun 98	Jun 02	83	–104	3.6	0.1
Japan	Nov 97	Dec 80	Jun 99	Dec 08	38	–25	1.8	0.4
Malaysia	Jul 97	Sep 93	Mar 98	Mar 01	75	–36	6.5	2.0
Mexico	Dec 94	Sep 88	Mar 95	Dec 96	27	–19	2.3	–0.5
Nicaragua[3]	Aug 00	Jun 96	Dec 00	Mar 02	19	–15	5.0	2.6
Norway	Oct 91	Mar 80	Jun 90	Dec 96	66	–38	2.7	3.7
Philippines	Jul 97	Jun 91	Dec 97	Mar 00	60	–18	3.1	3.0
Russia	Aug 98	Mar 96	Mar 99	Jun 01	32	–30	–0.6	6.9
Sweden	Sep 91	Sep 85	Sep 90	Mar 96	46	–35	2.5	1.2
Thailand	Jul 97	Dec 93	Dec 97	Jun 02	89	–79	6.2	0.8
Uruguay[3]	Jan 02	Mar 95	Sep 02	Mar 07	69	–64	0.5	4.1
Average					*48*	*–39*	*3.1*	*2.4*

[1] Credit as a percentage of nominal GDP. Credit equals the sum of IMF IFS domestic credit to the private sector and consolidated cross-border claims of BIS reporting banks on the non-bank private sector on an immediate borrower basis. [2] In percentage points of GDP. [3] Annual GDP data.

Sources: IMF, *International Financial Statistics*; Datastream; national data; BIS calculations. Table II.A

Credit growth and lending standards



The vertical line marks 15 September 2008, the date on which Lehman Brothers filed for Chapter 11 bankruptcy protection.

[1] Year-on-year growth, in per cent. [2] Net percentage of banks reporting tightening standards in surveys by national central banks.

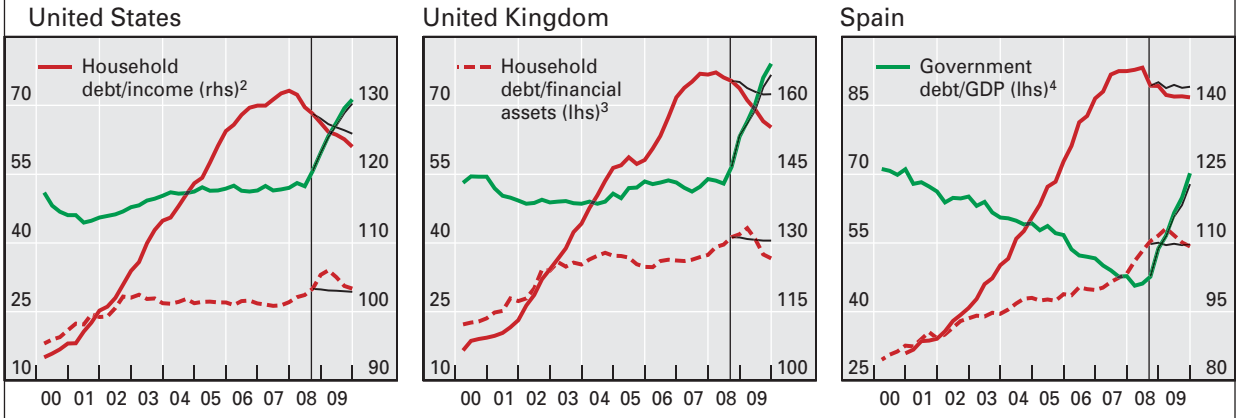
Sources: Datastream; national data. Graph II.7

and by more than 10 percentage points in the United Kingdom (Graph II.8), although some of this decrease was due to the ongoing rise in household income. Household leverage, defined as the ratio of debt to financial assets, continued to increase during the crisis as asset prices plummeted.[9] In all three countries, this ratio peaked in early 2009 and is now at or below the levels recorded in late September 2008.

... but the historical record points towards further debt reduction

Regardless of the measure, household debt in all three countries remains well above the levels recorded in the middle of the decade, let alone those

Household and government debt[1]



The vertical line marks 15 September 2008, the date on which Lehman Brothers filed for Chapter 11 bankruptcy protection.

[1] The thin black lines show the data based on constant Q3 2008 denominators. [2] Households and non-profit organisations; as a percentage of household disposable income. [3] Households and non-profit organisations; as a percentage of household financial assets. [4] General government debt as a percentage of GDP.

Sources: Federal Reserve flow of funds accounts; national data. Graph II.8

[9] This is an imperfect measure, as it excludes real estate and the present value of human capital.

seen before the housing booms took off. The historical record thus suggests that substantial further debt reduction is still to come.

Summing up

Financial and economic recovery is under way, but it is both incomplete and fragile, at least in the major advanced economies. Monetary policy is still highly stimulative almost everywhere, despite first steps towards a more neutral policy stance in some economies. Fiscal policy remains expansionary, causing government debt levels to rise at an alarming pace. Banks have returned to profitability and reduced leverage, but several factors raise doubts about the sustainability of their profits and their ability to obtain funding. Private investment remains weak, and economic growth is still largely driven by inventory rebuilding. At the same time, a number of emerging market economies are facing quite the opposite problem: the direct impact of the crisis on output was smaller than feared, and the expansionary policies employed both domestically and abroad have boosted output growth to the point of overheating.

Tighter fiscal policy is on the horizon. The re-evaluation by market participants of the sustainability of public finances has already forced a number of euro area economies to introduce austerity measures, which are bound to have much more contractionary effects than a timely exit would have implied.

Monetary policymakers will have to take into account the effects of fiscal consolidation when deciding on when to normalise their policy stance. That said, in addition to the obvious risks of tightening too early there are also risks associated with tightening too late. Cutting interest rates to record lows was necessary to prevent the complete collapse of the financial system and the real economy, but keeping them low for too long could also delay the necessary adjustment to a more sustainable economic and financial model.

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

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

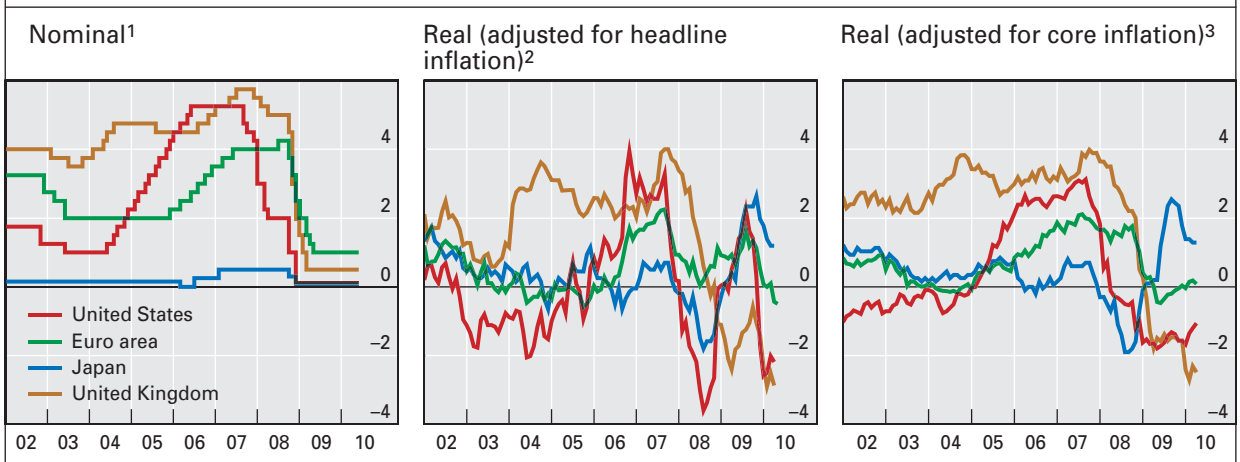
Central banks around the world first reacted to the economic downturn caused by the financial turmoil by aggressively cutting interest rates. As a result, policy rates in the main advanced economies range currently between zero and 1%, leaving little to no room for additional cuts to accommodate any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

... and adopted unconventional monetary policies

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

Nominal and real policy rates

In per cent



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

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

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

Policymakers have started pondering the exit

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

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

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

... that may create problems in the future

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

Domestic side effects of low interest rates

Low interest rates caused misallocations before the crisis ...

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

... and are now delaying necessary adjustments

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

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

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

Decline of measured and perceived risk

Low interest rates have an impact on risk measures and perception

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

This contributed to rising asset prices before the crisis …

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

… and may be at work again today

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

The search for yield

Low policy rates can induce a search for yield

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

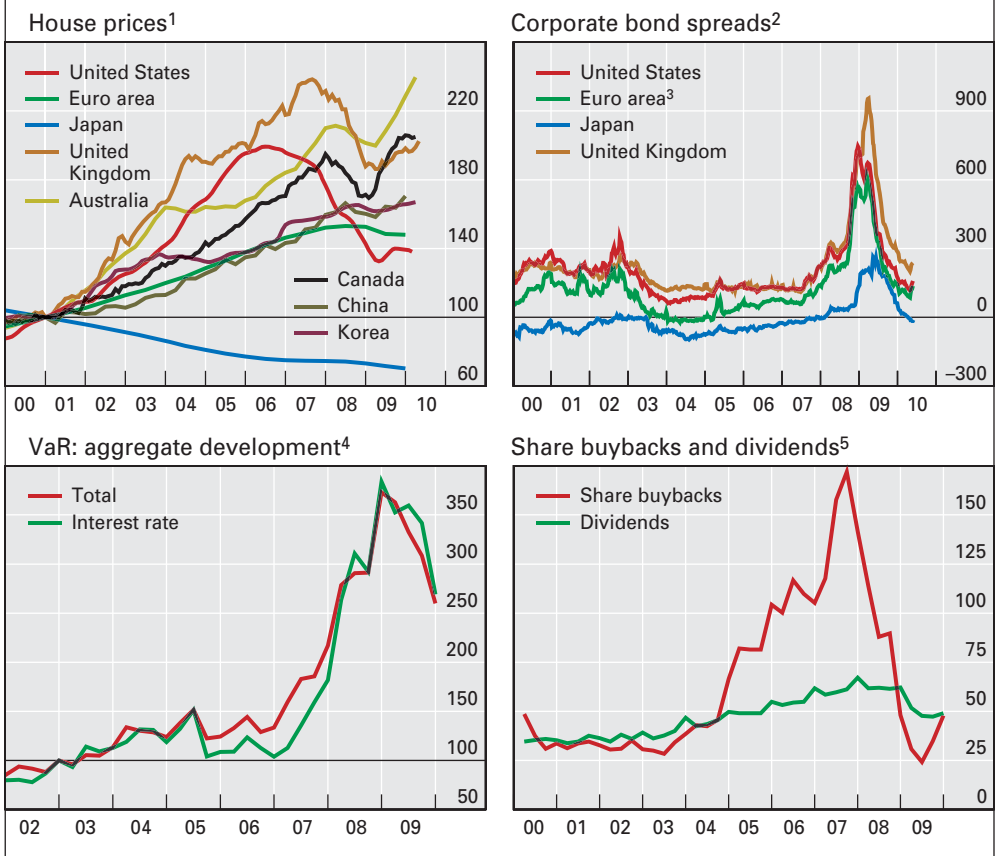
[3] For the impact of loose monetary policy on VaR measures, see T Adrian and H S Shin, "Financial intermediaries and monetary economics", Federal Reserve Bank of New York, *Staff Reports*, no 398, October 2009. For empirical evidence that commercial banks take on more risk in times of loose monetary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

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

This may drive up asset prices ...

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

Indicators of the search for yield



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

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

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

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

... fuel financial innovation ...

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

... and discourage real investment

Interest rate risk

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

Low policy rates can steepen the yield curve ...

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

... exposing banks to interest rate risk

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

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

Delays in balance sheet adjustments

Low policy rates can delay the restructuring of balance sheets

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

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

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

... which is difficult to measure

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

The adjustment of public finances may also be delayed

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

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

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

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

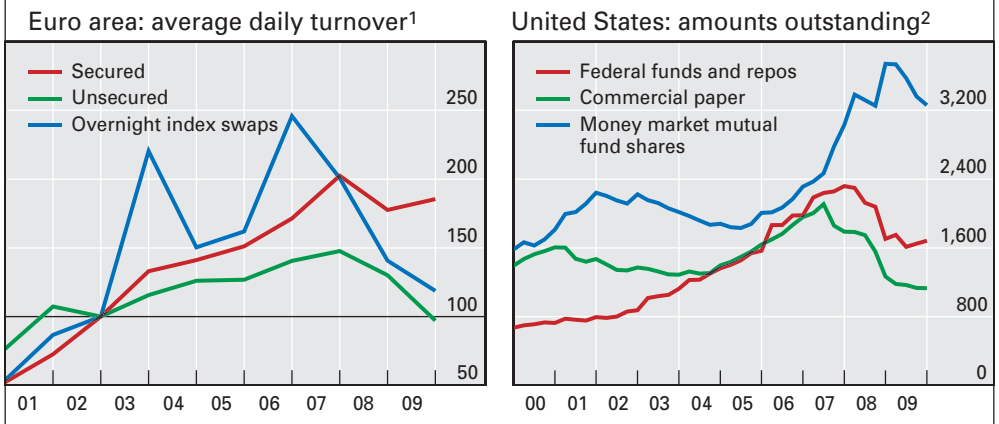
Paralysed money markets

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

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

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

Indicators of activity in money markets



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

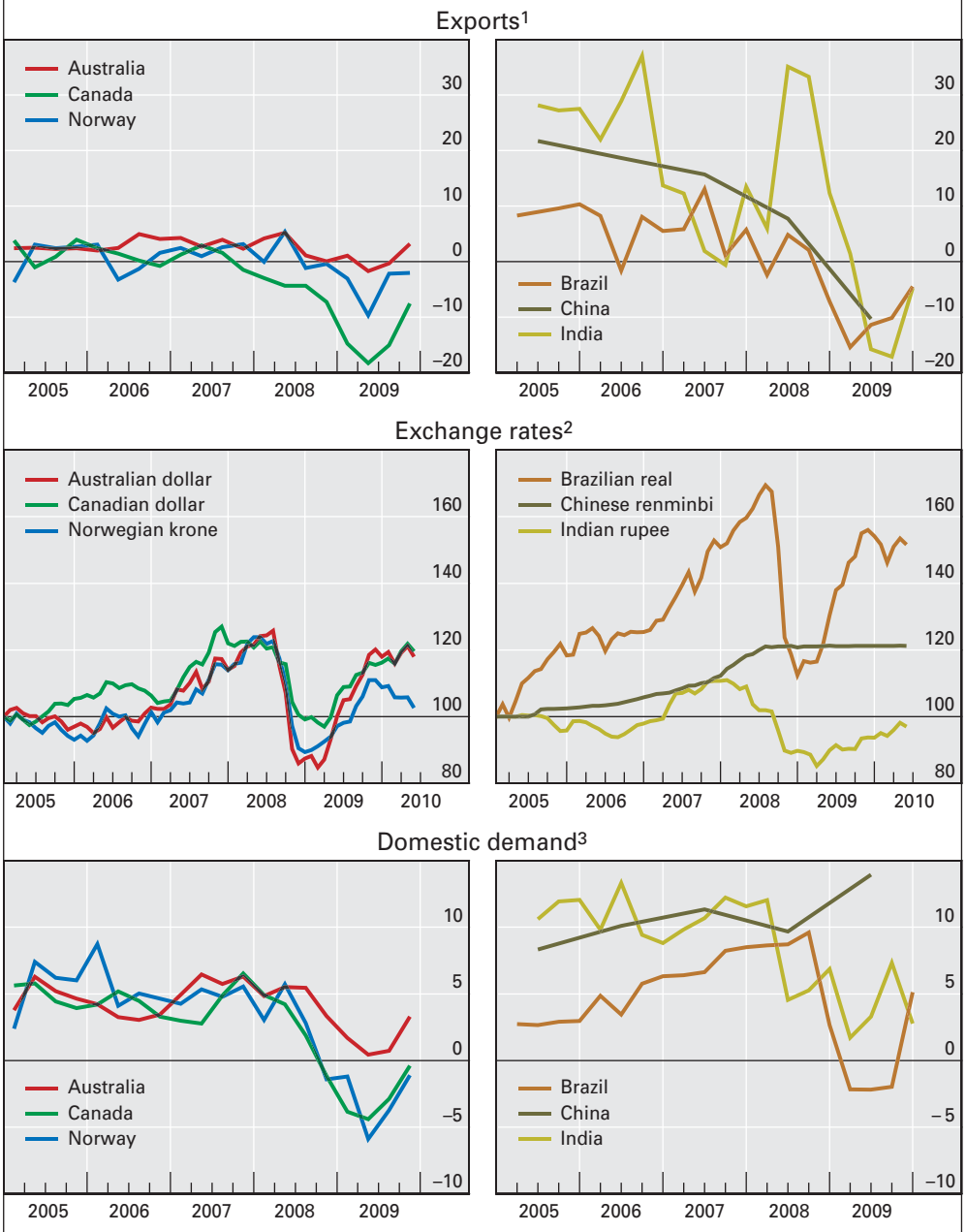
Sources: ECB, *Euro Money Market Survey*; Federal Reserve flow of funds accounts. Graph III.3

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

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

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

Commodity exporters and emerging markets



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

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

International side effects of low interest rates

Low policy rates also cause distortions abroad

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

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

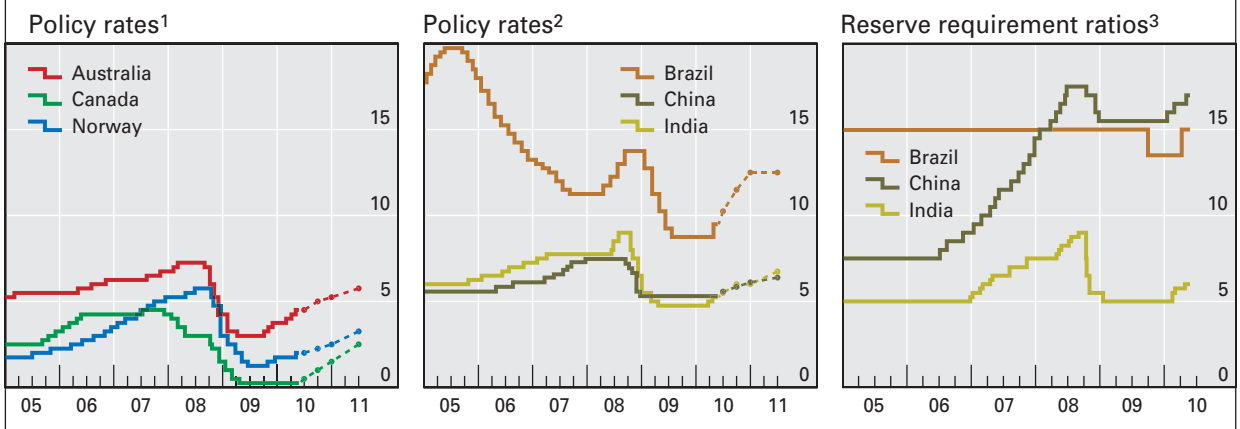
As a result, domestic demand was able to offset some of the contractionary impact of declining exports (Graph III.4, bottom panels). When also asset prices recovered, central banks outside the major advanced economies started tightening monetary policy again, despite the continued weakness of their exports.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

Interest rate differentials have caused capital inflows ...

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

Monetary policy response

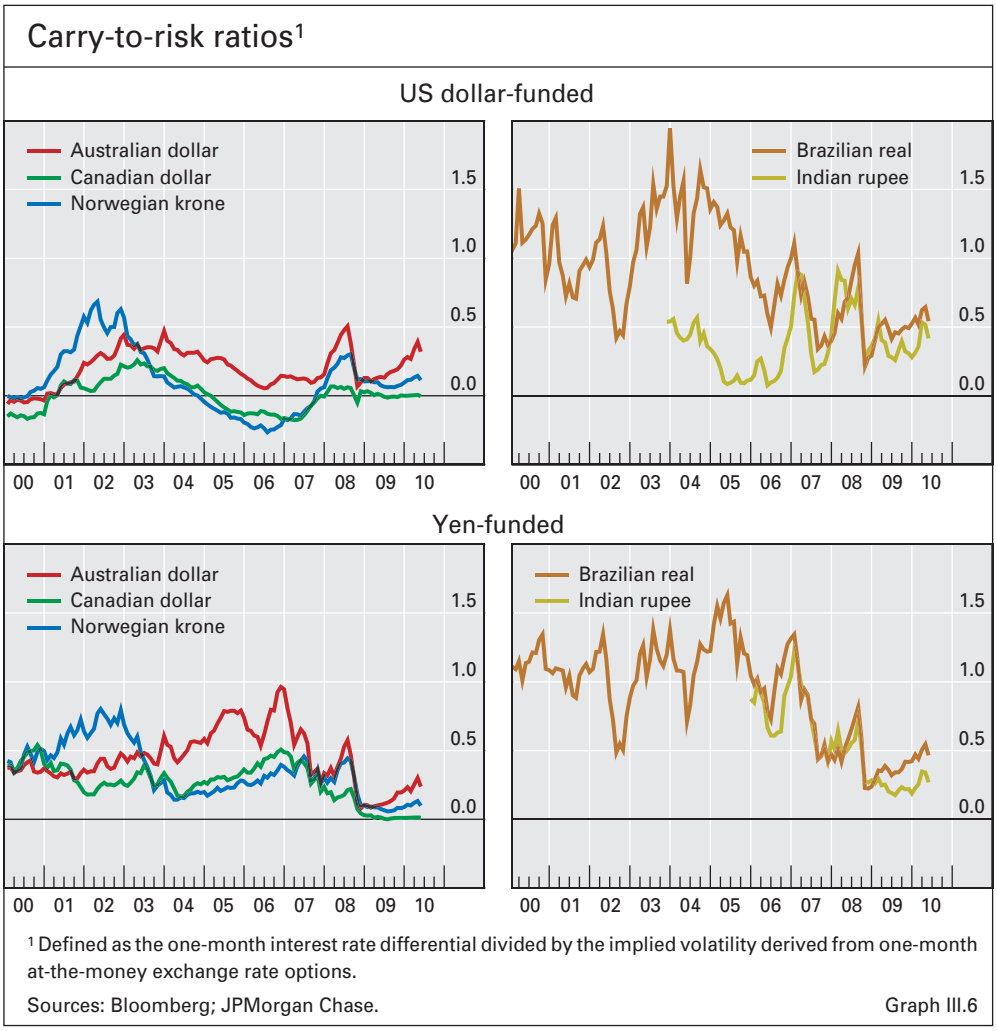
In per cent



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

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

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



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

Sources: Bloomberg; JPMorgan Chase. Graph III.6

... that are accelerating the expansion ...

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

... but may quickly reverse

Summing up

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

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

IV. Post-crisis policy challenges in emerging market economies

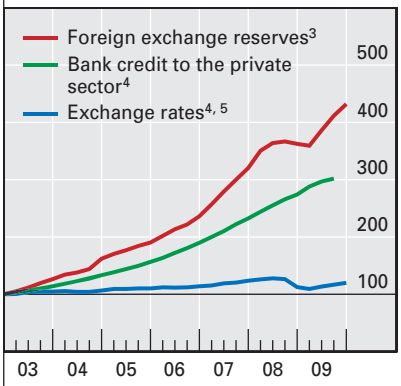
Demand in the emerging market economies (EMEs) is recovering strongly. Headline inflation rates have risen in most of emerging Asia, parts of Latin America (including Argentina, Brazil and Mexico) and Turkey. Core inflation has increased sharply in India. Growth in the resource-intensive industrial sectors of EMEs, especially China and India, has pushed up commodity prices. In several countries, bank credit to the private sector has grown rapidly, sometimes in association with strong increases in house prices.

Despite these developments, monetary conditions continue to be accommodative in many EMEs, particularly in Asia. A return to large-scale intervention to resist exchange rate appreciation has led to a rapid accumulation of reserves (Graph IV.1, left-hand panel). In such circumstances, some central banks need to tighten monetary policy, especially in those economies where inflation pressures are mounting. With continuing low interest rates in advanced economies, tighter monetary policy in the EMEs would encourage capital flows in the short run. But resisting the exchange rate appreciation pressures associated with these inflows would lead to faster credit growth and increase the risk of asset price overshooting.

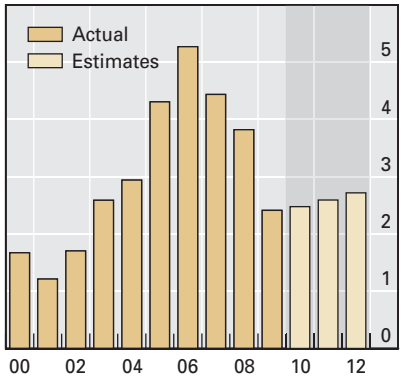
It is not surprising, therefore, that EMEs have shown a renewed interest in using discretionary capital controls to deal with surges in inflows. Yet many

International financial indicators for EMEs

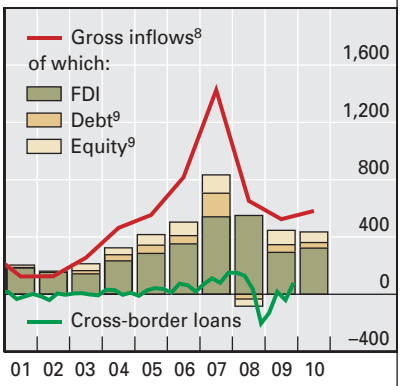
Reserves, credit and exchange rates[1, 2]



Current account surpluses[6]



Private capital inflows[1, 7]



[1] Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, the Czech Republic, Estonia, Hong Kong SAR, Hungary, India, Indonesia, Korea, Latvia, Lithuania, Malaysia, Mexico, Peru, the Philippines, Poland, Romania, Singapore, Thailand, Turkey and Venezuela. [2] End-2002 = 100. [3] In US dollar terms; sum of the economies listed. [4] Weighted average based on 2005 GDP and PPP exchange rates. [5] Against the US dollar; an increase indicates an appreciation. [6] IMF emerging market economies grouping; as a percentage of GDP; for 2010–12, estimates from *World Economic Outlook*. [7] In billions of US dollars; sum of the economies listed. [8] For 2009 and 2010, estimates from *World Economic Outlook*. Due to data limitations, data may include some official flows. [9] Portfolio investment; breakdown for 2009 and 2010 based on BIS estimates.

Sources: IMF, *International Financial Statistics*, *World Economic Outlook*; Datastream; national data; BIS. Graph IV.1

forms of capital controls can offer only temporary relief. Moreover, to the extent that they are effective, capital controls reduce competition in the financial system, distort the efficient allocation of capital and inhibit economic growth. Macroprudential measures, however, can help limit the vulnerability of the financial system to volatile capital flows and alleviate some important policy dilemmas.

In view of these policy challenges, there may be no effective alternative to raising interest rates, allowing greater flexibility in exchange rates and reducing reliance on foreign exchange intervention. This approach is also essential in order to achieve an orderly medium-term macroeconomic adjustment and, ultimately, balanced global growth.

At the same time, EMEs and advanced economies need to continue working together on strengthening international monetary arrangements to ensure that, in any subsequent crisis, a sufficient supply of an international currency is available: for the foreseeable future, that currency is almost certain to remain the US dollar.

External imbalances and capital flows: resuming unhealthy trends?

Current account imbalances persist

Current account imbalances in EMEs are projected to widen. As a proportion of their collective GDP, the EME combined current account surplus had fallen sharply from 2006 to 2009, but it is projected to rise in 2010–12 (Graph IV.1, centre panel). Indeed, under the influence of the underlying cyclical sensitivity of trade flows, strong demand from China and a rise in commodity prices, exports from many EMEs surged earlier this year.

Capital flows return to the EMEs ...

Meanwhile, capital continued flowing into EMEs. Foreign direct investment remained relatively strong during the crisis and continues to be the dominant source of inflows. The pickup in other private capital inflows since mid-2009 has been led by an increase in equity portfolio flows (Graph IV.1, right-hand panel). Debt flows have also resumed, but at a more modest pace. Only cross-border banking flows remained weak during 2009, although they rose modestly in the fourth quarter.

... because of international interest rate spreads ...

Several domestic and external factors point to even heavier inflows in the period ahead. First, short-term nominal interest rate differentials are expected to widen in favour of the EMEs leading the global recovery, as their central banks normalise policy rates faster than central banks in the advanced economies (Graph IV.2, left-hand panel).

... exchange rate expectations ...

Second, expectations of exchange rate appreciation will attract additional capital inflows. As before the crisis, the currencies of several EMEs are thus likely to become the target of carry trades and to face heightened exchange rate volatility.

... strong growth prospects ...

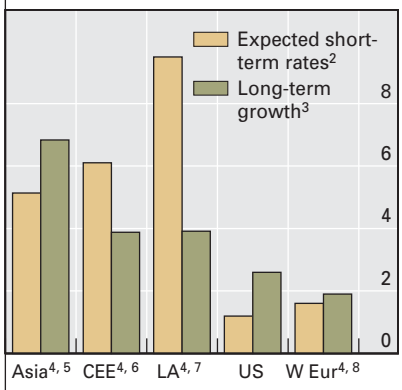
Third, EMEs are expected to grow significantly faster than the advanced economies over the next 10 years (Graph IV.2, left-hand panel). This prospect is positive for capital inflows.

... and favourable external funding conditions

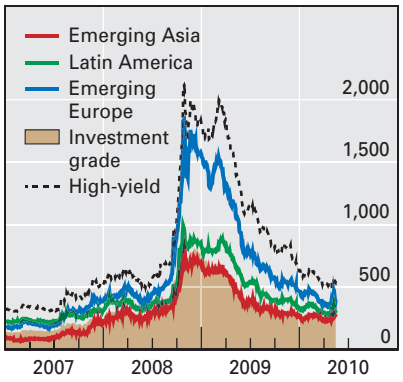
Lastly, the stronger EME recoveries have contributed not only to higher real rates of return but also to a perception among investors of declining risk. This has been reflected in lowered bond spreads (Graph IV.2, centre panel)

Factors promoting capital inflows to EMEs

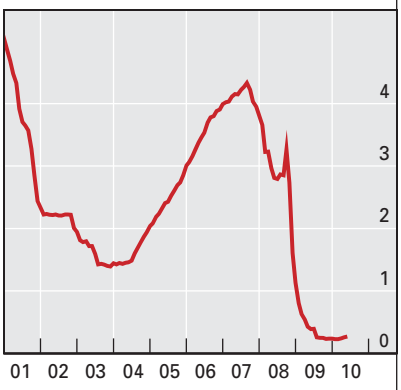
Interest rate and growth forecasts[1]



Spreads of EME corporate bonds[9]



International short-term interest rate[10]



CEE = central and eastern Europe; LA = Latin America; US = United States; W Eur = western Europe.

[1] In per cent. [2] Consensus estimates for February 2011; for Argentina, 30-day peso certificate of deposit rate; for Brazil and Turkey, overnight interbank rate; for China, one-year base lending rate; for Mexico, 28-day CETES rate; for Venezuela, 30-day deposit rate; for other economies, three-month rate. [3] Expected average annual growth for 2015–19; for CEE, in 2014. [4] Weighted average of listed economies based on 2005 GDP and PPP exchange rates. [5] China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Singapore and Thailand. [6] The Czech Republic, Hungary, Poland and Turkey. [7] Argentina, Brazil, Mexico and Venezuela. [8] The euro area, Norway, Sweden, Switzerland and the United Kingdom. [9] Corporate Emerging Markets Bond Index (CEMBI); spreads of US dollar-denominated bonds over Treasuries, in basis points. [10] Weighted average of overnight Libor rates in euros, sterling, Swiss francs, US dollars and yen; based on 2005 GDP and PPP exchange rates; monthly averages, in per cent.

Sources: IMF, *International Financial Statistics*, *World Economic Outlook*; © Consensus Economics; JPMorgan Chase. Graph IV.2

and a number of rating upgrades for EMEs in 2009–10, including for Brazil, Indonesia, Korea, Peru, the Philippines and Turkey. These more favourable funding conditions for EMEs have led to renewed interest on the part of international investors in a range of EME asset classes. Emerging market bond issuance in international and local markets has rebounded strongly as credit default swap (CDS) spreads for emerging market names have narrowed considerably from their peaks in late 2008. Indeed, EME corporate bonds are increasingly being priced more like investment grade than high-yield issues (Graph IV.2, centre panel). So far, however, the demand for EME assets has primarily benefited the higher-quality borrowers, especially those in Asian and Latin American economies where public finances and corporate balance sheets have remained strong.

Moreover, low policy rates (Graph IV.2, right-hand panel) and the large expansion of central bank balance sheets in the main advanced economies are setting the stage for a significant resumption of portfolio and banking flows. International investors still have large holdings of highly liquid assets such as money market mutual funds, and these can be readily deployed to higher-yielding and less liquid EME assets as conditions warrant. In addition, international banks are strengthening their balance sheets and developing local funding as they adapt to the new post-crisis banking environment (see Chapter VI).

International financial integration offers significant benefits: capital inflows stimulate financial development and are often a key ingredient for economic growth over the medium term. Nevertheless, some forms of

capital inflows can be destabilising. The main concerns are portfolio – especially debt – flows and cross-border bank lending, in which fund managers and leveraged investors play a particularly big role. Those concerns underscore the importance of monitoring not only the types of flows but also the ultimate investors.

Policy options

Exchange rate appreciation helps the adjustment but is not without risks

The prospect of strong capital inflows presents a number of immediate policy challenges for EMEs. Greater currency flexibility offers many advantages. It may deter the build-up in the private sector of imprudent foreign exchange exposures. Also, it can be particularly useful in discouraging short-term capital inflows associated with carry trade dynamics. Yet, greater flexibility means that the exchange rate may temporarily rise to unsustainable levels but then fall back. Such dynamics, however, are of greater concern for economies with thin domestic capital markets or foreign exchange markets that are prone to over- and undershooting: their financial systems would be overwhelmed by the pace of the inflows. Moreover, export industries have led EME growth in the past decade; many worry that currency appreciation would undermine the competitiveness of those industries and thereby impose potentially costly structural adjustments on EMEs. Nevertheless, currency appreciation is usually an important mechanism to reorient demand towards domestic sources.

Lower policy rates entail risks as well

One response to the threat of appreciation posed by capital inflows has been to keep policy interest rates low even as inflation pressures pick up. Low policy rates would limit exchange rate pressures while strengthening investment and boosting domestic demand more generally. But keeping interest rates too low for too long increases the risks of domestic overheating, inflation, excessive credit expansion and asset price overshooting.

Another option for managing the pressure on the exchange rate amid rising inflows is foreign exchange intervention combined with a rise in the policy rate to address the implications for inflation, credit growth and asset prices. However, intervention alone, with the consequent build-up of reserves, leads to distortions associated with the large expansion of bank balance sheets and the increase in inflationary pressures. Likewise, restraining domestic demand with higher policy rates and allowing only a modest or steady appreciation may eventually stoke carry trades and even stronger capital inflows, which in turn would only reinforce pressure on the exchange rate. In addition, heavy intervention makes it more difficult for policymakers to set monetary policy with the appropriate degree of restraint and may contribute to financial stability risks.

Other options may be needed

In these circumstances, policymakers have looked to non-interest rate options both to moderate the size of capital flows and to strengthen the resilience of the economy and the financial system in the face of capital flow volatility. The following sections explore the various policy trade-offs associated with prolonged foreign currency intervention. Capital controls and regulatory measures to address financial risks that arise from surging capital inflows are also discussed.

Foreign exchange intervention – part of the problem or part of the solution?

Intervention part of EME toolbox

Changes in the stock of foreign currency reserves before, during and after the crisis illustrate that foreign exchange intervention is an important tool for emerging market central banks. But prolonged large-scale intervention in foreign exchange markets can be both costly and risky.

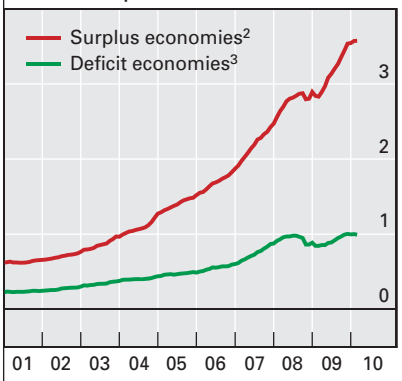
Before the crisis, authorities in EMEs built up large foreign exchange reserves (Graph IV.3, left-hand panel). In some EMEs (eg Korea), building a stock of reserves considered adequate by market participants was a policy goal in its own right. The views of the rating agencies, which use the size of reserves as one element in assessing a country's creditworthiness, were also influential. But in other EMEs, particularly those with large current account surpluses, the build-up of reserves was a by-product of exchange rate policies.

During the crisis, reserves proved useful

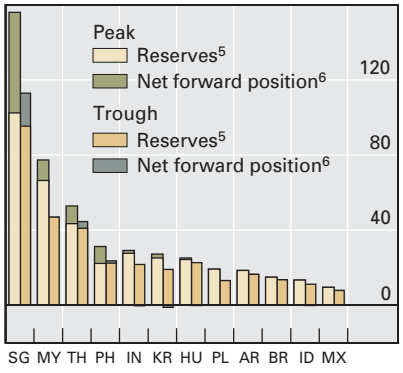
During the crisis, the large holdings of reserves proved useful. In the early phase, they helped reassure foreign investors that EMEs had some form of protection from external shocks. Later, after mid-2008, central banks drew down reserves not only to support the exchange rate in the face of large portfolio outflows (as in Korea and Mexico) but also to meet the dollar liquidity shortages of domestic financial institutions (as in Brazil and Korea; Graph IV.3, centre panel). Such use of foreign reserves to provide foreign currency funding to domestic banks has reinforced the pre-crisis view of the desirability of holding large reserve stocks. In the end, however, these reserves needed to be supplemented with foreign exchange swap lines, particularly from the

Foreign exchange reserves

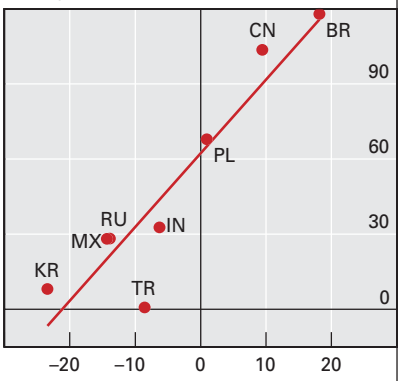
EME reserves by current account position[1]



Level of reserves during crisis[4]



Reserve increases and exchange rates, 2007–10[7]



AR = Argentina; BR = Brazil; CN = China; HU = Hungary; ID = Indonesia; IN = India; KR = Korea; MX = Mexico; MY = Malaysia; PH = Philippines; PL = Poland; RU = Russia; SG = Singapore; TH = Thailand; TR = Turkey.

[1] Sum of foreign exchange reserves; in trillions of US dollars; economies with a current account surplus/deficit based on average current account position as a percentage of GDP for 2001–09. [2] Economies with a current account surplus: Argentina, Chile, China, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand and Venezuela. [3] Economies with a current account deficit: Brazil, Bulgaria, Colombia, Croatia, the Czech Republic, Estonia, Hungary, India, Latvia, Lithuania, Mexico, Peru, Poland, Romania and Turkey. [4] The peak is the maximum level of reserves leading into the crisis; the trough is the minimum level of reserves during the crisis. Dates of peaks and troughs vary by country. [5] Sum of SDRs, reserve positions in the IMF and foreign exchange reserves, as a percentage of 2007 GDP. [6] Long positions in forwards and futures in foreign currencies vis-à-vis the domestic currency, minus short positions, as a percentage of 2007 GDP. [7] Vertical axis: change in reserves, including derivative positions, from March 2007 to March 2010, in per cent. Horizontal axis: change in nominal effective exchange rate (increase = appreciation) from March 2007 to March 2010, in per cent.

Sources: IMF; national data. Graph IV.3

Federal Reserve. This shortage of short-term dollar funding has also prompted discussion of more robust institutional arrangements.

The drawdown of derivative positions helped too

Another feature of intervention during the crisis was the use of foreign exchange swaps and forwards. Authorities in Malaysia, the Philippines and Singapore, for example, used forward positions as a first line of defence to cushion foreign exchange reserves and limit the impact on domestic liquidity (Graph IV.3, centre panel). This gave authorities a means to provide foreign currency liquidity to the private sector, most notably to banks. From the mid-1990s, EMEs have increasingly used derivatives as a tool in their reserve management. Mexico used options in the aftermath of the Tequila crisis to smooth the subsequent exchange rate adjustment. Forwards and swaps have become the main types of derivatives used by central banks in recent years.

Intervention and reserve accumulation have resumed

During the post-crisis recovery, many EME central banks have returned to resisting appreciation and accumulating reserves on a substantial scale. Some continued to build reserves throughout the crisis (eg China), while others that saw some of the largest declines in foreign reserves have rebuilt them. For example, Korea's reserves declined by $64 billion during the crisis, but have since returned to their pre-crisis level. These examples are consistent with the more general positive association between reserve accumulation and exchange rate pressures in EMEs (Graph IV.3, right-hand panel).

Intervention can lead to loose monetary and financial conditions

Prolonged and large-scale intervention has significant consequences for the economies and the domestic financial systems in the EMEs. First, reserve accumulation that results in easy monetary conditions and rapid credit growth can add to inflation pressures or create financial system risks.[1] In recent years, foreign reserves have grown to levels that are now large relative to the size of the domestic financial system (Graph IV.4).

Prolonged sterilisation of intervention can be costly and generates financial stability risks

Second, even if sterilisation measures offset the unintended inflationary consequences of reserve accumulation, intervention and sterilisation are almost always costly. Typically, sterilisation entails the central bank exchanging high-yield domestic assets for low-yield reserves.[2] Such sterilisation also leads to an expansion in the balance sheet of the banking system and adds to financial system fragility in at least two key ways.[3] First, it involves authorities swapping foreign currency assets of the private sector for domestic currency assets of the public sector, effectively transferring the foreign exchange risk arising from the capital flows from the private to the public sector. Second, if the maturity of central bank bills were to lengthen significantly, as was the case earlier in the decade, private sector banks, which typically hold the sterilisation debt in EMEs, would find themselves becoming increasingly exposed to interest rate risk.

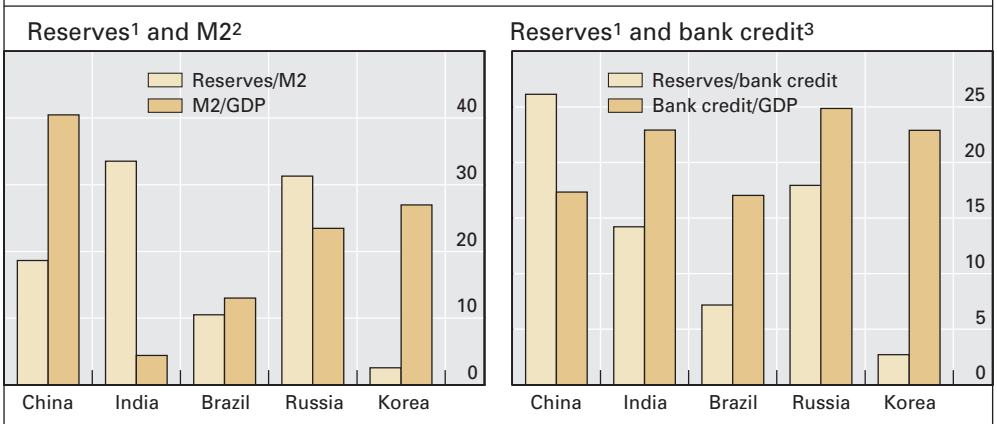
[1] See, for example, J Amato, A Filardo, G Galati, G von Peter and F Zhu, "Research on exchange rates and monetary policy: an overview", *BIS Working Papers*, no 178, June 2005.

[2] Depending on the underlying governance arrangements between the central bank and the government, the costs may be large enough to raise questions about the central bank's budgetary independence. For estimates of costs in India and Korea earlier in this decade, see H Genberg, R McCauley, Y C Park and A Persaud, "Official reserves and currency management in Asia: myth, reality and the future", *Geneva Reports on the World Economy*, 7, September 2005.

[3] See M S Mohanty and P Turner, "Foreign exchange reserve accumulation in emerging markets: what are the domestic implications?", *BIS Quarterly Review*, September 2006.

Foreign exchange reserves, money and credit

Increases in percentage points; end-2002–end-2009



[1] Foreign exchange reserves minus currency in circulation. [2] M2 is a broad measure of money. [3] Bank credit to the private sector.

Sources: IMF; Datastream. Graph IV.4

The unwanted side effects of fully sterilising large-scale intervention have led to the use of non-market instruments such as reserve requirements. Indeed, some central banks (including those of Argentina, China, Croatia, India, Korea, Poland and Romania) have actively used reserve requirements to effectively sterilise the liquidity impact on the banking system. Compared with issuing central bank bills, raising reserve requirements is relatively inexpensive for the central bank as reserves are typically remunerated at below market rates. But there are practical drawbacks. Especially in economies with more developed financial systems, high reserve requirements over time drive intermediation from the regulated banking system to less regulated entities. Moreover, raising reserve requirements may be effective in constraining credit creation during a boom associated with capital inflows, but lowering them may be less useful than reducing interest rates on central bank bills when trying to stimulate credit expansion. And unlike sterilisation with interest rate-based tools, frequent changes in reserve requirements may unduly complicate liquidity management at banks.

In sum, prolonged large-scale foreign exchange intervention generates significant vulnerabilities in the financial system and accentuates dilemmas facing policymakers. These inherent drawbacks help to explain the renewed interest in administrative tools, such as capital controls and prudential measures, as alternatives to intervention.

A role for capital controls and prudential policies?

Managing capital flows

The policy issues that arise in the management of capital flows are receiving wide attention.[4] Although various controls have been used in the past, the

[4] See Committee on the Global Financial System, "Capital flows and emerging market economies", *CGFS Papers*, no 33, January 2009.

historical record suggests that they are unlikely to insulate recipient economies from surging inflows. But some measures have for a time helped countries keep local interest rates above those prevailing in international markets. In addition, prudential measures have shown some promise in improving the ability of the domestic financial system to absorb cross-border financial flows and to weather exchange rate volatility.

The broad reduction in legal impediments to cross-border capital flows over the past 25 years has supported a corresponding increase in financial globalisation. Closer financial integration has brought many benefits – but there are risks that need to be managed. The approach to controls among EMEs differs across regions. Since the early 1990s, countries in central and eastern Europe (CEE) have been steadily dismantling capital controls as part of their ongoing integration with the European Union; EMEs in southern Asia and East Asia have increased certain controls over the same period; and those in Latin America fall somewhere in between, with a modest decrease in the incidence of explicit controls.

Some of the hoped-for benefits of capital controls ...

The attractiveness of capital controls has several sources. One is that they increase the effectiveness of domestic monetary policy by driving a wedge between onshore and offshore financial markets. Another is that, if they reduce the volume of capital inflows, capital controls moderate appreciation pressures on the currency (but at the cost of distorting the international allocation of capital).

... have not been forthcoming

Empirical studies suggest, however, that capital controls have limits. They do not appear to have a durable impact on the size of capital flows. But controls may change their composition (eg away from short-term flows) in ways that reduce exchange rate volatility. Furthermore, there is little evidence that capital controls render the economy less susceptible to crises or reduce the real cost of such crises.[5] Finally, controls create microeconomic distortions.

Jurisdictions with a still developing financial system now recognise that any relaxation of existing controls on international capital flows should be carefully sequenced. Nonetheless, as such economies develop and their financial markets become more sophisticated, the effectiveness of, and the rationale for, the controls tend to fade. A more promising and durable approach to addressing volatile EME capital inflows would be to strengthen the ability of the financial system and the economy to withstand them. Prudential tools, which have been the focus of attention as a means of limiting systemic financial risks (see Chapter VII), could play a valuable role.

Macroprudential tools ...

Prudential tools have long been employed by emerging market economies to enhance financial resilience. The authorities have been recalibrating many of those tools recently to address capital inflows. In Hong Kong SAR, for example, where heavy inflows had been driving up real estate prices, the authorities in October 2009 lowered the maximum allowable loan-to-value

[5] See R Glick, X Guo and M Hutchison, "Currency crises, capital-account liberalization, and selection bias", *Review of Economics and Statistics*, vol 88, no 4, November 2006, pp 698–714; and R Cardarelli, S Elekdag and M Kose, "Capital inflows: macroeconomic implications and policy responses", *IMF Working Papers*, no WP/09/40, March 2009.

ratio on certain types of mortgage to reduce the risks associated with the price run-up. Similar measures were employed in Korea. Limits on debt-to-income ratios have also been used (for example in Korea) to contain ebullient credit creation. Several CEE central banks (notably in Bulgaria, Croatia, Estonia and Poland) adopted similar measures during the credit boom preceding the crisis in order to limit currency mismatches and contain excessive credit creation stemming from capital inflows.

... can make the financial system more resilient

Additional steps that EMEs have taken to ensure a resilient financial system include strengthening the regulatory framework with respect to maturity mismatches on the balance sheets of financial institutions, encouraging the development of local currency bond markets and instruments for hedging foreign exchange risk, limiting short-term foreign borrowing, promoting risk management capacity and practices in the private sector, and strengthening the surveillance of foreign currency exposures.

The US dollar's future as an international currency

Calls for reform of the international monetary system

While in the near term capital inflows are a dominant concern, EME policymakers are also exploring reforms to the international monetary system that may be important over the longer term. One particular concern is the role of the US dollar as the dominant international currency. The dollar's role in the international monetary system – in particular as the vehicle currency for most derivatives contracts – has been cited as a contributor to the international financial and macroeconomic spillovers during the latest crisis. However, it is important to note that the crisis spread from its US origins to the advanced economies in Europe not because of the dollar but largely because banks in those economies were heavily exposed to US toxic assets and were dependent on short-term wholesale dollar funding. And the crisis spread to Asia, Latin America and emerging Europe through trade linkages. Some banking systems in EMEs did suffer a shortage of short-term dollar funds that exacerbated the crisis, but the problem was addressed in some cases by the Federal Reserve with bilateral swap lines.

The US dollar is the dominant international currency

Access to an international currency needed in crises

The principal concern for monetary authorities during periods of crisis is ensuring the availability of sufficient funds in the international currency, whichever it is. Currently, it is the dollar and, to a much lesser extent, the euro and Swiss franc (see box). The emergence of some other dominant international currency or currencies (actual or virtual) would not change the nature of the problem.

But an issuer of an international currency may not supply sufficient liquidity

For EMEs, that problem can be serious. Any central bank's ability to provide liquidity in a foreign currency is limited, given that foreign currency holdings are finite. Further, the issuer of an international currency cannot be expected to provide liquidity insurance unconditionally. Use of an international currency such as the SDR, which is based on a basket of national currencies, will not solve this fundamental problem. In fact, it is likely to make it more complicated: officials in countries whose currencies make up the basket would tend to view the unconditional issuance of the composite unit no differently from the unconditional issuance of their own currencies.

EMEs search for alternatives

So the search continues for an enhanced global financial safety net, and various proposals are under discussion. This is particularly important given the absence of extensive formal foreign exchange swap line arrangements between EMEs and major central banks. One approach is to modify the Flexible Credit Line introduced by the IMF to make qualification for the line more predictable and to extend its duration. Establishing a foreign exchange liquidity insurance mechanism, which would combine paid-in insurance premiums and pre-agreed credit lines from major central banks, is another option. Regional solutions, such as the Chiang Mai Initiative Multilateralisation and bilateral swaps of non-reserve currencies during periods of stress, are an additional possibility. All these mechanisms are worthy of further consideration. Important questions to be resolved are how to deal with the moral hazard risks such mechanisms can create and how realistic it is to reach an agreement on a global financial safety net large enough for a major crisis in which many other elements would also need to be addressed.

Summing up

The economic situation for the EMEs is much improved, but they still face significant policy dilemmas. Renewed growth and the return of capital inflows confront policymakers once again with the familiar pressures – inflation, rapid credit growth, currency appreciation and frothy asset prices – that they had to cope with before the crisis. If capital inflows accelerate, the build-up of macroeconomic imbalances could continue. Addressing inflows with a resumption of large-scale foreign exchange intervention entails risks for the financial system. In the alternative, macroprudential measures can help to limit currency or maturity exposures arising from debt inflows and can limit adverse consequences associated with the expansion in credit. But macroprudential measures cannot substitute for tightening monetary policy and increasing exchange rate flexibility as means to promote orderly and sustained domestic and external adjustments. At the same time, further efforts are needed to make the international monetary system more resilient.

Lesson from the crisis on the US dollar's international role

In late 2008, turbulence in global money markets disturbed the US dollar's outsize role in forward trading of two currencies at the euro area's edge, the Hungarian forint and the Polish zloty. This natural experiment on the resilience of the dollar ended in a quick reversion of this part of the global currency market to its previous pattern. The case suggests that the dollar's dominant position as an international medium of exchange is stronger than is generally appreciated.

Background

During the global financial crisis, strains in dollar funding markets quickly and forcefully spread to other money markets, in part owing to the predominance of the dollar in the foreign exchange swap market. In that market, funds in one currency are temporarily exchanged for funds in another currency. In April 2007, the busiest currency pair was the dollar/euro, accounting for 28% of swap transactions. Other currencies were swapped against the dollar in 64% of all transactions and against the euro in just 6%. Dollar swaps led by 10 to one even in central European currency markets, where, in contrast, market participants trade domestic currency spot mostly against the euro. In short, the dollar stood head and shoulders above other currencies as a means of exchange in the swap market.

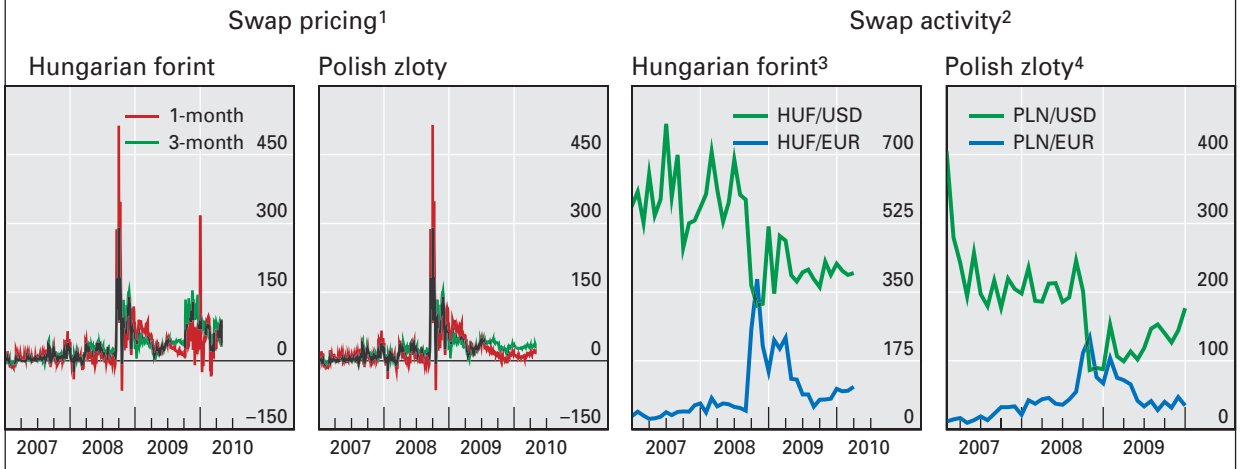
The dollar does not so dominate other international uses. In the international bond market, the dollar and the euro stand more nearly equal in importance as stores of value: 45% for the dollar and 32% for the euro at the end of 2008, according to data from the BIS and ECB. One explanation for this contrast is inertia in the medium of exchange because liquidity is concentrated in certain bilateral exchange rates. Thus, only well after central European currencies became more stable against the euro than against the dollar did they begin trading mostly against the euro in the spot currency market.

Beyond mere inertia, network externalities guide the choice of a medium of exchange. In particular, if dollars swap most readily against other foreign currencies, then any domestic currency is most usefully swapped against dollars. In this case, the predominance of dollar swaps may re-establish itself even after a powerful disturbance that leads market participants to substitute the euro for the dollar for a time. Mere inertia can explain persistence but not a return to dollar swaps.

The natural experiment

In April 2007, only a few currencies enjoyed a well developed swap market against both dollars and euros, including the Hungarian forint and the Polish zloty. Fortunately, the central banks of Hungary and Poland collect monthly data that offer insights into the market dynamics in the period after the collapse

Swap pricing and activity: the US dollar and euro against the forint and zloty



[1] Spread between FX swap-implied US dollar yield premium over dollar Libor and euro yield premium over euro Libor for the currency indicated; in basis points. [2] Foreign exchange swap turnover against the US dollar and euro. [3] Average daily turnover of swap transactions reported by resident credit institutions on the Hungarian foreign exchange market; in billions of forints. [4] Total monthly turnover on the Polish foreign exchange market, in billions of zlotys.

Sources: Magyar Nemzeti Bank; National Bank of Poland; Reuters. Graph IV.A

of Lehman Brothers in September 2008. As noted, before the crisis the currency of choice for swaps in both markets remained the dollar. As the dollar shortage became acute in September and October 2008, dollar interest rates implied by dollar swap pricing rose above euro interest rates implied by euro swap pricing. Foreign exchange traders in Hungary and Poland switched from swapping the domestic currency against dollars to swapping it predominantly against euros. When massive Federal Reserve swaps provided dollar funding to European banks, the premium on dollars came down and, one year later, traders again swapped domestic currencies overwhelmingly against the dollar (Graph IV.A).

The structure of the market for Swiss francs could hold the key to explaining the return of the Hungarian and Polish swap markets to the dollar. Because much lending in Hungary and Poland is denominated in Swiss francs, banks there need to transform domestic currency liquidity ultimately not into euros or dollars but into Swiss francs. In April 2007, in the spot market, the value of Swiss franc/euro transactions approached the value of Swiss franc/dollar transactions ($33 billion vs $49 billion); but in the swap market, the value of Swiss franc/euro transactions fell far short of the value of Swiss franc/dollar transactions ($15 billion vs $81 billion). If, under normal circumstances, the Swiss franc can be swapped against the dollar more readily than against the euro, then traders in Hungary and Poland would understandably revert to swapping the domestic currency against the dollar in the aftermath of the crisis.

Amid the discussion of the dollar's future as a store of value, the return of its use in the swap market in the case of Hungary and Poland illustrates its resilience as a means of exchange. This resilience reflects forces beyond mere inertia that are rooted in the complex links among internationally active banks, cross-border lending and cross-currency liquidity operations. This practical perspective on the current operations of markets should inform any discussion of changes to the international monetary system.

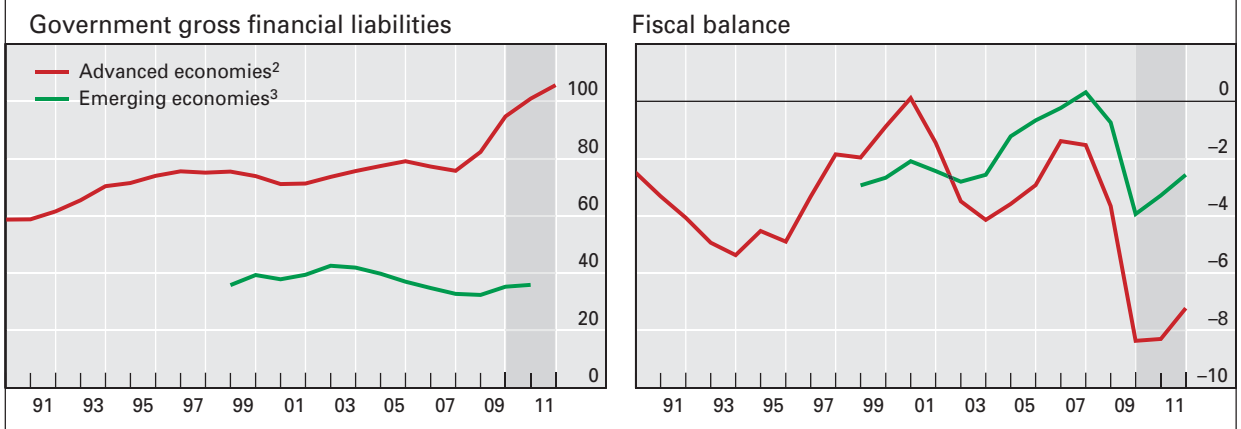
V. Fiscal sustainability in the industrial countries: risks and challenges

Remarkable declines in national incomes, large financial rescue programmes and expansionary fiscal policies in the wake of the financial crisis have led to a dramatic deterioration of fiscal positions in industrial economies (Graph V.1). The aggregate public debt of the advanced economies is projected to rise from 76% of GDP in 2007 to more than 100% in 2011 – a record high in recent decades. Moreover, the full cost of cleaning up the balance sheets of financial institutions – particularly against the backdrop of their continued high vulnerability to adverse shocks – is not yet known. And beyond 2011, many industrial countries face the large, rising pension and health costs associated with their ageing populations. Unless tackled effectively and in a timely manner, such costs could lead to ever increasing deficits and debt levels.

Emerging market economies (EMEs) collectively entered the financial crisis with a relatively strong fiscal position and emerged from it relatively unscathed (Graph V.1). Hence, their aggregate public debt ratio, at around 35% of GDP at the end of 2009, remains low compared with that of the advanced economies and seems unlikely to rise sharply. Nevertheless, fiscal positions across EMEs vary significantly, with several countries struggling to reduce their budget deficits to sustainable levels. And many EMEs face

General government debt and fiscal balance[1]

As a percentage of GDP



The shaded area represents forecasts.

[1] Weighted average of the economies listed, based on 2005 GDP and PPP exchange rates and available data; for China, the data cover the central and local governments; for India and Malaysia, central government; for Mexico, central government and the state-owned enterprises (including social security enterprises). [2] Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States. [3] Argentina, Brazil, Chile, China, Chinese Taipei, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Singapore, South Africa, Thailand, Turkey and Venezuela.

Sources: European Commission AMECO database; OECD; CEIC; © Consensus Economics; Moody's, *Country Credit Statistical Handbook*; national data. Graph V.1

long-term fiscal challenges from their ageing populations; the challenges are likely to grow more difficult as those EMEs attempt to upgrade or expand essential public services to a larger segment of their populations. These issues are briefly discussed in the box on page 64.

High and rising levels of public debt imply significant risks for the global economy. As demonstrated by the recent European debt crisis, concerns about government default may lead to a sharp rise in interest rates, which could further aggravate financial fragility and put the incipient economic recovery at risk. The introduction of unprecedented support measures in May by European governments, the IMF and the ECB helped to stabilise financial markets, but concerns about long-term fiscal sustainability in Greece and a number of other European countries persisted. A key risk is that those concerns may worsen and engulf other countries unless governments take resolute action to address their fiscal problems. Furthermore, over the long run, persistently higher levels of public debt might make economies more vulnerable to adverse shocks, reduce their long-run growth potential and endanger prospects for monetary stability.

In fact, the increased scrutiny of fiscal positions by investors has already persuaded a number of advanced economies to introduce new or enhanced fiscal consolidation measures, which should facilitate a faster reduction of fiscal deficits than was envisaged at the beginning of 2010. Any efforts to reduce current fiscal deficits should also be accompanied by reforms that ensure the long-term viability of public finances. The latter include measures aimed at boosting productivity and future potential economic growth as well as measures to contain the increase in age-related spending. Provided these measures are implemented with the necessary determination by industrial countries, their possible short-term adverse effects on output growth will be largely outweighed by the benefits of lower and stable interest rates, a less fragile financial system and improved prospects for economic growth.

The rest of this chapter addresses the short- and long-term fiscal imbalances faced by industrial countries and discusses their potential implications for the global economy.

The evolution of public debt and its near-term prospects

Public debt reached a record high in the post-World War II era

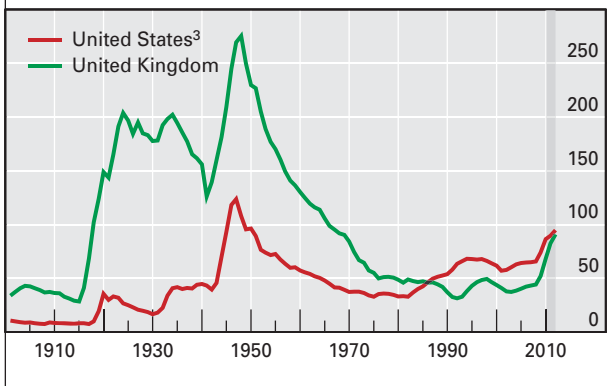
High levels of public debt are not unknown in the industrial countries. In the wake of the Second World War, for example, public debt reached about 120% of GDP in the United States and 275% of GDP in the United Kingdom. In those two countries, where levels of public debt are projected to reach upwards of 90% of GDP in 2011, the recent rate of increase parallels only that seen during the two world wars (Graph V.2, left-hand panel). What is worse, the current, crisis-related surge took place against the backdrop of a long-term erosion of the fiscal position in many countries. Indeed, from the 1970s to 2007, the collective average public debt ratio in industrial countries had steadily ratcheted up from 40% to 76% (Graph V.2, right-hand panel). The chronic mismatch between revenues and committed expenditures (particularly age-related spending) indicates that, to varying degrees by country, the fiscal

An upward trend in public debt preceded the crisis

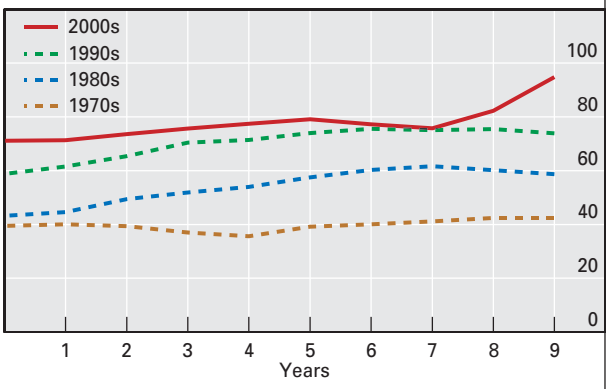
Government debt[1]

As a percentage of GDP

Selected economies[2]



Industrial economies[4]



[1] General government gross financial liabilities. [2] The shaded area represents OECD forecasts. [3] Central government debt. [4] Weighted average, based on 2005 GDP and PPP exchange rates and available data, of Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States.

Sources: B Mitchell, *British historical statistics*, Cambridge University Press, 1988; European Commission AMECO database; OECD; UK Office for National Statistics, *Economic Trends Annual Supplement*; national data. Graph V.2

situation was already on an unsustainable path before the beginning of the recent financial crisis.

The rise in debt varies across countries

By the end of 2011, public debt/GDP ratios in industrial countries are projected to be on average about 30 percentage points higher than in 2007 – a rise of about two fifths. But the increase for countries that have been hit particularly hard by the crisis will be even greater: for the period from the end of 2007 to the end of 2011, the debt/GDP ratio is expected to rise by more than half in the United States and by four fifths in Spain and to almost double in the United Kingdom and triple in Ireland (Table V.1).

Public debt will continue to rise ...

... as large budget deficits are likely to persist

The recent increase in public debt is unlikely to be halted any time soon, for a number of reasons. The first is that the cyclical deficits caused by the economic downturn – sharp declines in tax revenues combined with a rise in some expenditures (mainly income support) – are unlikely to vanish soon because, as current projections suggest, economic recovery will be slow.

Lower potential output implies a loss of tax revenue

The second reason is that a large part of the currently projected fiscal deficit in 2010 and 2011 is likely to persist despite the recovery in output. The financial crisis is expected to have permanently reduced the level of future potential output for many countries – and hence the tax base of the government.[1] Furthermore, in some countries (notably Ireland, Spain, the United Kingdom and the United States) part of the large increase in tax revenues before the crisis was associated with an unsustainable boom in the construction and financial sectors. As output in these sectors is unlikely to

[1] As a result of the permanent loss of potential output, OECD-wide tax revenues in 2009–11, as a share of GDP, are estimated to be more than 1 percentage point lower than the 2000–07 average; see OECD, *Economic policy reforms: going for growth 2010*, March 2010.

Fiscal situation and prospects in selected advanced economies[1]

	Fiscal balance			Structural balance[2]			Government debt		
	As a percentage of GDP								
	2007	2010	2011	2007	2010	2011	2007	2010	2011
Austria	–0.5	–4.7	–4.6	–1.1	–3.1	–3.2	62	74	77
France	–2.7	–7.8	–6.9	–3.0	–5.7	–5.2	70	94	99
Germany	0.2	–5.4	–4.5	–0.4	–3.7	–3.1	65	81	84
Greece	–5.4	–8.1	–7.1	–5.8	–4.6	–2.4	104	129	139
Ireland	0.1	–11.7	–10.8	–1.3	–8.0	–8.3	28	83	92
Italy	–1.5	–5.2	–5.0	–2.2	–2.4	–2.8	112	132	135
Japan	–2.4	–7.6	–8.3	–3.0	–6.6	–7.6	167	199	205
Netherlands	0.2	–6.4	–5.4	–0.3	–4.4	–3.7	52	75	79
Portugal	–2.7	–7.4	–5.6	–2.6	–5.8	–4.3	71	95	99
Spain	1.9	–9.4	–7.0	1.6	–6.6	–4.6	42	73	78
United Kingdom	–2.7	–11.5	–10.3	–3.4	–8.6	–7.8	47	82	91
United States	–2.8	–10.7	–8.9	–3.1	–9.3	–8.0	62	90	95
Memo:[3]									
Emerging Asia[4]	*0.1*	*–3.1*	*–2.6*	…	…	…	*33*	*36*	…
Central Europe[5]	*–2.2*	*–6.0*	*–5.0*	…	…	…	*45*	*55*	*59*
Latin America[6]	*–0.5*	*–2.3*	*–1.9*	…	…	…	*39*	*40*	…

[1] General government; for China, the data cover the central and local governments; for India and Malaysia, central government; for Mexico, central government and the state-owned enterprises (including social security enterprises); forecasts for 2010–11. [2] Cyclically adjusted fiscal balance. [3] Weighted averages of the economies listed, based on 2005 GDP and PPP exchange rates. [4] China, Chinese Taipei, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. [5] The Czech Republic, Hungary and Poland. [6] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.

Sources: European Commission AMECO database; OECD; CEIC; © Consensus Economics; Moody's, *Country Credit Statistical Handbook*; national data. Table V.1

return to pre-crisis levels soon, neither is the level of taxes that they generate. In addition, countries can also be expected to pay higher unemployment benefits for many years due to a rise in the number of long-term unemployed workers.

Reversal of exceptional discretionary measures is uncertain

The third reason is the uncertainty surrounding the timing and extent of the reversal of the exceptional discretionary measures implemented in several countries to revive aggregate demand. The recent crisis has forced a number of southern European countries to announce measures to reduce their structural budget deficits more rapidly than previously envisaged, but it remains to be seen whether the major industrial countries will also reverse fiscal stimulus before growth and unemployment have returned to more acceptable levels. Experience in industrial countries indicates that structural primary deficits (deficits excluding interest payments, adjusted for cyclical increases in expenditure and cyclical decreases in revenue) tend to be corrected only slowly.[2]

Ultimate cost of cleaning up the financial system is unknown

Finally, the ultimate cost of cleaning up the financial system is still unknown. Banks in several countries are still fragile and exposed to volatile

[2] See S Cecchetti, M S Mohanty and F Zampolli, "The future of public debt: prospects and implications", *BIS Working Papers*, no 300, March 2010.

financial markets and a deteriorating commercial real estate market (see Chapter II).[3]

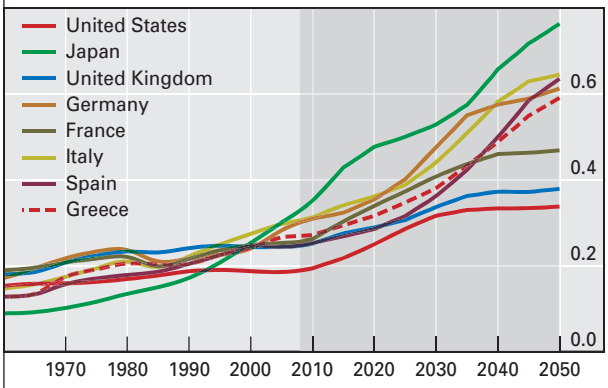
How far and for how long the debt/GDP ratios will rise depends not only on future decisions regarding taxes and primary expenditures (expenditures excluding interest payments on outstanding debt) but also on real GDP growth and the path of future real interest rates. In that regard, growth prospects facing many industrial countries are at best weak, and real interest rates are likely to rise.

Current deficits understate fiscal problems ...

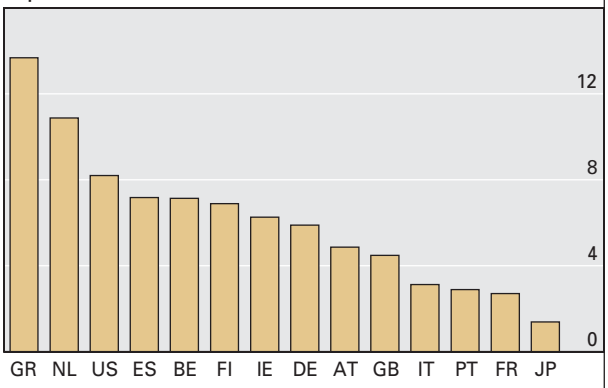
Unfortunately, the large projected near-term fiscal deficits are not the only source of worry. Governments in advanced economies with a markedly growing ratio of the elderly to the working age population (Graph V.3, left-hand panel) face yet another fiscal challenge – containing and funding the rising costs for health care and pensions in the medium to long term. Some of those countries also face lower growth of potential output, which will make such funding even more challenging. Countries have different pension and health systems – and some of them have already reformed their systems to contain part of the rise in expenditures. Hence, countries with similar projected increases in the ratio of the elderly to people of working age do not necessarily face comparable increases in projected age-related public expenditures. For example, given current policies, such expenditures as a share

Future impact of population ageing

Old age population[1]



Estimated increase in age-related government expenditure from 2011 to 2050[2]



AT = Austria; BE = Belgium; DE = Germany; ES = Spain; FI = Finland; FR = France; GB = United Kingdom; GR = Greece; IE = Ireland; IT = Italy; JP = Japan; NL = Netherlands; PT = Portugal; US = United States.

[1] Population aged 65 or older as a share of the working age population (aged 15 to 64); constant fertility scenario; the shaded area represents forecasts. [2] Health care and public pensions; in percentage points of GDP.

Sources: European Commission; IMF, *World Economic Outlook*, April 2007; United Nations, *World Population Prospects*; World Bank, *Health, Nutrition and Population Statistics*; US Congressional Budget Office; BIS calculations. Graph V.3

[3] The amount of resources pledged so far in support of the financial sector in advanced economies (capital injections as well as purchases of assets and lending by the treasury) is currently estimated by the IMF at 6.2% of 2009 GDP, of which only 3.5% of GDP has so far been used – a rather modest amount compared with the average direct cost of financial rescue programmes in past crises. Yet these figures may hide a more severe situation in some of the countries hardest hit by the financial crisis. For example, the United Kingdom and the United States have pledged 11.9% and 7.4% of 2009 GDP, respectively, of which 6.6% and 4.9% of GDP has so far been used. See IMF, *Fiscal Monitor: Navigating the fiscal challenges ahead*, May 2010.

Fiscal prospects in emerging market economies

Emerging market economies (EMEs) are likely to face fiscal challenges in the years ahead. At first glance, their fiscal position overall seems manageable. Indeed, unlike in the industrial countries, the ratio of public debt to GDP for EMEs as a whole is projected to change very little from its pre-crisis level of around 35%. Also, the rapid growth enjoyed by many EMEs raises the hope that their public debt ratios will not rise as fast as those of the industrial economies. Moreover, the high return to public investment in the EMEs can help sustain higher debt provided the latter is not financing wasteful consumption.

However, the aggregate fiscal position of EMEs masks important cross-country differences. For instance, the ratio of public debt to GDP of some EMEs such as Hungary and India, at around 80% or more at the end of 2009, remains high. More generally, some of the factors that have made EMEs less capable of supporting levels of public debt similar to those of more advanced economies might continue to be relevant.

First, weaker inflation credibility in EMEs requires their governments to depend to a greater extent on foreign currency borrowing to finance their fiscal deficits, which exposes them to fluctuations in the external value of their currency and to sudden reversals of capital flows. For example, foreign currency debt accounted for 63%, 58% and 40% of total public debt in Indonesia, Hungary and Poland, respectively, in 2009. However, Brazil and India, which are among the EMEs with the highest debt, finance their deficits mostly from domestic sources.

Second, the tax base – and, hence, tax revenue relative to GDP – is generally smaller in EMEs and cannot be easily expanded, given their lower degree of urbanisation and development. For example, the revenue/GDP ratio is below 25% in several Asian EMEs, compared with an OECD average of about 38% in 2008. Third, EMEs tend to be more vulnerable to adverse shocks in international trade and financial markets. A great concern now is that a possible intensification of fiscal problems in advanced economies may spill over to EMEs through weaker demand for exports as well as through an increase in investors' risk aversion and a deterioration of credit conditions. Fourth, fiscal policy remains very expansionary in some EMEs, contributing to booms in asset prices that may prove unsustainable. For instance, large fiscal stimulus programmes in China have been associated with the recent rapid expansion of bank credit there, which has created major risks for the economy and the financial system.

In addition to traditional challenges, several EMEs also face a rapidly growing elderly population as well as an increasing demand for social welfare coverage. Expanding the social safety net is desirable not only on its own merits but also because of the need to reduce large national savings in some countries and, thereby, global current account imbalances. But any such expansion must not jeopardise the long-term viability of the fiscal system.

of GDP are projected to rise in the period 2011–50 by several percentage points in Germany, Greece, Spain, the United Kingdom and the United States but by a more modest amount in France, Italy and Japan (Graph V.3, right-hand panel).

... as age-related spending is set to rise

Long-term projections of public debt

The severity of the fiscal problems facing industrial countries is illustrated by long-term projections of public debt/GDP covering the period 2010–40 in selected countries (Graph V.4). The first two years of the projections – 2010 and 2011 – correspond to the data shown in Table V.1; from 2012 onwards, the projections abstract from short-term variations in output and interest rates. As such, they are best thought of as trends around which actual debt ratios might fluctuate. In addition, a number of simple assumptions are made. First, the real effective interest rate paid on debt is assumed to be the same as its 10-year pre-crisis average (1998–2007). Second, real GDP is assumed to grow at its potential rate as estimated by the OECD for the period 2012–25. Finally,

Projections of public debt up to 2040

possible interactions among output, interest rates and fiscal policy are not considered.

Three illustrative scenarios

In the first scenario (labelled "Baseline" in Graph V.4), revenues and non-age-related spending as a share of GDP for the 2012–40 period remain constant at the OECD-projected 2011 values, and the rate of increase in age-related spending is set so as to make the cumulative increase up to 2040 match the estimates made by the sources used for Graph V.3.[4] In this scenario, part of the cyclical deficit is expected to linger for some years. As it moves further into the projection period, the baseline scenario becomes increasingly unrealistic. Sooner or later, something will occur to prevent debt from exploding: governments will adopt corrective measures on their own, or they will be forced to act as sovereign risk premia reach unbearable levels.

Public debt will continue on an unsustainable path ...

The second and third scenarios are simulations of two possible courses of corrective action. In the second scenario (labelled "Gradual adjustment"), the primary budget balance (revenues less expenditures excluding interest payments on outstanding debt), excluding age-related spending, is assumed to improve relative to GDP by 1 percentage point a year for 10 years (a total swing of 10 percentage points – large by historical standards) and then to remain constant at the new level as a share of GDP for the rest of the projection period. In the third scenario ("Gradual adjustment and constant age-related spending"), the 10 percentage point improvement is coupled with the assumption that age-related expenditures will remain constant, as a share of GDP, at OECD-projected 2011 levels throughout the projection period.

... unless large deficits are cut ...

The second scenario's gradual improvement of the primary budget stance succeeds, after a decade or so, in putting the debt/GDP ratio on a steadily declining path in France, Ireland and Spain but not in Japan, the United Kingdom or the United States. The improved primary balance stabilises the debt/GDP ratio in the United States only until 2025, after which pressure from the increase in age-related expenditures causes the ratio to start drifting up again. In Japan and the United Kingdom the ratio does not stabilise, but its ascent is slowed. The second scenario thus suggests that, in reality, the adjustment in the primary balance could be larger than assumed in the projections, or front-loaded, in some of the countries with the worst debt dynamics.

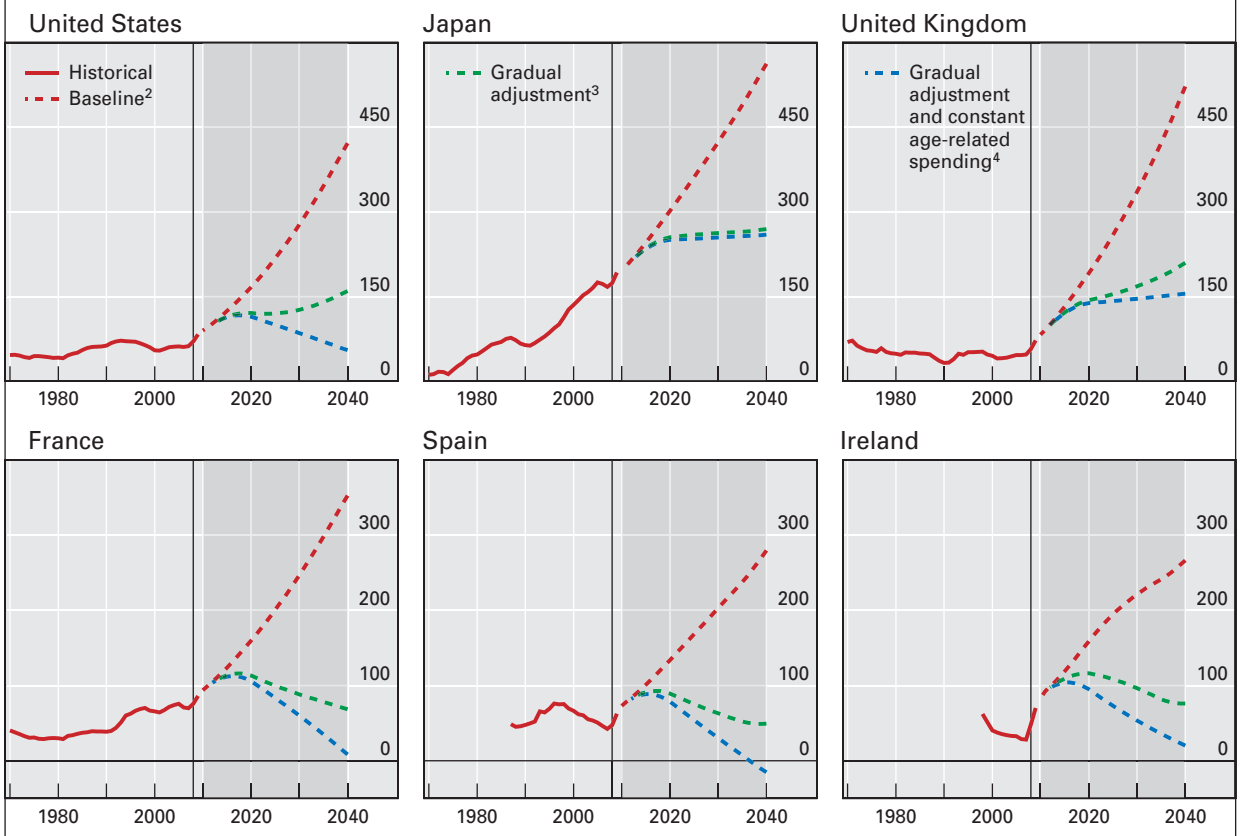
... and age-related spending is contained

Coming on top of the improvement in the primary balance, the freeze of the GDP share of age-related expenditures leads to a faster decline in the debt/GDP ratio or a slower rate of increase. Preventing age-related spending from growing faster than GDP for the entire projection horizon may be somewhat unrealistic. Nonetheless, the results suggest that early efforts to reduce future age-related spending or finance the spending through additional taxes and other measures (discussed below) could significantly improve fiscal sustainability in several countries over the medium term. Moreover, the fact

[4] The European Commission provides projections for age-related expenditure between 2008 and 2060; see "2009 ageing report: economic and budgetary projections for the EU-27 member states (2008–2060)", provisional version, *European Economy*, no 2, 2009; and "European economic forecast: autumn 2009", *European Economy*, no 10, 2009. Using these projections, we interpolated an annual series for age-related expenditure from 2012 to 2040.

Gross public debt projections[1]

As a percentage of GDP



[1] Refers to general government debt; the shaded area covers projections by the OECD (2010–11) and BIS (2012–40). The vertical line corresponds to 2008, the first full year of the crisis. [2] Based on the following assumptions throughout the BIS projection: constant growth of potential real GDP at the rate estimated by the OECD for 2012–25, constant real effective interest rate at the 10-year pre-crisis average, 2011 revenue and non-age-related spending (both as a percentage of GDP) held constant and age-related spending as a percentage of GDP based on estimates by sources in Graph V.3 and on procedure detailed in footnote 4 in the main text of this chapter. [3] The baseline primary balance excluding age-related spending (as a percentage of GDP) improves from the 2011 level by 1 percentage point per year for the first 10 years of the projection and remains at that level for the remaining period (all other assumptions as in the baseline scenario). [4] Gradual adjustment scenario with the additional assumption that age-related expenditures as a percentage of GDP remain constant at the 2011 level.

Sources: OECD; BIS calculations. Graph V.4

that the debt/GDP ratio falls in some countries to very low levels towards the end of the forecasting period suggests that the fiscal adjustment in those countries could be smaller than assumed in this scenario.

Consequences of high debt

History and compelling economic arguments warn against a large and rapid build-up of public debt. Such profligacy threatens the government's solvency, reduces potential growth and lowers living standards. It also impairs the ability of the monetary authority to control inflation.

Risks of sovereign default

Among industrial countries, default is not unknown ...

Apart from Germany and Japan in the wake of the Second World War, no industrial country has defaulted since 1945. But a longer view of history reveals

that large increases in public debt – often the consequence of banking crises – tend to be followed by episodes of high inflation and an increase in the number of sovereign defaults, even among the advanced economies of the time. Typically, countries chose to incur the consequences of defaulting on their debt or rescheduling it when they viewed the financial and other consequences of inflation to be even worse.[5]

... and its probability has now increased

Recently, the spectre of sovereign default descended again on southern Europe. Greece, with its bond yields spiralling upwards, had to ask for external financial help to continue refinancing its debt. A combination of factors – very weak growth prospects, high unemployment rates, a constant erosion of international competitiveness and the lack of fiscal transparency – had led to a continued weakening of investors' confidence in the government's creditworthiness. The erosion of confidence accelerated when it became clear that other European countries were struggling to agree on the extent and conditions of financial support. Risk premia on Greece's debt shot up, exposing financial firms in several countries to potentially large capital losses and the private sector to a tightening of credit conditions.

As the bailout package for Greece was being finalised, the crisis took a turn for the worse when yields on sovereign bonds of other countries, especially Portugal and Spain, began to rise sharply. The fiscal position in both those countries is better than in Greece, but like Greece they have poor growth prospects and large trade deficits and cannot adjust through currency depreciation or monetary expansion. New support measures announced in May by European governments, the IMF and the ECB managed to calm markets' fears, at least temporarily, allowing governments some time to introduce the necessary measures to consolidate public finances and improve the prospects for economic growth.

Countries are more vulnerable when dependent on capital flows ...

The recent European crisis also showed that the risk of adverse debt dynamics taking hold is greater in countries with a low saving rate relative to investment, which forces them to rely in part on inflows of foreign capital to finance their budget deficits. Currently, non-residents hold a substantial part of the government debt of many industrial countries, particularly of Greece, Italy and the United States (Graph V.5, left-hand panel).

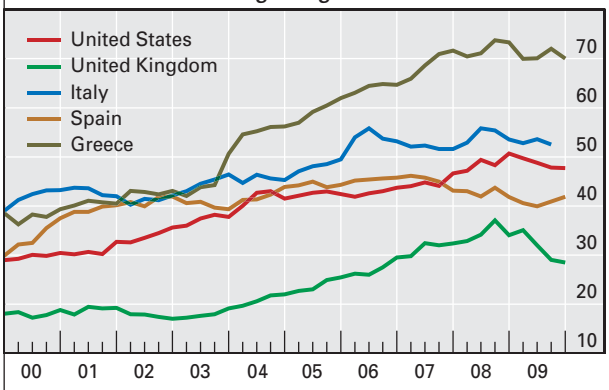
... and short-term financing

In addition, the vulnerability to a run on the debt is clearly higher when a country has to refinance a large portion of its debt every year. As demand for long-term bonds weakens, governments may be forced to increasingly borrow short term, leading to a steady reduction of their average debt maturities. In Italy, for example, the average maturity of public debt shortened from about seven years in 1973 to only about one year in 1982, making the country more vulnerable to a run in those years. Currently, the average public debt maturity in most industrial countries is relatively long, but it could start to shorten again if investors come to see long-term investment as risky (Graph V.5, right-hand panel).

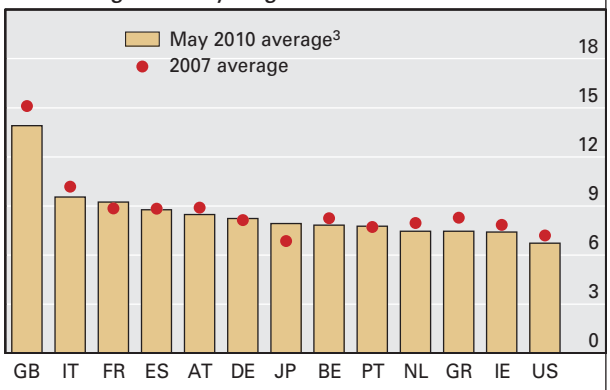
[5] See C Reinhart and K Rogoff, "From financial crash to debt crisis", *NBER Working Papers*, no 15795, March 2010; and C Reinhart and K Rogoff, "The forgotten history of domestic debt", *NBER Working Papers*, no 13946, April 2008.

Government debt structure

Non-resident holdings of government debt[1]



Remaining maturity of government debt[2]



AT = Austria; BE = Belgium; DE = Germany; ES = Spain; FR = France; GB = United Kingdom; GR = Greece; IE = Ireland; IT = Italy; JP = Japan; NL = Netherlands; PT = Portugal; US = United States.

[1] As a percentage of total government debt; definitions may differ across countries. [2] In years; domestic government debt as represented in the JPMorgan Government Bond Index. [3] Up to 26 May.

Sources: JPMorgan Chase; national data. Graph V.5

Macroeconomic consequences

Lower growth may result ...

Even if adverse debt dynamics can be avoided, three key factors that accompany higher levels of public debt may lead over time to a reduction of potential economic growth and a fall in living standards: higher interest payments, greater competition for portfolio investment and the impairment of fiscal policy.

First, the larger share of fiscal resources needed to service a higher public debt might crowd out productive expenditures (such as for infrastructure, education and health) and could also lead to higher distortionary taxation. Second, the higher level of public debt will compete with other investments in private portfolios, including other countries' government bonds. The competition, along with higher default and inflation risk premia, could push up real interest rates and lead to an offsetting fall in the private stock of capital. International flows of capital could limit these effects, but the interest paid to foreign residents would reduce domestic income. Third, higher debt may limit the scope and effectiveness of fiscal policy, including the operation of automatic stabilisers; the resulting higher macroeconomic volatility is likely to discourage capital accumulation.

... but the evidence is limited

Although the evidence on the growth implications of high levels of public debt is slim, it suggests that the effects could be significant. Among countries with a debt/GDP ratio of more than 90%, the median growth rate of real GDP is 1 percentage point lower (and the average is 4 percentage points lower) than in countries with a lower ratio. Recent evidence also suggests that the expected increase in the debt/GDP ratio in the advanced economies for the 2007–15 period may permanently reduce future growth of potential output by more than half a percentage point annually.[6]

[6] See C Reinhart and K Rogoff, "Growth in a time of debt", *NBER Working Papers*, no 15639, January 2010; and IMF, *Fiscal Monitor: Navigating the fiscal challenges ahead*, May 2010.

Fear of future inflation is related to ...

The continued deterioration of fiscal balances could also complicate central banks' task of keeping inflation low and stable, for at least two reasons. One is that rapidly mounting public debt heightens the temptation to tolerate an unexpected rise in inflation to reduce the real value of the debt, particularly when a large part of the outstanding domestic currency debt is long-term and a large share is foreign-owned. That temptation will also be greater if the public budget is based mainly on nominal flows, so that unexpectedly higher inflation would boost the real value of tax revenues and reduce that of public expenditure. As a result, the political pressure on the central bank to accommodate higher inflation may increase. Yet any benefit from unexpected inflation would be temporary, while the cost would certainly be higher and longer-lived. The cost includes permanently higher future real interest rates, the misallocation of resources caused by higher inflation, and the loss of output that would probably be needed to bring inflation back to its original level.

... the temptation to inflate away public debt ...

... or the unwillingness of the public to hold government debt

A second reason why high and rising debts may lead to higher inflation is that the public, confronted with the continued failure of government to close the fiscal gap, may eventually become unwilling to hold government bonds. To avert an outright sovereign default when the outstanding debt can no longer be rolled over, the central bank would be forced to purchase government bonds and thus let the money supply expand. Unlike in the previous case, this is more likely to occur the shorter the average maturity of the debt. Moreover, when a large fraction of the debt is of short maturity, efforts to reduce inflation by raising interest rates might eventually fail to work: the rise in interest rates would be rapidly translated into higher interest payments and hence higher debt, thereby bringing forward the likely time for monetisation.

High-inflation scenarios are tail risks ...

Even if these high-inflation scenarios remain unlikely in the immediate future, any increase in the probability attached to them could quickly have adverse effects. One is that agents would revise up their expectations of future inflation as well as demand greater compensation for inflation risk, causing medium- and long-term interest rates to rise.[7] Another potential effect is that investors would take refuge in foreign assets, causing a sharp depreciation of the currency and a consequent rise in inflation. Any of these effects might reduce central banks' room for manoeuvre in stabilising inflation at both short and long horizons.

... which could push up interest rates and unsettle exchange rates

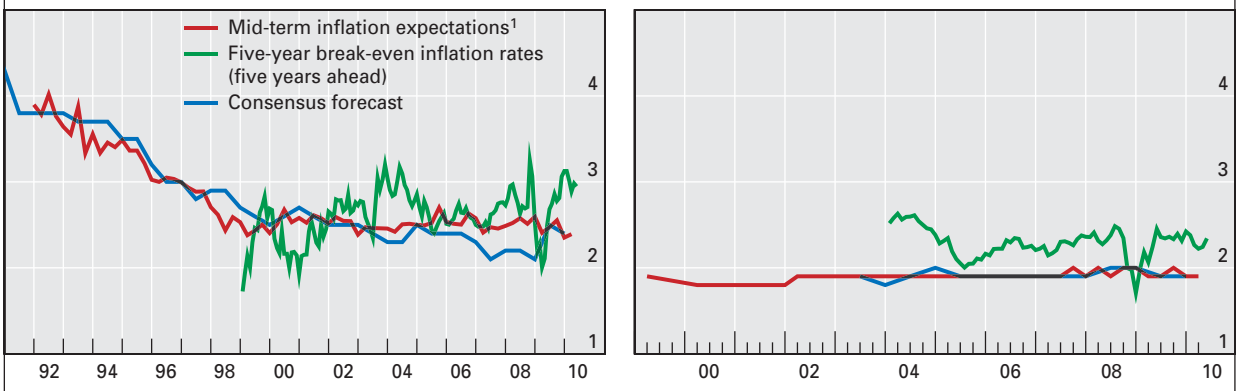
Inflation expectations remain anchored

How realistic is the worry that fiscal deterioration will lead to higher inflation? So far, there is no evidence that inflation expectations have become unanchored (Graph V.6). However, a failure by governments to make headway in restoring fiscal sustainability increases the risk that inflation expectations may abruptly and unexpectedly change.

[7] For example, even if the central bank does not yield to political pressure to accommodate higher inflation, the rise in perceived inflation benefits could be interpreted by financial markets as an increase in the risk that the central bank will lose its independence under the pressure of unsustainable public finances, and therein could lie a rise in expected inflation.

Inflation expectations

In per cent



[1] From Survey of Professional Forecasters (SPF). For the United States, 10 years ahead; for the euro area, five years ahead.

Sources: ECB, SPF; Federal Reserve Bank of Philadelphia, SPF; © Consensus Economics; national data; BIS calculations. Graph V.6

Addressing fiscal imbalances

Large fiscal consolidations took place in the past ...

Given the unsustainable trajectories of public debt in many industrial countries, a prolonged period of fiscal tightening that brings the primary budget balance to a sizeable surplus is inevitable. In this regard, the experiences with a number of tightenings by industrial countries in the past 30 years offer grounds for optimism (Table V.2). Several of the consolidation efforts involved swings in the structural primary balance (SPB) of nearly 10% of GDP and lasted for several years. Each instance of consolidation either stabilised the debt/GDP ratio or reduced it; and in some episodes the reduction of the debt/GDP ratio continued for several years after the end of the consolidation period.

For example, after a large rise in public debt in the early 1980s, Denmark managed to raise its SPB from a deficit of 6.4% of GDP in 1982 to a surplus of 7.0% in 1986 (a swing of more than 13 percentage points in four years). Sweden, still in the midst of a recession after a banking crisis in the early 1990s, launched a consolidation plan that raised its SPB from a deficit of 7.1% of GDP in 1993 to a surplus of 4.7% in 2000 (a swing of almost 12 percentage points). Despite an initial reversal and a change of government, Ireland managed to move from a deficit of 7% of GDP in 1980 to a surplus of almost 5% in 1989 (a move of nearly 12 percentage points). And after a comprehensive spending review, Canada gradually adjusted its SPB from a 5.4% deficit in 1985 to a 5.7% surplus in 1999. Its run of surpluses lasted until 2008 and reduced its debt/GDP ratio from a peak of 102% in 1996 to 65% in 2007.

... under different macroeconomic conditions

An assessment of the relevance of these cases of large fiscal adjustments to today's needs shows that, on the one hand, they overcame employment conditions that were quite difficult (Table V.2) – Canada, Ireland and Italy in particular experienced rising unemployment at the beginning of the consolidation period or at some point during its course. On the other hand, the countries making the adjustments enjoyed real GDP growth over the adjustment period that was comparable to the growth rates prevailing in several industrial

Examples of successful large fiscal adjustments

Country and period of consolidation[1]	Structural primary balance[2]			General government debt[3]			Real GDP growth	Inflation rate	Interest rate[4]	REER[5] change	Un-employ-ment rate
	Swing	Start[6]	End	Start[6]	Peak	End	Average over the episode				
	As a percentage of GDP						In per cent				
Denmark (1983–86)	13.4	–6.4	7.0	65	77	72	3.9	5.4	11.8	1.7	6.8
Sweden (1994–2000)	11.8	–7.1	4.7	78	84	64	3.7	1.0	6.1	–0.9	10.1
Ireland (1980–89)	11.8	–7.0	4.8	68	114	100	3.1	9.3	10.5	1.0	14.5
Canada (1986–99)	11.1	–5.4	5.7	67	102	91	2.8	2.8	11.1	–1.4	9.2
Belgium (1984–98)	10.3	–3.6	6.7	107	141	123	2.3	2.6	8.3	0.3	8.9
Italy (1986–97)	10.2	–3.4	6.7	89	130	130	2.1	5.0	10.6	–0.1	10.2
Sweden (1981–87)	8.6	–5.7	2.9	47	71	62	2.2	7.6	9.0	–1.7	3.7
United Kingdom (1994–2000)	7.7	–4.4	3.3	49	53	45	3.5	1.8	7.0	2.7	7.3
Japan (1979–90)	7.0	–4.9	2.1	41	77	64	4.6	2.7	6.6	0.5	2.4
Western Germany (1980–89)	5.2	–3.7	1.5	29	41	40	1.9	2.9	7.8	–1.5	5.2
United States (1993–2000)	4.9	–1.7	3.2	70	72	54	3.9	2.6	6.7	2.4	5.2
Netherlands (1991–2000)	4.6	–2.2	2.5	88	96	64	3.2	2.4	6.4	–0.6	4.8
Spain (1995–2006)	3.7	–0.6	3.1	64	76	46	3.6	3.1	5.4	0.9	12.6

[1] The choice of the initial and final year of each consolidation period is based on the observed troughs and peaks in the structural primary balance, with some arbitrary adjustments in those cases where the data do not suggest a clear pattern. [2] General government cyclically adjusted primary fiscal balance. [3] For Ireland, the data source is the European Commission annual macroeconomic database (AMECO). [4] Nominal effective interest rate on public debt computed from government gross interest payments at period *t* divided by government gross financial liabilities at period *t*–1. [5] Real effective exchange rate based on consumer price index; an increase indicates an appreciation. [6] The starting value refers to the period preceding the adjustment episodes; for Ireland, structural primary balance not available before 1980.

Sources: European Commission AMECO database; OECD; Datastream; national data; BIS calculations. Table V.2

countries in the years preceding the recent crisis. In some episodes, favourable external demand conditions may indeed have facilitated the adjustment.

Another fact that stands out is that large consolidation efforts took place amid a wide range of conditions regarding real exchange rates and real interest rates. In particular, currency depreciation and monetary policy accommodation may have facilitated fiscal adjustment in some countries, but not in all. Unfortunately, empirical research that seeks to control for the influence of various factors has so far failed to reach a consensus on the role played by external and monetary conditions in ensuring the success of fiscal consolidations.

Composition of fiscal adjustment is key to success ...

The same research, however, unequivocally points to the importance of the "quality" of fiscal adjustment.[8] Most of the successful consolidations were

[8] See eg A Alesina and R Perotti, "Fiscal adjustments in OECD countries: composition and macroeconomic effects", *IMF Staff Papers*, vol 44, no 2, June 1997; S Guichard, M Kennedy, E Wurzel and C André, "What promotes fiscal consolidation: OECD country experiences", *OECD Economics Department Working Papers*, no 553, May 2007; J McDermott and R Wescott, "An empirical analysis of fiscal adjustments", *IMF Staff Papers*, vol 43, no 4, December 1996; and M Kumar, D Leigh and A Plekhanov, "Fiscal adjustments: determinants and macroeconomic consequences", *IMF Working Papers*, no WP/07/178, July 2007.

biased towards expenditure cuts – specifically, reductions in government consumption including public wages – while the least effective were biased towards cuts to productive public investment. In countries that started from a low level of taxation, increases in tax revenues were also helpful, in which cases taxes on consumption and measures to broaden the tax base were the most effective. And consolidation efforts were often accompanied by structural reforms that improved the functioning of the labour market and reduced taxes on labour and capital.

... as are structural reforms

One important conclusion from the examination of past episodes is that consolidation efforts of the size required today can be implemented, although the growth and employment conditions facing countries may be tougher now than before. Countries with a high and rapidly increasing level of public debt and whose creditworthiness has been questioned have no option but to implement fiscal adjustment immediately. For those countries, any delay is itself a threat to the financial system and the economic recovery. Indeed, if they undertake fiscal tightening now, the improved confidence and lowered risk premia that result will outweigh the short-term output cost. At the time of writing, the governments of Greece, Portugal and Spain had announced a number of austerity measures, including cuts to public wages and increases in taxes. If implemented fully, such measures should lead to a sizeable reduction in fiscal deficits in the short and medium term. Yet these countries would still face significant challenges in making the adjustment needed to restore investors' confidence in the sustainability of their finances.

Fiscal adjustment is unavoidable for most countries ...

Other countries that continue to enjoy investors' confidence have a higher degree of fiscal credibility and so may have some flexibility in choosing the timing and pace of their fiscal consolidation. But if they are to preserve that flexibility – by forestalling any rise in default and inflation risk premia – they should announce clear and credible plans to reduce their current fiscal deficits and to address their long-term fiscal imbalances.

... but some may have more flexibility in choosing its timing and pace

Countries have at least two broad options to ensure the long-term viability of their public finances. The first is to promote an increase in overall productivity and in the growth of potential output through measures such as a commitment to cutting unproductive expenditures, changing the structure of the tax system and implementing reforms in labour and product markets. The speedy introduction of such measures would contribute to underpinning market confidence and keeping interest rates low, thereby facilitating the reduction of current fiscal deficits.

Two options for the long term: boost productivity and growth ...

The second option is to boost the size of the labour force relative to the size of the elderly population. To this end, one approach is to favour immigration into countries with a rapidly growing elderly population. Another is to increase the rate of labour market participation, especially of women (at 64% in the OECD countries in 2008, it is well below the rate of 84% for males) and of older workers. In this regard, an effective and enduring solution is to favour a lengthening of employees' working life through some combination of an increase in the statutory retirement age and an increase in the incentives to retire later. An increase in the expected age of retirement may partly alleviate the need to cut benefits – announcing such cuts could lead to higher saving

... and increase the size of the workforce

rates and hence work against supporting aggregate demand. Likewise, a later retirement age could alleviate the need to raise taxes to high levels, which would significantly distort labour market choices and weigh more heavily on young and future generations.[9]

Summing up

Deteriorating public finances in industrial countries pose major macroeconomic risks to the global economy. Not only can high and rising levels of public debt endanger medium- and long-term growth prospects, but they can also undermine the credibility of monetary policy in maintaining low inflation. In addition, the massive long-term fiscal imbalances in the industrial countries are hidden by the much smaller current official figures for their public debt – a problem that certainly points to the need for greater transparency in reporting. Equally important is the need to base budget projections on prudent assumptions. On both points, the establishment of independent agencies to monitor public accounts and projections could prove beneficial.

The required adjustment currently facing advanced economies is surely large but not unprecedented. A credible commitment by governments to reduce or eliminate their current and future fiscal deficits will pay rewards over time. Any possible initial costs of fiscal tightening in terms of reduced short-term output growth will be outweighed by the persistent benefits of lower real interest rates, greater stability of the financial system and better prospects for economic growth.

[9] See eg R Barrell, I Hurst and S Kirby, "How to pay for the crisis or: macroeconomic implications of pension reform", *Discussion paper*, no 333, National Institute of Economic and Social Research, London, 2009; and D Krueger and A Ludwig, "On the consequences of demographic change for rates of return to capital, and the distribution of wealth and welfare", *Journal of Monetary Economics*, vol 54, January 2007, pp 49–87.

VI. The future of the financial sector

At the current juncture, the financial sector faces several challenges. In the near term, these stem directly from the crisis itself. In the longer term, they are related to efforts by market participants and regulators to build a more resilient financial system. Adjustments to the size of institutions, as well as their scope, funding methods, risk management practices, revenue sources and international operations, will reshape the financial sector.

The crisis revealed structural deficiencies in the sector's business model. For several decades, financial institutions have resorted to high leverage as a way to boost short-term profitability, at the cost of a marked volatility in their performance. Weak capital, illiquid assets and reliance on short-term funding created vulnerabilities that led in recent years to large losses and systemic distress.

A new business model, based on stronger capital and liquidity buffers, would make the performance of financial institutions more robust, thus stabilising the flow of credit to the economy. Several factors will play a role in a successful convergence to such a model. For one, the regulatory environment will need to reward prudent behaviour by financial institutions and create incentives for markets to do the same. For their part, institutions will need to reduce operating costs and restructure their financing, including that of their international activities.

This chapter outlines the financial sector's current business model and then discusses its future evolution. It starts by comparing the risk-return profile and size of the financial sector with those of other sectors of the economy. After discussing likely near-term developments in the financial sector, the chapter turns to the drivers of a new business model, in which sustainable profits are based on strong balance sheets.

The financial sector in the context of the broader economy

A comparison across different sectors of the economy casts unfavourable light on distinct features of the financial business model. Over the long term, this model has produced a sub-par risk-return profile and has disappointed investors at times of economy-wide stress. The importance of greater stability in the financial sector is underscored by the sector's increased weight in overall economic activity and by its growing international dimension.

Relative performance

Financial firms' performance has been competitive ...

Finance is about managing risk and leverage. In fact, the performance of financial firms has been underpinned by leverage that is about five times that of firms in other sectors (Table VI.1). High leverage has allowed financial firms to post a competitive return on equity – which is what matters to shareholders – despite a low return on assets.

... but extremely volatile ...

While the return on equity of financial firms has been comparable to that of firms in other sectors, it has been less stable. Since leverage amplifies the

Profitability and leverage

Medians across years and institutions

	Return on assets[1]				Return on equity[2]				Leverage[3]			
	95–09	95–00	01–07	08–09	95–09	95–00	01–07	08–09	95–09	95–00	01–07	08–09
Banks	0.6	0.7	0.7	0.2	12.2	13.3	12.8	3.2	18.3	17.8	19.1	17.4
Non-bank financials	0.9	1.0	1.0	0.5	11.2	12.3	11.4	5.4	12.1	12.5	12.1	10.8
Non-financials	3.2	3.0	3.4	2.8	11.7	10.9	12.8	9.8	3.0	3.0	3.0	2.9
Energy	5.9	3.9	8.1	5.2	14.2	10.8	18.6	10.1	2.4	2.5	2.3	2.2
Materials	4.3	4.3	4.7	3.2	10.6	8.8	13.1	8.5	2.5	2.4	2.5	2.7
Industrials	2.1	1.4	2.4	2.3	10.4	8.3	11.5	11.0	5.4	6.1	5.4	4.8
Consumer discretionary	2.2	2.1	2.6	1.1	9.1	8.9	10.4	4.2	3.4	4.0	3.1	3.1
Consumer staples	5.4	5.2	5.7	5.1	13.0	12.4	13.8	11.7	2.5	2.4	2.5	3.0
Health care	8.1	8.0	8.3	6.5	18.2	18.8	18.5	15.3	2.3	2.3	2.3	2.3
Information technology	5.1	5.1	5.0	5.6	12.8	15.1	12.8	10.3	2.2	2.2	2.1	2.0
Telecom services	3.2	3.6	2.8	2.9	8.5	10.8	8.4	6.4	2.6	2.7	2.6	2.7
Utilities	2.7	2.5	2.7	2.7	10.8	9.3	11.6	11.9	4.1	3.7	4.4	4.0

[1] Net income over total assets, in per cent. [2] Net income over total shareholder funds, in per cent. [3] Total assets over total shareholder funds.

Source: Bloomberg. Table VI.1

sensitivity of equity returns to economic conditions, financial stocks have been consistently more volatile than non-financial stocks (Graph VI.1, left-hand panel). Moreover, in many countries financial firms have posted lower equity returns than the rest of the market over long periods (centre panel). In some cases, the difference was 4% or more per year over a decade. Thus, despite several decades of higher returns on financial stocks, their risk-adjusted performance has been similar to or weaker than that of non-financial stocks over the past 40 years (right-hand panel).

... and sub-par in periods of general stress

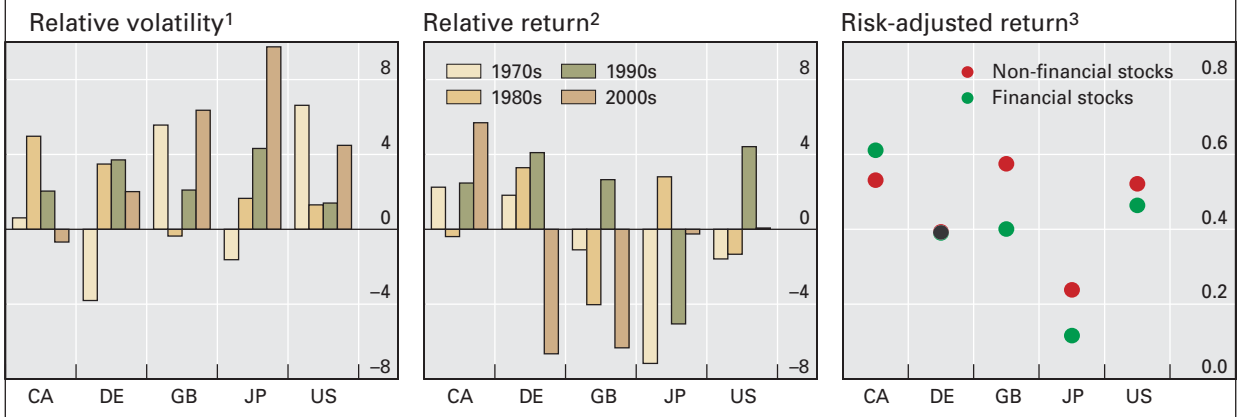
Given high leverage, the dependence of financial firms on short-term funding and their opaque and illiquid risk exposures have heightened the sector's sensitivity to economic downturns. As a result, financial stocks have posted particularly weak returns in periods of generalised market stress. When returns on the overall market have been extremely low (concretely, in the bottom 20% of their historical range), returns on financial stocks have tended to be lower than those on non-financial stocks, by 10 percentage points or more on an annual basis (Graph VI.2, left-hand panel). In comparison, financial stocks have outperformed the rest of the market by modest margins during booms (Graph VI.2, right-hand panel). These gains have typically failed to compensate for losses in periods of general stress, reflecting the asymmetrical effect of balance sheet illiquidity and high leverage on equity valuations.

Relative size

The size of the financial sector ...

The importance of financial sector stability for economic performance has grown with the sector's share in overall activity. Thanks to advances in communications, computing and financial know-how, the financial sector's size and share in value added have increased over time. In the United States, Canada

Relative performance of financial stocks



CA = Canada; DE = Germany; GB = United Kingdom; JP = Japan; US = United States.

[1] Average volatility of weekly returns on financial stocks minus that on non-financial stocks, annualised; in per cent. [2] Average return on financial stocks minus that on non-financial stocks, annualised; in per cent. [3] Average return between 1973 and 2010, divided by the corresponding standard deviation of returns.

Source: Datastream. Graph VI.1

and Australia, this share has approximately doubled since 1980, reaching 8% in 2009. In Europe and Japan, the sector's growth has been somewhat more moderate, resulting in current shares of about 6% (Graph VI.3, left-hand panel).

... has increased in relative terms ...

Financial firms have also accounted for a large, often growing, share in the global investment portfolio.[1] Organic expansion and successive waves of

Financial stocks in extreme market-wide events[1]

1973–2010

CA = Canada; DE = Germany; GB = United Kingdom; JP = Japan; US = United States.

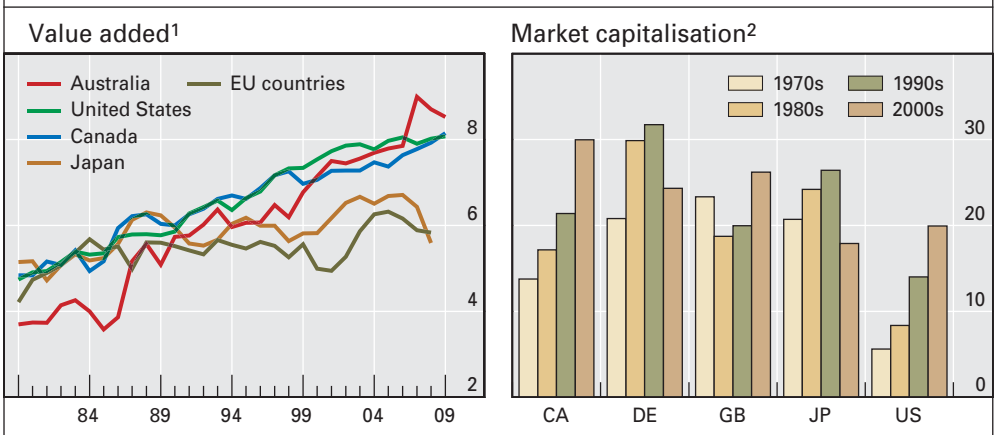
[1] Average quarterly return in each financial subsector minus that in non-financial sectors; annualised, in per cent. [2] When the quarterly return in the whole market is equal to or smaller than the 20th percentile of its empirical distribution. [3] When the quarterly return in the whole market is equal to or greater than the 80th percentile of its empirical distribution.

Source: Datastream. Graph VI.2

[1] For an illustration of the growth of UK banks' balance sheets relative to overall economic activity in the United Kingdom, see P Alessandri and A Haldane, "Banking on the state", speech, Bank of England, November 2009.

Size of the financial sector

In per cent



CA = Canada; DE = Germany; GB = United Kingdom; JP = Japan; US = United States.

[1] As a share of the total value added in the economy. [2] Market capitalisation of the financial sector as a share of total stock market capitalisation.

Sources: Datastream; national data. Graph VI.3

consolidation have generally increased the relative size of the largest financial firms, as indicated by their weight in the overall capitalisation of headline equity price indices in many countries (Graph VI.3, right-hand panel). Patterns have differed internationally. The increase has been steeper and more stable in North America than in Europe. For its part, the share of Japanese financial firms in Japan's overall equity market capitalisation has plummeted since the country's financial crisis in the early 1990s.

Growth of international banking

... and also along its international dimension

The expanding international dimension of finance also increases the importance of the sector's stability. The growth in the international business of financial firms has contributed to global economic integration but also to the spillover of stress across borders. International lending – whether conducted from the home office, or by local affiliates in foreign countries, or via international hubs – has trended upwards as a share of banks' total (ie domestic plus international) lending to non-banks (Graph VI.4, left-hand panel).[2] For European banks, this share has grown strongly over the past five years, and currently stands at more than one third. Partly because of their larger domestic economies, Japanese and US banks channel abroad less than 15% of their lending.

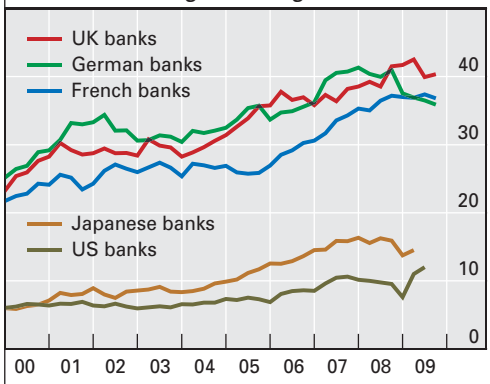
Non-bank borrowers' reliance on foreign banks has varied across national economies but has been generally substantial (Graph VI.4, right-hand panel).

[2] The different forms of international bank lending are associated with different degrees of currency, funding, country and banking group-level risks. See P McGuire and N Tarashev, "Bank health and lending to emerging markets", *BIS Quarterly Review*, December 2008; R McCauley, P McGuire and G von Peter, "The architecture of global banking: from international to multinational?", *BIS Quarterly Review*, March 2010; and Committee on the Global Financial System, "Funding patterns and liquidity management of internationally active banks", *CGFS Papers*, no 39, May 2010.

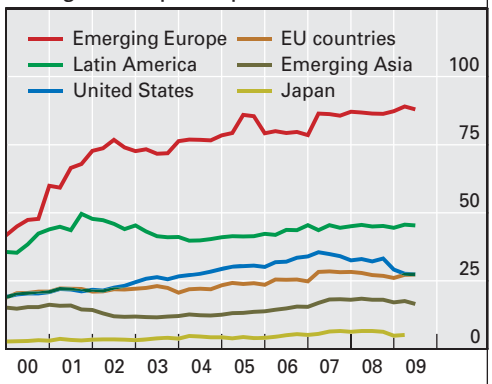
Scale of international banking

In per cent

Share of foreign lending[1]



Foreign bank participation[2]



[1] Cross-border and local lending to non-banks residing outside the country where the banks are headquartered as a share of these banks' total lending to non-banks. [2] Cross-border and local lending by foreign banks as a share of total bank lending to non-bank residents of the country or region.

Sources: IMF; BIS international banking statistics. Graph VI.4

At one extreme are the countries of emerging Europe, which obtain more than 80% of their bank borrowing from banks headquartered abroad. At the other extreme is Japan, where borrowers depend on international lenders for just 5% of their financing. In between, foreign banks account for roughly one quarter of overall bank credit in the United States and EU countries. And contrary to conventional wisdom that foreign banks play a larger role in emerging markets, their share in emerging Asian economies is less than 20%.

The financial sector in the near future

In the near term, the sector must deal with ...

In the near term, sector developments will be closely linked to the fallout from the crisis and the related policy responses. Currently, financial firms need to address uncertainties about the post-crisis economic environment and expected changes to the prudential regime. In addition, recent rises in the effective funding rate – a result of market participants' uncertainty about the sustainability of the recent surge in bank profits and about the consequences of financial exposures to troubled sovereigns – have slowed down the recovery process (see Chapter II). Further ahead, institutions will need to address three major challenges: refinancing a large portion of their liabilities; ending their dependence on emergency support measures by the public sector; and redressing balance sheet weaknesses and reducing operating costs.

... refinancing challenges ...

The maturity profile of banks' bond financing shortened during the crisis. For some time, supply constraints prevented financial institutions (although not borrowers from other sectors) from issuing debt beyond the short maturities (Graph VI.5, left-hand panel). This implies particularly high refinancing needs over the course of the next two years, when bonds worth a total of $3 trillion are due to mature (Graph VI.5, right-hand panel).

Importantly, the refinancing will take place in an environment radically different from that in which balance sheets expanded and securitisation could

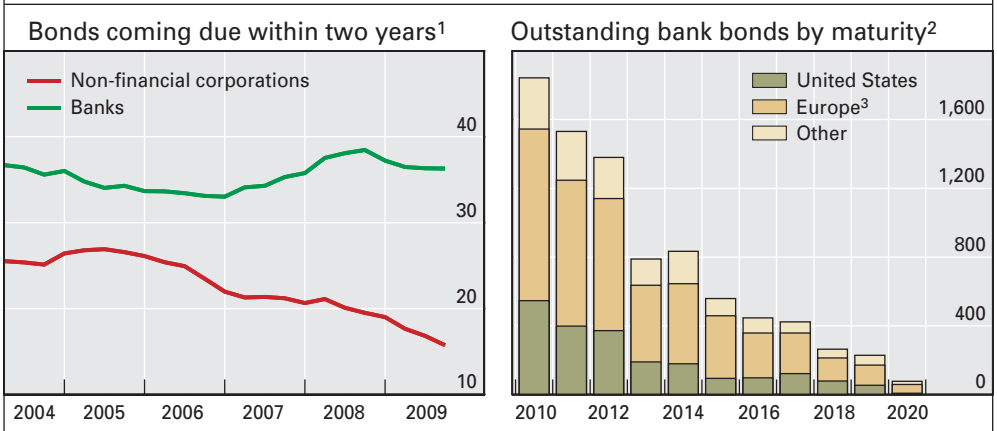
be relied on. Recently, credit spreads on bank bonds have been markedly higher than their pre-crisis levels. For medium-term maturities, they have ranged between 50 and 200 basis points, a tenfold increase from before 2007. Banks will compete for bond market funding amid an ongoing increase in public sector borrowing and an eventual reduction in central bank holdings of public debt. In the long run, banks that have trouble tapping new funding sources will have to shrink.

... the phasing-out of official support ...

The second major challenge for the financial sector arises from the eventual phasing-out of public sector support. The extraordinary measures introduced in response to the crisis helped to quell uncertainty and provide necessary support for markets and institutions. Yet the situation will not be normalised until these measures are fully withdrawn. Currently, only some measures have diminished in importance. Examples are the reduced demand from euro area banks for longer-term repos with the ECB and the declining take-up of the Federal Reserve's Commercial Paper Funding Facility in the United States.

Moreover, evidence suggests that the remaining measures continue to have an impact on banks' funding costs. When gauged by the incremental improvement in bank ratings, the impact of official support might actually be stronger now than before the crisis. According to Moody's, official support in 2009 for the 50 largest banks translated on average into a three-notch upgrade of their rating (from A3 to Aa3), up from a two-notch upgrade in 2006 (from A1 to Aa2). In addition, as recently as December 2009, about one quarter of all bonds issued by banks with higher than average credit default swap (CDS) spreads featured some form of government guarantee. Similarly, government stakes – the outcome of capital injections into troubled banks – remain substantial for a number of important institutions and are likely to diminish only gradually as the performance of these institutions improves. Also, central

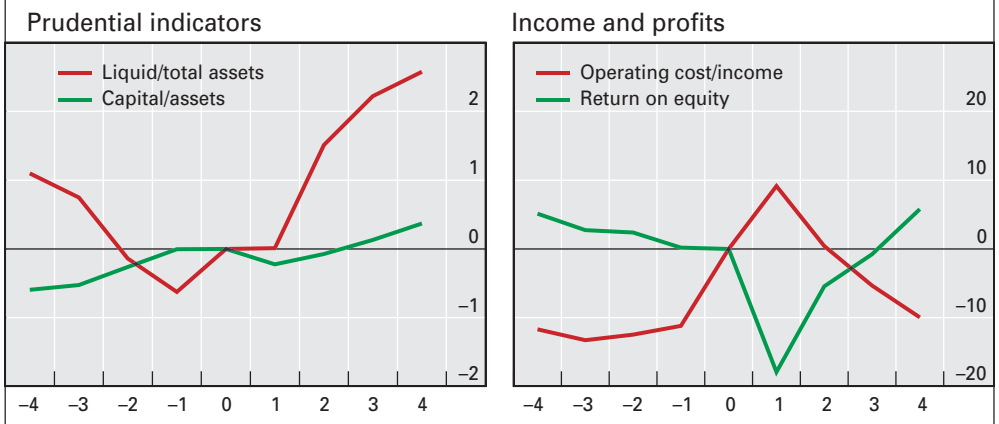
Maturity profile of bank bonds



[1] International bond issues maturing within two years as a percentage of all bonds issued in the international market. [2] Syndicated debt securities with an original time to maturity of more than 360 days placed in domestic and international markets, excluding preferred shares and convertible issues; end-2009 volume outstanding by nationality of issuer, in billions of US dollars. [3] The euro area, Switzerland and the United Kingdom.

Sources: Dealogic; BIS international financial statistics. Graph VI.5

The banking sector around crises[1]



[1] Deviations in the years before and after a banking crisis (horizontal axis) from the level registered in the crisis year (year 0), in percentage points.

Source: OECD. Graph VI.6

banks still hold large portfolios of assets that they purchased with a view to supporting specific markets, such as that for securitised mortgages.

… and challenges to profitability

The third challenge facing the financial sector stems from the need to repair balance sheets and strengthen profitability. After periods of distress, the banking sector tends to act quickly to restore its health. In particular, it rebuilds its liquidity buffers and cuts back operating costs within four years of a crisis (Graph VI.6). In the aftermath of the 1990s crises in the Nordic countries, for example, banks there cut costs by consolidating, shedding branches and reducing staff numbers.[3] In general, such actions are aimed in large part at capturing the attention of investors via a competitive level of return on equity (Graph VI.6, right-hand panel). Importantly, past experience also suggests that post-crisis recoveries are facilitated when financial institutions provide prudential authorities with a realistic picture of their health and convince markets that they are effectively tackling the problem of excess capacity in the sector.[4]

Converging to a new business model

An overhaul of the financial business model …

Both market participants and prudential authorities are demanding a structural overhaul of the financial business model. Increased vigilance by funding markets, as well as greater rigour on the part of rating agencies, has led to more stringency and differentiation in assessing the risk of financial firms. Looking forward, a key priority for the authorities is to embed the current demands in prudential rules that will strengthen the resilience of the sector, forming the basis for sustainable profits. Such rules would induce

[3] See C Borio, B Vale and G von Peter, "Resolving the financial crisis: are we heeding the lessons from the Nordics?", *BIS Working Papers*, no 311, June 2010, which presents an in-depth comparison between the resolution regimes of the recent and Nordic crises.

[4] See BIS, *63rd Annual Report*, June 1993, Chapter VII.

financial institutions to hold stronger liquidity and capital buffers and to use reliable sources of funding.

Drivers of the convergence process

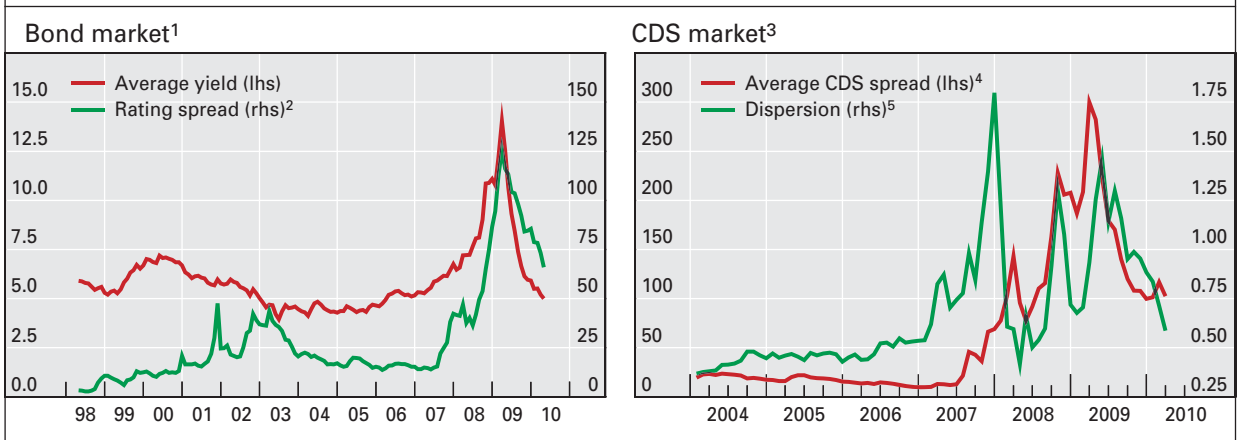
Rating agencies, market participants and prudential authorities will guide the transition of the financial sector to a new business model. From the onset of the crisis, rating agencies have announced that their future ratings will reflect greater scrutiny of financial institutions. Indeed, agencies have started to review more carefully those elements of banks' business that are more dependent on market functioning and sentiment. Examples are large trading operations and short-term wholesale funding. In addition, franchise stability and collateral arrangements have gained importance in the determination of credit ratings.

... is demanded by market players ...

Market participants have also revised their assessment of the risks embedded in exposures to financial institutions. Increasingly, they are supplementing information from the rating agencies with quantitative analysis based on market and institutional data. As a result, the funding costs of financial firms have become more sensitive to credit risk. For instance, even as yields on bank bond indices in the United States and Europe have declined, the differential between the yields on riskier and on relatively safer institutions has remained wide (Graph VI.7, left-hand panel). Although it has come down from its crisis peak, this differential (normalised by the average yield) is still wider than that seen between 1998 and 2008. The CDS market paints a similar picture, albeit over a shorter time period (Graph VI.7, right-hand panel).

Market pressures have already forced financial institutions to build more resilient balance sheets. Even so, institutions' progress in improving their liquidity buffers and in finding more stable sources of funding was insufficient to prevent the escalation of tensions in interbank markets in May 2010 (see Chapter II). More generally, given the experience that financial markets amplify

Perceived credit risks in the financial sector



[1] For financial companies in the United States and Europe, in per cent. [2] Spread between the bond yields for companies rated BBB and AA, divided by the contemporaneous average yield. [3] Based on the CDS spreads of 34 large banks and 14 large insurance companies in Europe and North America. [4] In basis points. [5] Standard deviation of the cross section of CDS spreads, divided by the contemporaneous average.

Sources: Markit; Merrill Lynch. Graph VI.7

the cycle, market participants are likely to slacken their vigilance during the next boom phase. Prudential authorities must lock in and build on current gains in market-driven discipline, thus supporting the structural resilience of the sector.

... and prudential authorities

Current regulatory efforts in this direction seek to improve banks' risk management, governance and transparency and to facilitate the orderly resolution of large internationally active banks (see Chapter I). The proposed changes will boost the quality and size of capital and liquidity buffers and will constrain institutions' leverage. In line with the renewed focus of market participants, these changes will expand the risk coverage of the regulatory framework and place greater emphasis on tangible equity. Furthermore, international cooperation to improve the transparency and comparability of financial institutions' balance sheets aims to level the playing field, promote market discipline and restrict the scope for regulatory arbitrage.

Towards improved funding and liquidity management

Stable sources of funding and strong liquidity buffers buttress the resilience of the financial sector's performance. In periods of stress, they support markets' confidence in the ability of institutions to continue financing their operations or downsize their balance sheets at a low cost. And this confidence, which is reinforced by greater balance sheet transparency, is of the utmost importance for financial intermediation. As soon as it vanishes, key financial markets seize up, quickly inflicting material damage on fundamentally viable institutions.

Heightened funding and liquidity risks

From the outset, the crisis exposed deficiencies in banks' funding strategies and asset management. As financial losses started to mount, the scarcity of information about financial institutions' illiquid balance sheets heightened market uncertainty. This aggravated the difficulties of banks dependent on sentiment-driven short-term funding markets, creating a vicious circle.[5]

Banks' liquidity and funding problems have been particularly acute on the international scene, where information problems are greatest. In response to disruptions in the foreign exchange swap market, central banks intervened and provided emergency swap lines on an unprecedented scale in 2008. Similar strains resurfaced more recently, necessitating a second wave of official liquidity support in May 2010. In addition, host countries suffered disruptions in intermediation as foreign banks experienced strains in their home market or in third countries. Each case has triggered calls for a more decentralised model of international banking, so that lending is funded, extended and supervised to a greater degree in the same location.

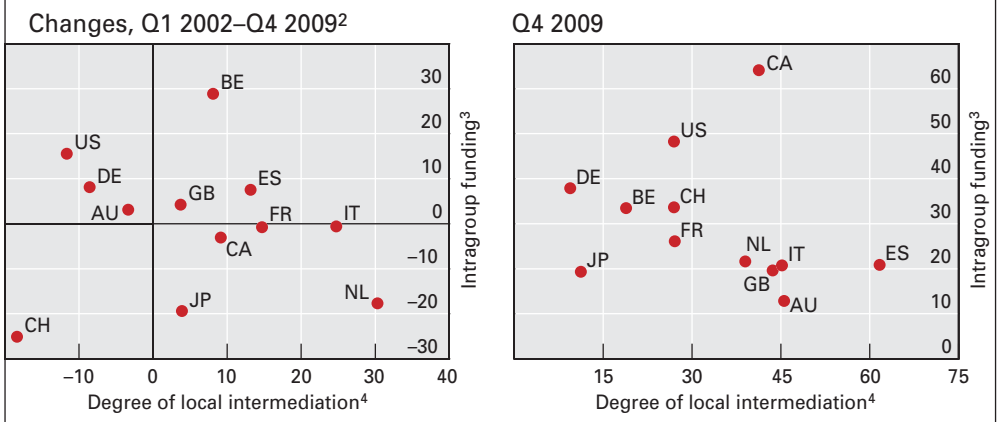
A move towards more decentralised international banking ...

The extent to which banks have adjusted the model of their international operations over the years has differed across countries. Canadian, Dutch and Japanese banks have moved towards a more decentralised model, which involves more local funding of foreign lending and less reliance on intragroup

[5] For empirical evidence that stable funding sources improve the returns on financial stocks and enhance the resilience of banks, see A Beltratti and R Stulz, "Why did some banks perform better during the credit crisis? A cross-country study of the impact of governance and regulation", *NBER Working Papers*, no 15180, July 2009; and R Huang and L Ratnovski, "Why are Canadian banks more resilient?", *IMF Working Papers*, no WP/09/152, July 2009.

Decentralisation of international banking[1]

In percentage points and per cent



AU = Australia; BE = Belgium; CA = Canada; CH = Switzerland; DE = Germany; ES = Spain; FR = France; GB = United Kingdom; IT = Italy; JP = Japan; NL = Netherlands; US = United States.

[1] By home country. [2] For Australian banks, the change is between Q4 2007 and Q4 2009. [3] Share of intragroup liabilities in total foreign liabilities. [4] Sum of the minima of local assets and local liabilities in all host countries, as a share of total foreign claims.

Source: BIS international banking statistics. Graph VI.8

transfers (Graph VI.8, left-hand panel). For their part, US, German and Australian banks have moved in the opposite direction. Such developments have resulted in a marked divergence in the degree of decentralisation of national banking systems (Graph VI.8, right-hand panel).

... entails trade-offs

From a borrower's point of view, any shift towards a more decentralised model of international banking will carry both benefits and costs. For instance, such a model would help insulate the domestic economy from disruptions elsewhere to the operations of internationally active banks. At the same time, however, a more decentralised model would also imply a lower degree of diversification against local shocks. In addition, to the extent that cross-border banking flows support high levels of net external debt (top right quadrant in Graph VI.9), any reduction in these flows would need to be offset by alternative sources of financing.

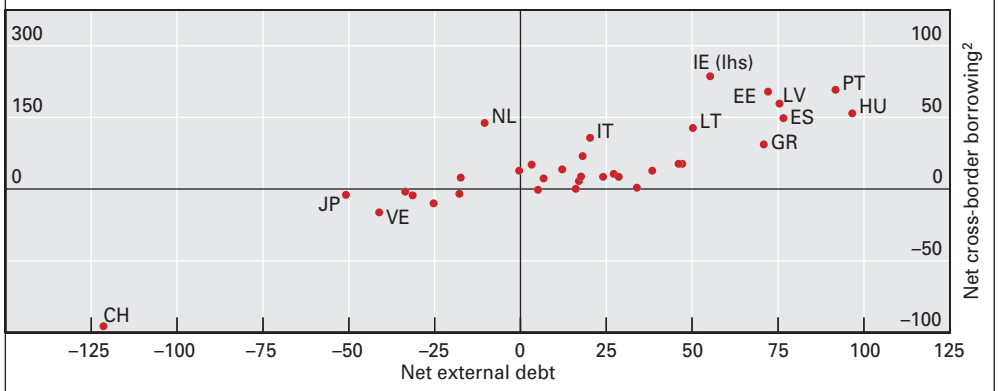
The trade-offs associated with a move towards a more decentralised model of international banking serve as a general reminder that it is impossible to eliminate all risks via institutional reorganisation. Risks in liquidity and funding management will need to be mitigated via stronger liquidity buffers and greater reliance on stable funding sources, such as retail deposits.

Higher capital: is there a trade-off between resilience and profitability?

The success of regulatory reform depends on the balance it strikes between the objectives of the prudential authorities and the incentives of financial institutions. Contrary to an often repeated assertion, empirical evidence from recent years fails to uncover any tension between banks' capitalisation and return on equity during the boom period although it does point to a link between lower capital ratios and higher losses during the crisis. In addition, stylised analysis of the balance sheet and income statement of a representative

Bank financing of external debt[1]

In per cent



CH = Switzerland; EE = Estonia; ES = Spain; GR = Greece; HU = Hungary; IE = Ireland; IT = Italy; JP = Japan; LT = Lithuania; LV = Latvia; NL = Netherlands; PT = Portugal; VE = Venezuela.

[1] Stocks outstanding in 2008, as a percentage of the 2008 GDP of the respective country. [2] From non-resident bank offices.

Sources: IMF; BIS international banking statistics. Graph VI.9

bank shows that, by rewarding the long-term resilience of better capitalised institutions, funding markets could actually help to ensure high long-term profits in the financial sector. Investors also need to recognise that banks' recent net earnings have been artificially supported by official guarantees. Moreover, the sector will need to address overcapacity before its profitability can become truly sustainable.

High capital is not incompatible with high profitability ...

The experience of 40 large banks during the last boom reveals no discernible link between return on equity and capital holdings. The banks with low returns on assets between 2004 and 2006 were the ones that increased leverage to attain a competitive return on equity. Such banks had relatively lower capital ratios but posted a return on equity that was no higher than that of banks with a stronger capital base (Graph VI.10, left-hand panel). To the extent that higher capital ratios led to greater resilience, there is then no evidence of a trade-off between enhanced safety and high returns.

... and it also improves resilience

Indeed, the crisis demonstrated that higher capital ratios did contribute to the resilience of the best performers among the same 40 banks (Graph VI.10, centre panel). The banks with high capital holdings in 2006 required low levels of support in the form of emergency measures between 2007 and 2009. More importantly, only banks with low capital ratios in 2006 needed extensive emergency support during the crisis. This pattern is quite distinct even though it leaves out additional major determinants of how banks fared in the crisis, such as the size of their liquidity buffers.[6]

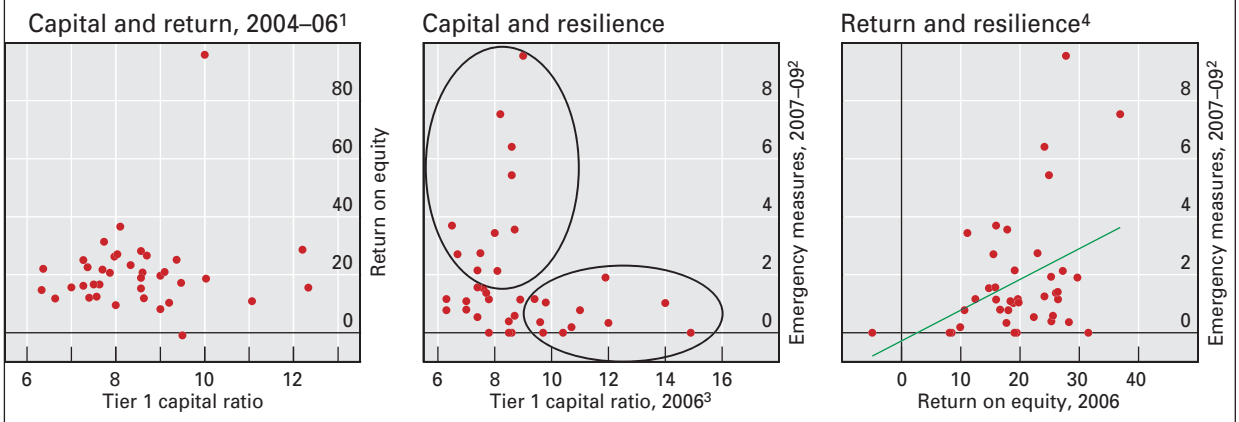
High and sustainable profits are supported by ...

The crisis also exposed the precarious nature of bank profits. Banks that had enjoyed high returns on equity just before the crisis needed high levels of

[6] For further evidence that higher capital ratios support a more robust performance in crises, see A Beltratti and R Stulz, "Why did some banks perform better during the credit crisis? A cross-country study of the impact of governance and regulation", *NBER Working Papers*, no 15180, July 2009; and K Buehler, H Samandari and C Mazingo, "Capital ratios and financial distress: lessons from the crisis", *McKinsey Working Papers on Risk*, no 15, December 2009.

Pre-crisis characteristics and in-crisis performance of 40 large banks

In per cent



[1] Averages. [2] Sum of the values of fixed income, capital and hybrid instruments issued and assets sold from mid-2007 to end-2009, as a percentage of total liabilities in 2006. [3] At end-year. [4] The slope of the line, based on an ordinary least squares regression, is statistically significant at the 95% confidence level.

Sources: Bankscope; Bloomberg; company reports. Graph VI.10

emergency support as it unfolded (Graph VI.10, right-hand panel). This is a specific illustration of the structural fragility of banks' business models. Consistent with the long-term picture depicted by Table VI.1 and Graphs VI.1 and VI.2, high shareholder returns in the sector were unsustainable because they were generated by high leverage and risk-taking that proved to be unmanageable in a period of stress.

... resilient balance sheets ...

Looking forward, strong capital buffers should contribute to a resilient performance by financial institutions. As markets recognise this resilience, the cost of funding will decline and, with it, the return on assets in the sector will rise. And since higher capital constrains leverage, it will also limit institutions' capacity to boost return on equity in good times at the cost of elevated losses in bad times.

Lower returns on equity could actually be a desirable outcome for the long-term investor as well as for the economy at large. In the light of recent experience (Graph VI.10, right-hand panel), equity holders will arguably require lower but more stable returns on equity that are likely to translate into higher profits in risk-adjusted terms. For the economy as a whole, a more stable performance of the financial sector would imply a reduced incidence of financial crises and a lower magnitude of the associated costs.

In addition, a reduction of returns on equity from the high levels supported by explicit and implicit public guarantees would contribute to the healthy functioning of the financial sector. As noted above, government support has recently boosted the average Moody's rating for the 50 largest banks by three notches. For 2009 levels of bank CDS spreads, this upgrade translates into a 1 percentage point decline in funding costs, which lifts returns on equity. This amounts to a subsidy, which keeps profits in the sector at artificially high levels and distorts economic decision-making. Thus, higher capital holdings would not only improve institutions' resilience but, by

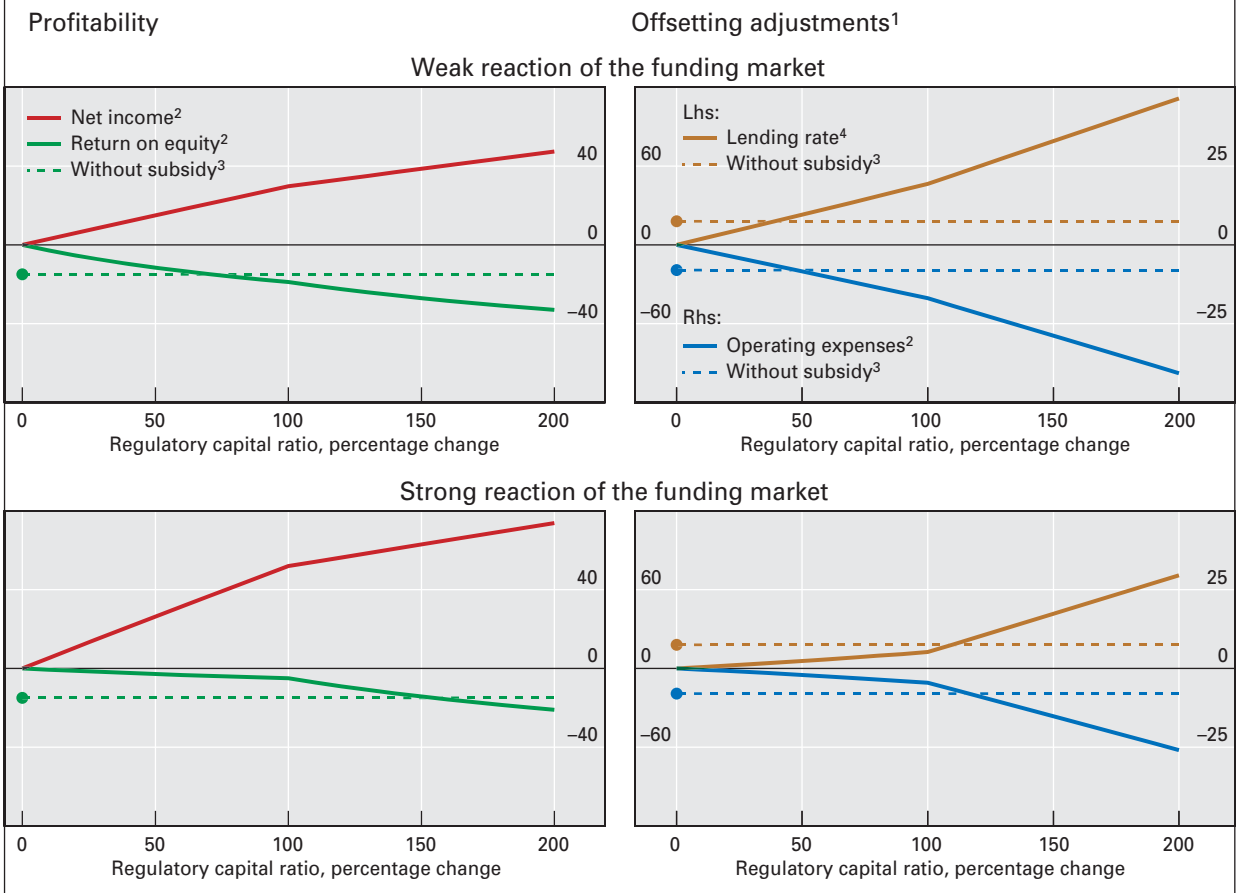
Capital holdings and profitability of a representative bank

What effect will higher capital requirements have on banks' profits and how might banks respond? This box seeks to provide quantitative answers and to put them in perspective by measuring the benefits that banks enjoy from government support. The results, presented in Graph VI.A, are based on end-2006 balance sheets and income statements for national banking systems in the euro area, as published by the OECD. Averaging across banking systems delivers the balance sheet and income statement of a representative bank, with leverage (ie assets-to-capital ratio) of 20, return on equity (or net income divided by equity capital) of 14% and operating expenses equal to 40% of interest expenses. It is assumed that, initially, the bank charges an interest rate on loans of 6% (which is the ratio of interest income to interest earning assets) and that 60% of its capital qualifies as regulatory capital.

The graph's two left-hand panels illustrate the impact of higher capital requirements on net income and the return on equity. The assumption is that the bank meets higher capital requirements by transforming a uniform fraction of its different debt instruments into equity, without changing the assets side of its balance sheet. The resulting decline in leverage improves the bank's creditworthiness, which is assumed to depress the interest rate only on its bond issues. Keeping revenues constant, this decline in funding costs raises net income to the extent indicated by the red lines in the graph. In addition to their positive impact on net income, higher capital holdings also depress leverage, which results in a net negative impact on the return on equity (green lines).

The stronger the reaction of funding markets to changes in the bank's capital ratio, the greater is the positive impact of higher capital requirements on net income and the smaller is the negative impact on the return on equity. The top and bottom panels reflect different assumptions regarding this reaction.

Impact of greater capital holdings



[1] The plotted changes in the lending rate and operating expenses keep the return on equity constant. [2] Percentage changes. [3] Impact on the return on equity (left-hand panels) and offsetting adjustments to the lending rate and operating expenses (right-hand panels) if capital holdings do not change but funding costs increase by 1 percentage point. [4] Change in basis points.

Source: OECD. Graph VI.A

A weak reaction by the funding market translates into a 15% (17%) decline in the funding rate for a 100% (200%) rise in regulatory capital. At a risk-free rate of 3.5%, this decline corresponds to the narrowing of CDS spreads in the euro area when credit ratings improved from A to AA (to AAA) in 2005. Corresponding to the narrowing of CDS spreads in 2006, the decline in the funding rate under a strong market reaction is set to 40% (48%).

The right-hand panels illustrate two alternative ways of restoring the bank's initial return on equity given its new capital requirements. One way is to increase the rate on loans (brown lines). Alternatively, a cut in operating expenses could stabilise the return on equity at the same level (blue lines).

To put these results into perspective, the graph also shows how the removal of government support might affect profits. According to Moody's, the rating in 2009 of the 50 largest banks would have worsened on average by three notches (from Aa3 to A3) in the absence of government support. Recent data on bank CDS spreads indicate that such a downgrade would increase the interest rate that banks pay on their securities by 1 percentage point. The dashed lines in the left-hand panels quantify the resulting decline in the representative bank's return on equity when capital holdings are at their initial level. In the right-hand panels, the dashed lines plot the corresponding increase in the lending rate and decrease in operating expenses that would maintain the initial level of the return on equity in the absence of government support.

reducing the return on equity, would also serve to offset the distortionary impact of government support.

... and funding markets that reward prudence

A back of the envelope calculation illustrates the extent to which higher capital offsets the impact of government support on a representative bank (see box). For a broad range of increases in capital holdings, the resulting return on equity remains above the level that would prevail under the initial capital holdings but in the absence of a subsidy due to public guarantees. In Graph VI.A (left-hand panels), this is the range where the solid green lines are above the dashed lines. Concretely, when the funding market provides high rewards for building a resilient balance sheet, an increase in capital holdings by up to 150% would have a smaller impact on return on equity than a removal of public guarantees (bottom left-hand panel).

The bank could compensate for the higher cost of equity compared with debt, by cutting its operating costs or raising its lending rate (Graph VI.A, right-hand panels). Provided that the funding market reacts strongly to improvements in the resilience of the bank's balance sheet, the cut in operating expenses would be modest (bottom right-hand panel). For instance, the cut that keeps the return on equity at its initial level, given an increase in capital holdings of up to 120%, is smaller than the cut that would achieve the same result if capital holdings stayed fixed but government subsidies were removed (solid vs dashed blue lines). A similar conclusion is reached if the bank adjusts by raising its lending rate (brown lines).

Summing up

The crisis exposed deficiencies in the financial sector's business model that had prevailed for several decades. Since financial institutions have generated competitive returns on equity via high leverage on opaque and illiquid balance sheets, their performance has been volatile at all times and sub-par in periods of general stress. The importance of strengthening the sector's resilience has

increased in line with its weight in overall economic activity and with the scale of the international component of financial intermediation. Higher prudential buffers and lower leverage will help ensure the structural resilience of the financial sector. Continuing progress by banks in restructuring their cost base, stabilising their balance sheets and eliminating excess capacity will support the trend towards sustainable profitability.

VII. Macroprudential policy and addressing procyclicality

We must use the opportunity to establish macroprudential frameworks ...

Macroprudential policy frameworks are critical to putting the financial system on a more stable foundation. The financial crisis has accelerated efforts to develop them.[1] And authorities are acquiring greater experience with using prudential instruments for system-wide goals. The opportunity to establish credible macroprudential frameworks firmly must not be squandered.

The broad goal of macroprudential policy is to limit systemic risk – the risk of financial system disruptions that can destabilise the macroeconomy.[2] To implement macroprudential policy, instruments typically used in the prudential regulation and supervision of individual financial institutions are adapted to limit risk in the financial system as a whole (see box).

... to address the risk of joint failures from linkages and common exposures ...

Macroprudential policy limits systemic risk by addressing the two key externalities of the financial system. The first is joint failures of institutions because of interlinkages and common exposures among them. Chapter I discusses a range of initiatives under way to reduce vulnerabilities arising from these sources.

... and the vulnerability of the financial system to procyclicality

The second externality is procyclicality. Procyclicality is the phenomenon of amplifying feedbacks within the financial system and between the financial system and the macroeconomy. As we have seen recently, procyclicality can promote the emergence of unsustainable booms. As boom turns to bust, procyclicality can magnify the disruption and cause a deep economic recession.

Addressing procyclicality and countercyclical macroeconomic policy are related

Addressing procyclicality is closely linked to traditional countercyclical macroeconomic policy. And likewise, the development of an effective framework to address procyclicality raises some questions that are familiar from the development of fiscal and monetary policy. For example, how should the objective be defined? What is the right balance between instruments that vary countercyclically and static measures that act as automatic stabilisers? How much room should be allowed for discretion as opposed to rules? Who should decide on the instrument settings? And what should be the relationship with macroeconomic policies, especially monetary policy? In this chapter, these questions will be examined as we describe the essential elements of a macroprudential framework to address procyclicality. Before proceeding, however, we emphasise three broad points.

[1] See, for example, Group of Twenty, *Enhancing sound regulation and strengthening transparency*, March 2009; and M Brunnermeier, A Crockett, C Goodhart, A Persaud and H S Shin, "The fundamental principles of financial regulation", *Geneva Reports on the World Economy*, 11, July 2009.

[2] For an elaboration, see J Caruana, *Systemic risk: how to deal with it?*, paper, BIS, 12 February 2010, www.bis.org/publ/othp08.htm.

What is a macroprudential instrument?

The term "macroprudential" has become so popular since the crisis that its use has spread to many policy measures whose primary goals lie beyond the specific realm of financial stability.[1] Such indiscriminate extension risks impeding and obscuring policy development, and thus undermining public support for macroprudential policy.

Many policy functions – including monetary, fiscal and exchange rate policy – can, and often do, promote financial stability in one way or another. But only instruments operated with the explicit primary objective of promoting the stability of the financial system as a whole, and which have the most direct and reliable impact on financial stability, should be thought of as macroprudential.

Those tools are prudential tools. Macroprudential policy essentially broadens the perspective of traditional prudential policy, whose tools promote sound practices and limit risk-taking at the level of individual financial institutions and instruments. The definition of a macroprudential instrument certainly has grey areas, and the suitability of tools can change as the structure of the economy and financial system changes. For example, reserve requirements are seeing increasing use in emerging market economies for financial stability purposes, and could be seen as macroprudential to the extent that they limit liquidity risk.

Conceiving of the core set of macroprudential instruments as overlays to existing prudential instrument settings, or as adjustments to those settings, has the practical advantage of clearly distinguishing macroprudential measures from microprudential settings of the instruments. Implementation in the form of overlays highlights the independence of the macroprudential function and the difference between the macroprudential and the microprudential perspectives. It clarifies the focus of macroprudential policy, which is to target the stability of the financial system as a whole, rather than that of individual institutions within it. Moreover, this rigorous definition of macroprudential instruments helps keep governance arrangements simple and thus more likely to promote accountability and clear policy.

[1] For more extensive discussion of the use of the term, see P Clement, "The term 'macroprudential': origins and evolution", *BIS Quarterly Review*, March 2010, pp 59–67.

The macroprudential objective should be realistic

First, the macroprudential objective should not promise more than policymakers can deliver. In particular, the objective should not be defined in terms of managing the economic cycle. An objective of eliminating credit cycles or targeting asset prices would also reach too far. Rather, the most realistic objective is to strengthen the resilience of the financial system to the emergence of financial strains. This objective is achievable through the well timed, countercyclical building-up and releasing of capital and other buffers in the financial system. Such an approach should also help restrain excessive credit growth and unsustainable asset price dynamics.

Instruments should be set as much as possible using simple rules

Second, the instruments used to promote resilience should be set as much as possible using simple rules and guidelines, such as constraints on extreme risk-taking and links to clear indicators of systemic risk. Such an emphasis on simple rules will help policymakers manage the public's typically strong resistance to countercyclical actions during a boom. Closely tying instrument settings to risk indicators that are not well understood and whose reliability is not well established should be avoided.

Central banks need to be closely involved ...

Third, central banks will need to be closely involved in the development and implementation of macroprudential policy. That imperative reflects both the deep experience of central banks in system-wide analysis and intervention and the close, two-way relationship between addressing procyclicality and conducting monetary policy.

Several caveats are important. There is no silver bullet that will eliminate financial system instability. Frameworks will need to reflect country-specific circumstances. Improving financial system resilience will not prevent economic recessions. And finally, monetary policy should be an essential partner in promoting financial stability. In particular, monetary policy must lean more against the build-up of financial system risks. It can do that while retaining its focus on price stability by lengthening its effective policy targeting horizon.

... and monetary policy must lean more against the build-up of financial system risks

Essential elements of a macroprudential framework

The essential elements of a macroprudential framework consist of: a clearly defined and realistic objective; an operating strategy; choices about sectoral specificity; governance arrangements; sensitivity to economy-specific circumstances; and international coordination.

A clearly defined and realistic objective

Increasing the resilience of the system is an achievable macroprudential objective

The objective for macroprudential policy must aim for a clear but achievable reduction in systemic risk. Given the current state of our knowledge, stability can be most reliably achieved by emphasising strengthening of the resilience of the system through countercyclical management of the system's buffers against shocks.[3] The objective could include mitigating the build-up of excesses in credit growth and asset prices, but we should recognise that that is much more elusive. It would strain our current knowledge and probably require measures that are less well tested. The objective should not go so far as to aim explicitly at eliminating credit booms and unsustainable asset price increases.

In contrast, the use of prudential instruments to manage buffers countercyclically is not new. The most effective method for increasing the strength of the system is to ensure that adequate buffers are available and released during downturns. That would reduce the risk of fire sales and credit crunches in the downturn, and might also moderate financial ebbs and flows by restraining risk-taking during the boom.

A broad range of tools is available

Many instruments have been applied in such a manner and others are under development. Some measures aim to reduce short-termism and other procyclical features of decision-making in financial institutions. Their imposition need not depend on prevailing financial and economic conditions (Table VII.1).

Other instruments constrain balance sheet structure (eg capital, liquidity or provisioning standards), characteristics of lending contracts (eg maximum loan-to-value ratios) or other types of risk exposure (eg limits on currency mismatches) directly. They can be set once and for all, or varied according to changing assessments of systemic risk (Tables VII.2 and VII.3).

The most efficient way to create countercyclical buffers is to build them up during booms. Although still at an early stage and generally not done in the

[3] See BIS, *Addressing financial system procyclicality: a possible framework*, Note for the Financial Stability Forum Working Group on Market and Institutional Resilience, September 2008.

Measures to reduce procyclicality caused by decision processes	
Objective	Intervention
Improve risk measurement by banks	Require the use of through-the-cycle or conservative inputs to risk models
Raise awareness of systemic risk	Regularly publish official assessments of vulnerabilities
Reduce procyclicality in financial reporting	Require through-the-cycle valuations
Enhance market discipline	Require disclosure of risk positions, including uncertainties in measuring them
Reduce compensation incentives to take excessive risk	Require longer horizons for risk-adjusted employee performance measurement; back-load bonuses

Table VII.1

context of an explicit macroprudential objective, such an approach has been used more extensively since the crisis, and further proposals are under review.[4] The Basel Committee on Banking Supervision, for example, is using this approach in its recommendations for the reform of banking regulation and supervision.[5]

Tools used thus far seem to have been effective in enhancing resilience ...

Recent evidence suggests that the use of traditional prudential instruments for macroprudential purposes does help to enhance financial system resilience.[6] In particular, the fairly widespread use of such measures in Asian economies to strengthen banks in the region over the past decade or so might help explain why those banks were less affected by the exuberance in property markets.

... but their impact on financial booms is untested

However, the overall experience to date does not suggest that countercyclical variations in buffers have powerful and lasting effects on credit and asset prices. Despite the fairly active use of measures related to property lending in Asia, the region's economies continue to see quite large and frequent property price cycles.

Yet the benefits of successfully moderating both phases of the credit and asset price cycle are clearly worth pursuing over the longer term. An approach to actively restrain credit and asset market excesses in booms could develop with improved knowledge of the relationships between macroprudential instrument settings and financial and economic fluctuations. The approach might require more restrictive or broad applications of the instruments and greater reliance on judgment and discretion. Because the role of macroprudential policy in macroeconomic policy would be more prominent in

[4] See, for example, Financial Stability Forum, *Report of the Financial Stability Forum on addressing procyclicality in the financial system*, April 2009.

[5] See Basel Committee on Banking Supervision, *Strengthening the resilience of the banking sector*, December 2009.

[6] See Committee on the Global Financial System, "Macroprudential instruments and frameworks: a stocktaking of issues and experiences", *CGFS Papers*, no 38, May 2010.

that situation, macroprudential governance arrangements would have to be stronger to manage the interaction with monetary policy.

Materially moderating credit and asset price cycles would maximise the contribution of macroprudential policy to macroeconomic stabilisation and hence would maximise its support of monetary policy. But experience thus far suggests that an ambitious macroprudential objective specified in such terms risks unintended consequences and should be avoided at this stage.

The best approach to restraining excesses in credit and asset prices would be achieved by a combination of macroprudential policy and monetary policy leaning against the build-up of imbalances. Each alone should not be expected to do the full job.

Operating strategy

Macroprudential operations can differ in terms of how much and how often the instruments are adjusted in response to movements in systemic risk, and in terms of whether those adjustments are governed by rules or discretion. Instrument settings might even be completely fixed – "set and forget" – and still act as automatic stabilisers by reducing the scope for extremes of risk-taking.

Prudential instruments to directly constrain elements of financial institution activity

	Instrument	Mechanism
Lending contracts	Caps on LTV ratios for property lending	Limits lender's exposure to property market downturn; limits highly leveraged property investment
	Caps on ratios of debt service to income for household lending	Limits chances of borrower default; limits highly leveraged property investment
Funding contracts	Countercyclical variation in minimum margins or haircuts on funding contracts (tied to capital requirements)	Discourages underpricing of systemic risks created by secured lending with low haircuts; reduces risk of sharp contraction in the supply of secured funding if risk perceptions of collateral quality are abruptly revised
Financial institution balance sheets	Countercyclical capital surcharge	Builds up countercyclical capital buffers in good times to restrain risk-taking, and runs down the buffers in bad times to allow the financial system to absorb emerging strains more easily
	Adjustments to risk weights	Ensures that capital buffers are sensitive to build-ups of risk in specific sectors
	Statistical provisioning	Reduces risk of underprovisioning during booms by anticipating the impairments expected to arise when the economy turns down
	Caps on loan-to-deposit ratio, core funding ratio and other liquidity requirements	Reduces the tendency to rely on short-term or unstable funding markets to support rapid lending growth

Table VII.2

Countercyclical prudential instruments in use or proposed	
In use	
Caps on LTV ratios for property lending	Hong Kong SAR, Korea, Malaysia, Singapore
Caps on ratios of debt service to income for household lending	Hong Kong SAR, Korea
Adjustments to risk weights	India, Turkey
Statistical provisioning	Spain
Caps on loan-to-deposit ratio, core funding ratios, reserve and other liquidity requirements	Argentina, China, Hong Kong SAR, Korea, New Zealand
Proposed	
Countercyclical variation in minimum margins or haircuts on funding contracts (tied to capital requirements)	Proposed by the Committee on the Global Financial System
Countercyclical capital surcharge	Under consideration by the Basel Committee on Banking Supervision

Table VII.3

Fixed limits on risk-taking have been used fairly often during upswings

The use of fixed ratios, or absolute limits, in upswings has been quite common. They have been applied to loan terms (eg loan-to-value (LTV) ratios, ratios of debt service to income, and margin limits),[7] currency mismatches[8] and, less frequently, loan loss provisioning through the use of long-term average loss experience ("through the cycle" or "dynamic" provisions).[9]

Greater use of set-and-forget instruments is currently under consideration. The capital reforms advanced by the Basel Committee on Banking Supervision, for instance, base minimum capital requirements for trading books on the assumption of stress conditions rather than on recent loss history, which varies highly procyclically.[10] Similarly, the Committee on the Global Financial System has recommended consideration of margin requirements based on through-the-cycle valuations of collateral assets, which would reduce the procyclical sensitivity of margins to financial and economic conditions.[11]

[7] For the use of LTV ratio limits, risk weights and other measures to restrain property lending, see, for example, S Gerlach and W Peng, "Bank lending and property prices in Hong Kong", *Journal of Banking and Finance*, vol 29, issue 2, February 2005, pp 461–81; Central Bank of Malaysia, *Financial stability and payment systems report 2009*, March 2010; and Reserve Bank of India, *Report on trend and progress of banking in India 2008–09*, October 2009.

[8] See M Goldstein and P Turner, *Controlling currency mismatches in emerging markets*, Institute for International Economics, Washington DC, April 2004.

[9] See J Saurina, "Loan loss provisions in Spain: a working macroprudential tool", Bank of Spain, *Revista de Estabilidad Financiera*, vol 17, November 2009, pp 11–26.

[10] See Basel Committee on Banking Supervision, *Strengthening the resilience of the banking sector*, December 2009.

[11] See Committee on the Global Financial System, "The role of margin requirements and haircuts in procyclicality", *CGFS Papers*, no 36, March 2010.

For bank capital, one can set fixed buffers above the regulatory minima that can be released, or at least be allowed to be drawn down, as banks incur losses.

Instrument settings can be fixed and act as automatic stabilisers ...

Fixed settings for instruments can still be automatically stabilising to the extent that their incidence, or "bite", varies over the cycle. For example, a maximum LTV ratio fixed at a low level will be more binding during a credit boom, when banks seek to expand property lending, than in a bust, when heightened risk aversion reduces their propensity to extend loans with a high LTV ratio. At the same time, fixed instruments need to be designed with care to avoid inducing procyclicality. For example, if binding during the upswing, minimum capital requirements can constrain risk-taking. But if they become binding as strains emerge, they can encourage hasty shedding of risky assets and tighter credit conditions.

... or vary according to developments in indicators of systemic risk

Instrument settings that vary according to developments in indicators of risk can be tied tightly to the indicators or only loosely. For example, capital buffers might be built up opportunistically, when capital is cheap, and varied in only a roughly countercyclical way. Alternatively, leading indicators of system-wide financial distress could be relied on more rigidly for steering instrument settings.

The development of systemic risk measures to guide instrument settings is under way. Work at the BIS and elsewhere suggests that simple indicators – based on simultaneous deviations from historical norms of both the credit/GDP ratio and asset prices – can fairly reliably signal financial distress years ahead, in real time and out of sample. As leading indicators of systemic risk improve, the instrument settings could respond to them more sensitively.[12] Ultimately, with enough improvement in modelling, policymakers could link instrument settings closely to systemic risk to maintain it within an acceptable range, in a manner akin to the use of inflation forecasts in inflation targeting regimes.

Discretionary adjustments have often been made in response to property market exuberance

In practice, policymakers have tended to rely heavily on discretionary adjustments to instrument settings that are only loosely linked to quantitative risk indicators. Especially in Asia, the adjustments have been made in connection with property-related lending during financial upswings, in response to concerns with overheating. Authorities have cited developments in property prices, growth in property sector credit, secondary market sales and construction activity as risk indicators warranting the actions. Adjustments have included tightening limits on loan contract terms such as LTV ratios, raising risk weights for regulatory capital, raising reserve and other liquidity requirements and, sometimes, limiting foreign currency exposures. Often, policymakers have made more than one adjustment at the same time – eg modifying LTV ratios while limiting the concentration of lending to certain sectors (Table VII.4). They have typically adjusted instrument settings at intervals of a few years, but the degree of activism has varied across countries.

[12] See C Borio and M Drehmann, "Assessing the risk of banking crises – revisited", *BIS Quarterly Review*, March 2009, pp 29–46.

There are good reasons to base the adjustment of instrument settings on simple and transparent rules. The main advantage of rules is that, once in place, they do not require continuous justification. If well structured and durable, they can reduce uncertainty. They can also contribute to automatic stabilisation by reducing lags in recognition and decision-making and by precommitting authorities to a tightening of instrument settings when needed. Precommitment can be especially important in a boom, when the financial industry, politicians and the public will all strongly challenge any discretionary tightening on the grounds that the outlook is rosy. Moreover, the temptation to believe that "this time things are different" can be very powerful for everyone, including the authorities themselves. Rules can thus be particularly helpful in relieving the pressure on supervisors to abstain from restraining actions during economic expansions.

Well structured rules can precommit policymakers and act as automatic stabilisers

A range of domestic and international initiatives, including a project within the Basel Committee's capital reform programme, are examining rules for countercyclical capital buffers. An example of such a rule would be to set the buffers as a function of above-trend credit expansion and other rough indicators of systemic risk. Rules could also specify that adjustments will be made only if the indicators exceed certain thresholds. The better the signal value of the indicators, the tighter the thresholds. The ability of rules to help overcome the lobbying problem is less dependent on their precise form than on their role in tying policy action to observable indicators.

The precise form of rules is less important than their reference to observable indicators

Examples of discretionary prudential interventions in response to property market developments

Economy	Date of first intervention	Intervention
Hong Kong SAR	1991	Limits on LTV ratios (LTV limits) varying by value of property; supervisory letters encouraging prudence in residential property lending; advice to limit to industry average the ratio of property-related lending to total loans for use in Hong Kong SAR; advice to limit growth rate of residential mortgages to nominal GDP growth rate
Malaysia	1995	LTV limits; limits on loan growth in property sector
Singapore	1996	LTV limits
Korea	2002	LTV limits and limits on ratio of debt service to income applied to specific property lending markets defined regionally and with variation depending on maturity and collateral value
India	2005	Risk weights and provisioning requirements for housing and commercial real estate, differentiated by size and LTV ratios; requirement for board-level policy on real estate exposure covering exposure limits, collateral and margin

Table VII.4

However, no rule can be effective under all circumstances. Some degree of discretion will inevitably be necessary. Discretion allows policymakers flexibility to employ a wide range of risk indicators and to make judgmental assessments about the evolution of systemic risk. Discretion also allows tailoring of responses to the nature of the build-ups in risk-taking and vulnerabilities (as long as these are identifiable in real time). Discretionary measures are also harder to circumvent than a known and predictable rule.

The design of countercyclical capital buffers illustrates these issues. As discussed in last year's Annual Report, it is hard to design simple rules linking the buffers to a small number of macroeconomic indicators that would reliably build up and release buffers at the right time. For example, the credit/GDP ratio works well during the build-up phase, but it tends to lag the emergence of strains and so is slow in releasing the buffers (Graph VII.1).

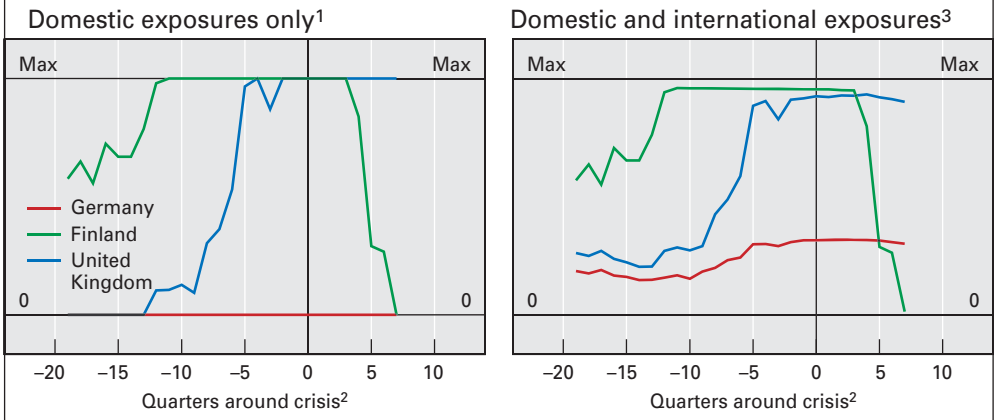
What is needed is a variable that is both a leading indicator of financial distress during the boom and a contemporaneous indicator of distress when it emerges. Because such a variable might well not exist, some discretion is probably inevitable in the operation of capital buffers.

Sectoral specificity

Sector-specific interventions are less blunt ...

Policymakers can apply instruments broadly across the financial sector or target exposures to specific sectors of the economy if these pose a threat to the system as a whole. Localised sources of risk might warrant a targeted, sectoral approach to avoid bluntly hitting the whole economy. For example, the real estate sector is a popular target, as it has often been a source of financial instability.

Build-up and release of capital buffers based on credit gaps



[1] The capital buffer for domestic exposures is the buffer for an average bank in the country indicated with only domestic exposures. It is based on deviations of the domestic credit/GDP ratio from its long-term trend (the credit gap). The buffer is at zero if the credit gap is below a lower threshold and it is at its maximum if the gap is above an upper threshold. [2] Quarter 0 is the onset of the respective crises, which is Q3 1991 for Finland and Q3 2007 for Germany and the United Kingdom. [3] The capital buffer for domestic and international exposures is the buffer for the average bank headquartered in the country indicated, with shares of domestic and cross-border lending corresponding to the aggregate exposures for that country. For each foreign country exposure, the domestic buffer for that country applies. Country weights for cross-border lending are based on the BIS international banking statistics and fixed at Q4 2006 values.

Sources: IMF; national data; BIS calculations. Graph VII.1

However, sector-specific strategies can present some difficulties too. They are less effective in protecting the whole system if they can be circumvented. And because they can stray into (or be misrepresented as) credit allocation policy, they put a heavy load on governance arrangements to keep policy intentions properly focused and clear. And finally, they require more information and judgment concerning the economy-wide impact of sectoral developments. Policymakers should therefore be cautious about taking highly sector-specific approaches.

... but might be circumvented more easily and stray into credit allocation

The design of countercyclical capital requirements for banks illustrates the issues of sectoral specificity. Linking the increase of capital buffers to a rise in bank lending to the real estate sector would ensure that the buffers take account of the systemic risks emanating from that sector. However, it would not address the indirect exposures arising from the transmission of problems in the sector to the financial system and wider economy. Moreover, banks might respond to a narrowly imposed measure by relaxing loan terms in other areas to maintain their overall loan growth. The temptation to apply ad hoc measures to a growing list of credit instruments and sectors would be strong.

Governance

Governance mechanisms are needed both to constrain discretion and to provide the independence needed for discretion to be exercised with some insulation from lobbying pressures. Another reason for the first element we addressed – a clear and realistic objective – is that it makes governance simpler.

Macroprudential policy needs carefully designed governance

However, measurement of the macroprudential objective, which is important for the accountability of policymakers, is challenging.[13] The concept of financial stability is multidimensional. It is also elusive compared with, say, price stability. The financial system might be fragile for a very long time before financial distress emerges. And even if vulnerabilities can be measured reliably, they might build up only gradually and so fail to signal a clear-cut case for action. In the meantime, excessive risk-taking can be masked by surging asset prices, low measured leverage, compressed risk premia and subdued volatility. Even if the objectives cannot be precisely specified, however, the strategy and intended actions for promoting financial stability need to be clearly articulated.

Another challenge is that regulators and supervisors, who control the instruments, have tended – or been required – to focus on the safety and soundness of individual institutions rather than on the system as a whole. As a result, they may tend to be less familiar with macroeconomic considerations. By contrast, central banks have an edge in understanding the behaviour of markets and the relationship between the financial system and the real economy. Indeed, it is mostly central banks that have taken the discretionary measures noted above in response to signs of overheating. Central banks have a stronger incentive to activate tools for macroprudential purposes (such as by modifying lending terms system-wide) to complement their macroeconomic policy functions.

Instruments, know-how and objectives should be well aligned

[13] See C Borio and M Drehmann, "Towards an operational framework for financial stability: 'fuzzy' measurement and its consequences", *BIS Working Papers*, no 284, June 2009.

Specific authorities with clear mandates and control over the instruments are desirable

New and specific institutional structures would be desirable to support further development of macroprudential frameworks. Those arrangements should bring together the macroeconomic and financial market expertise of central banks with the prudential expertise of financial regulators and supervisors. Specific authorities are needed, with clear mandates, powers and control over instruments. Financial stability committees, modelled along the lines of current monetary policy committees, are one option.

Such arrangements should preserve the independence of central banks, including financial independence. But they would also have significant implications for central bank accountability. Financial stability decisions may in many cases require more interaction with the government than monetary policy decisions, especially under crisis management conditions.

More interaction with the government need not compromise central bank autonomy. It does imply, though, a need for well specified coordination mechanisms, and for clarity about the central bank's financial stability mandate and strategy. Accountability can be promoted by requiring that actions and decision-making processes be disclosed to the public or reviewed by the legislature. These procedures are common in both monetary policy and financial stability policy. However, central bank reporting on financial stability to date has been generally less frequent and less policy-oriented than that on monetary policy. That will probably need to change.

Economy-specific circumstances and international aspects

Economy-specific circumstances matter ...

Authorities will choose objectives, strategies, instruments and governance arrangements that reflect their economy-specific circumstances. For example, to date, macroprudential interventions have been more frequent in bank-dominated financial systems, which offer fewer opportunities for circumventing the measures (eg through securitisation). The interventions also seem to have been more common in economies with fixed or managed exchange rates (such as Hong Kong SAR and other Asian economies) or in countries within currency unions (such as Spain), where the scope for using official interest rates for macroeconomic stabilisation purposes is limited or non-existent.

... as do international considerations

The likelihood of international variation in macroprudential frameworks and settings also highlights the need for international coordination. Instrument settings will have to recognise that financial developments are not synchronised across countries and that financial institutions operate across borders. For example, settings for capital buffers should relate to an institution's exposures to systemic risk across all the countries to which it is exposed, whether due to cross-border lending or to operations in host countries. Taking international exposures into account can make a big difference to the size and evolution of the capital buffers (Graph VII.1).

Close cooperation between home and host authorities will be inevitable. And some responsibility will have to shift to host authorities for deciding on the settings that apply to exposures in their jurisdictions and for advising home authorities of local financial conditions.

Implications for monetary policy

Successful monetary policy and macroprudential policy will complement each other ...

The implementation of macroprudential frameworks will affect the behaviour of the financial system and hence alter the monetary policy transmission mechanism. Monetary policy will need to take account of the influence of macroprudential actions on asset prices and yields.

By stabilising the financial system, a successful macroprudential policy will lighten the burden on monetary policy in several ways. It will reduce the frequency and intensity of financial disruptions that cause or amplify economic fluctuations. It will enhance the effectiveness of monetary policy by preventing financial distress from blunting the impact of interest rate changes. And perhaps most importantly, if macroprudential measures are effective, monetary policy will face less pressure to cut interest rates unduly in order to address threats to financial stability in the downturn.

... and influence each other's instrument settings

Most of the time, both policies – macroprudential and monetary – will be in the same phase of tightening or loosening. However, their relative efficacies will still need to be weighed carefully. For example, if inflation risks are emerging, macroprudential measures cannot take the place of interest rate increases. Macroprudential measures are well suited to enhancing the resilience of the financial system, but their effects on aggregate demand and inflation expectations are weak and uncertain compared with those of interest rates.

Sometimes, however, macroprudential policy and monetary policy will move in opposite directions, most obviously when the financial system is under stress but inflation risks are a threat. Under such circumstances, macroprudential settings might be loosened to ease the stress, while monetary policy is simultaneously tightened to reduce inflationary pressures. Such a combination does not indicate policy conflict. Rather, it illustrates how the two policies can complement each other.

Monetary policy will still be focused on price stability ...

In a system with a macroprudential framework, monetary policy will still be primarily responsible for price stability. Ebbs and flows in financial activity can still cause major economic fluctuations even if the financial system remains resilient to them. And recessions and inflation threats can still arise without a significant contribution from financial fluctuations.

... but will also need to play a bigger role in promoting financial stability

Monetary policy must, however, increase its contribution to the promotion of financial stability if it is to attain its own longer-term macroeconomic goals. Experience shows that a monetary policy strategy narrowly focused on stabilising inflation, looking out over a short horizon of about two years, is not sufficiently forward-looking to ensure financial stability, and is thus not sufficient to stabilise inflation over the longer term. Credit and asset prices have boomed during periods of low and stable inflation as well as during high inflation. Therefore, with a relatively short forecasting horizon, monetary policy could inadvertently accommodate or even contribute to the build-up of financial vulnerabilities. Monetary policymakers must give greater weight to that concern by extending the horizon of their targeting period.

Moreover, for the reasons discussed in the previous section, one should not necessarily expect nascent macroprudential policy aimed at enhancing the resilience of the financial system to materially restrain credit and asset price

booms too. The potential impact on credit growth of building larger buffers during the boom is not yet known. In contrast, the influence of monetary policy on broader credit conditions is relatively well understood.

Monetary policy frameworks do not need extensive adjustment to take account of financial stability. Systemic risk builds up over a long time. Adding a few years to the monetary policy targeting horizon, beyond the two years ahead commonly focused upon, would help monetary policymakers to weigh longer-term threats to financial stability, including the impact of interest rate settings, against nearer-term inflation. The result would be a more comprehensive assessment of the balance of risks facing the economy. Many central banks are already moving in this direction.

A financial stability objective for monetary policy is not necessary if policy horizons are lengthened

Central bank modelling and target horizons that incorporate longer-term risks to financial stability obviate the need for an explicit financial stability mandate for monetary policy. Such an approach would make clear that financial stability is part of the widely accepted concern with macroeconomic stability. But an explicit financial stability mandate for monetary policy might still be helpful because, in a booming economy with low inflation, it could alleviate the pressure on the central bank to refrain from monetary tightening. In that situation, the financial stability mandate would allow the monetary authority to tighten with the aim of countering longer-term threats to stability.

Governance arrangements must protect the credibility of the price stability objective

In any case, certain broad features of governance arrangements will be critical in preserving the credibility of the central bank's commitment to price stability: clear mandates and strategies for the macroprudential and monetary policy functions, operating independence, mechanisms that ensure effective public communication of the decisions taken, and ways of addressing any trade-offs that might emerge. Here, too, the arrangements will depend on country-specific circumstances, including the central bank's role in prudential regulation and supervision.

Summing up

Preserving financial and macroeconomic stability over the long term requires implementing carefully designed macroprudential frameworks and adjusting prevailing monetary policy frameworks. The current policy consensus provides a unique opportunity to accomplish those tasks.

The challenge for macroprudential policy is to establish a framework that is effective and gains public support over time. Macroprudential policy clearly cannot be an economic cure-all and should not be presented as one – we will continue to see recessions even under conditions of financial stability. Public expectations need to be kept aligned with what policy frameworks can actually deliver.

Given the evidence on what is achievable, the objective of macroprudential policy at this stage should emphasise strengthening the resilience of the financial system. Pursuing that objective successfully could also help restrain excessive credit growth and unsustainable asset price dynamics. Over time, as we learn more, we can correspondingly enlarge the framework to include greater emphasis on the moderation of credit and asset price cycles.

The resilience of the financial system can be strengthened by using simple macroprudential tools. Fixed limits, automatic stabilisers and rough adjustments of instrument settings – that is, adjustments commensurate with the reliability of the available indicators of systemic risk – can be implemented fairly easily. Particular sectors, such as real estate, can be targeted when it is clear that they are frequent sources of system-wide problems. But, in general, macroprudential policy should be cautious about targeting economic sectors too precisely, because that can resemble credit allocation policy and because the system-wide character of macroprudential policy needs to be established firmly.

Macroprudential policymakers should design governance arrangements carefully to ensure a sound basis for implementation. A degree of operational independence for macroprudential policy is essential, but beyond such general considerations, governance arrangements will reflect country-specific circumstances.

Successful macroprudential policy will support monetary policy. But the conduct of monetary policy must nevertheless adapt as macroprudential frameworks are developed and implemented. In addition, to maximise its contribution to both financial and macroeconomic stability, monetary policy needs to look beyond near-term inflation. Lengthening the policy horizon would naturally allow monetary authorities to consider financial stability more fully. In doing so, they would in fact promote price stability more effectively over the longer term.

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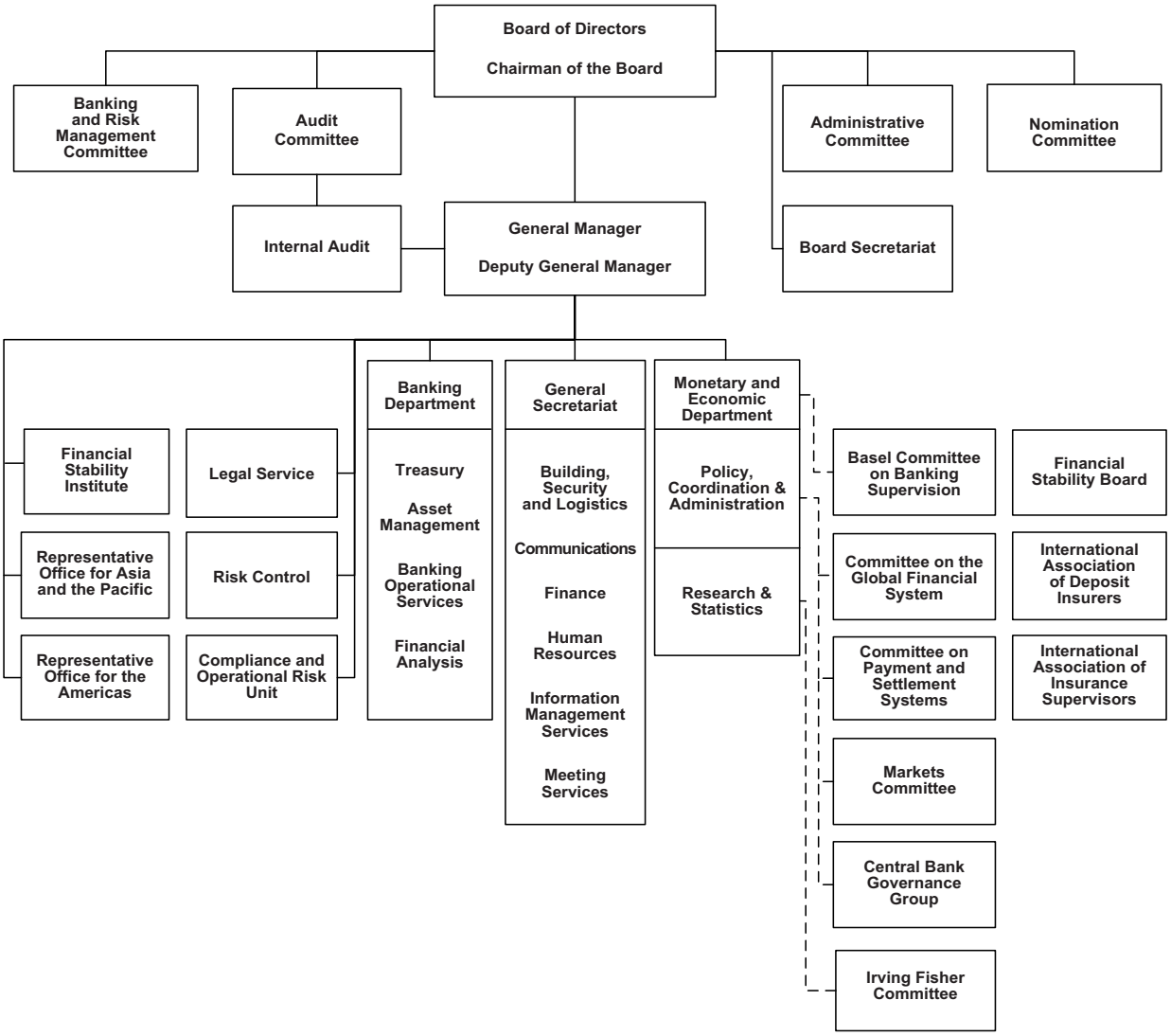


Organisation of the BIS as at 31 March 2010

The BIS: mission, activities, governance and financial results

The mission of the Bank for International Settlements (BIS) is to serve central banks and financial authorities in their pursuit of monetary and financial stability, to foster international cooperation in those areas and to act as a bank for central banks.

In the light of the Bank's mission, this chapter reviews the activities of the BIS and the groups it hosts for the financial year 2009/10; describes the institutional framework that supports their work; and presents the year's financial results.

In broad outline, the BIS pursues its mission by:

- promoting discussion and facilitating collaboration among central banks;
- supporting dialogue with other authorities that have responsibility for promoting financial stability;
- conducting research on policy issues confronting central banks and financial system supervisory authorities;
- acting as a prime counterparty for central banks in their financial transactions; and
- serving as an agent or trustee in connection with international financial operations.

The BIS promotes international monetary and financial cooperation and coordination through its meetings programmes for central bank officials and through the Basel Process – hosting international committees and standard-setting bodies and facilitating their interaction. In particular, the BIS hosts the Financial Stability Board and supports its mandate: to coordinate at the international level the work of national financial authorities and international standard-setting bodies in order to develop and promote the implementation of effective regulatory, supervisory and other financial sector policies.

The BIS research and statistics function addresses the needs of monetary authorities and supervisory authorities for data and policy insight.

The BIS banking function provides prime counterparty, agent and trustee services appropriate to the BIS mission.

The meetings programmes and the Basel Process

The BIS promotes international financial and monetary cooperation in two major ways:

- through hosting bimonthly and other meetings of central bank officials; and
- through the Basel Process, which facilitates cooperation of the committees and standard-setting bodies hosted by the BIS in Basel.

Bimonthly meetings and other regular consultations

At bimonthly meetings, normally held in Basel, Governors and other senior central bank officials discuss current 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. In addition to the bimonthly meetings, the Bank regularly hosts gatherings that variously include public and private sector representatives and the academic community.

The principal bimonthly meetings of Governors and other senior officials of the BIS member central banks are the Global Economy Meeting and the All Governors' Meeting.

The members of the Global Economy Meeting (GEM) consist of Governors from 30 BIS shareholding central banks in major advanced and emerging market economies that account for 82% of global GDP. Governors from another 15 central banks attend the GEM as observers.[1] The GEM's main role has been to monitor economic and financial developments and assess the risks and opportunities in the world economy and the global financial system.

In the course of 2009/10, the BIS Board of Directors added a new responsibility to the duties of the GEM when it decided on an important reform of the process of guiding the activities of the main central bank committees. The responsibility of providing guidance to those committees – the Committee on the Global Financial System, the Committee on Payment and Settlement Systems and the Markets Committee – which had been in the hands of G10 Governors for decades, was transferred to the GEM with effect from January 2010. Therefore the GEM now sets work priorities for those committees and, on the proposal of the Chairman of the new Economic Consultative Committee (discussed below), appoints committee chairs and approves changes in the composition and organisation of the committees. The GEM also now receives reports from the chairs of the committees and decides on publication.

As the Global Economy Meeting is quite large, the Board created a new, informal group called the Economic Consultative Committee (ECC) to assist it by preparing proposals for discussion and decision by the GEM. The ECC, limited to 18 participants, includes all Board member Governors, the central bank Governors from India and Mexico, and the BIS General Manager.

Jean-Claude Trichet, President of the ECB and Chairman of the Global Economy Meeting in its former capacity, has been elected by the Board to continue his chairmanship of the GEM in its enhanced capacity and also to become the Chairman of the new ECC.

In the All Governors' Meeting, chaired by the BIS Chairman, the Governors of all shareholding member central banks participate, discussing selected

[1] The members of the GEM are the central bank Governors of Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong SAR, India, Indonesia, Italy, Japan, Korea, Malaysia, Mexico, the Netherlands, Poland, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, the United Kingdom and the United States and also the President of the European Central Bank and the President of the Federal Reserve Bank of New York. The Governors attending as observers are from Algeria, Austria, Chile, the Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Israel, New Zealand, Norway, the Philippines, Portugal and Romania.

topics that are of general interest to the members. In 2009/10, the topics discussed were:

- systemic risks in OTC derivatives markets: analysis and policy options;
- systemic financial risk: drivers, measurement, policy tools;
- the comprehensive response of the BCBS to the global banking crisis;
- policy responses to capital inflows; and
- interest rate risk in the financial system.

In reviewing the governance of BIS cooperative activities, the Board and the GEM also agreed that the All Governors' Meeting should remain in charge of guiding the work of both the Central Bank Governance Group (which oversees the operations of the Central Bank Governance Forum) and the Irving Fisher Committee on Central Bank Statistics, in particular because the membership of the two groups goes beyond the participants in the GEM.

Regarding the Basel Committee on Banking Supervision (BCBS), the Bank hosts regular meetings of the Group of Central Bank Governors and Heads of Supervision, which oversees the work of the BCBS. This oversight body met twice during the period under review to endorse the comprehensive reform package being developed to strengthen the regulation, supervision and risk management of the banking sector.

The Bank regularly organises informal discussions among public and private sector representatives that focus on their shared interests in promoting a sound and well functioning international financial system. In addition, the Bank organises various other meetings for senior central bank officials on a regular or ad hoc basis, to which other financial authorities, the private financial sector and the academic community are invited to contribute. These meetings include:

- the meetings of the working parties on domestic monetary policy, held in Basel but also hosted at a regional level by a number of central banks in Asia, central and eastern Europe, and Latin America;
- the meeting of Deputy Governors of emerging market economies; and
- the high-level meetings organised by the Financial Stability Institute in various regions of the world for Deputy Governors and other senior-level supervisors.

The Basel Process

The Basel Process directly supports the work of the international secretariats hosted at the BIS, including the Financial Stability Board (FSB), which coordinates at the international level the work of national financial authorities and international standard-setting bodies. Another aspect of the BIS's facilitative role is the mandate of its Financial Stability Institute (FSI), which is to assist financial sector supervisory authorities worldwide in strengthening oversight of their financial systems.

Features of the Basel Process

The Basel Process is based on four key features: (i) the synergies of co-location; (ii) flexibility and openness in the exchange of information; (iii) support

from the economic research expertise at the BIS and its banking experience; and (iv) the dissemination of work.

Synergies. The BIS hosts the secretariats of nine groups, including the FSB, that contribute to the pursuit of financial stability. The following six enjoy a significant degree of autonomy in setting their agendas and structuring their activities:

- the Basel Committee on Banking Supervision (BCBS): addresses supervision at the level of individual institutions and its relation to macroprudential supervision;
- the Committee on the Global Financial System (CGFS): monitors and analyses macrofinancial stability issues;
- the Committee on Payment and Settlement Systems (CPSS): analyses and sets standards for the payment, clearing and settlement infrastructure;
- the Markets Committee: examines the functioning of financial markets;
- the Central Bank Governance Group: examines issues related to the design and operation of central banks; and
- the Irving Fisher Committee on Central Bank Statistics (IFC): addresses statistical issues of concern to central banks, including those relating to economic, monetary and financial stability.

In contrast to the above six groups, the FSB has its own governance and reporting lines, as do the remaining two groups hosted at the BIS, the International Association of Deposit Insurers (IADI) and the International Association of Insurance Supervisors (IAIS).

The synergies created by physical proximity and the resulting exchange of ideas among these groups have been considerable.

Flexibility. The limited size of these groups leads to flexibility and openness in the exchange of information, thereby enhancing the coordination of their work on financial stability issues and avoiding overlaps and gaps in their work programmes. At the same time, their output is much larger than their limited size would suggest, as they are able to leverage the expertise of the international community of central bankers, financial regulators and supervisors.

Supportive BIS expertise and experience. The work of the Basel-based committees is informed by the BIS's economic research and by its banking experience. The latter is derived from the BIS Banking Department's working relationships with market participants and its implementation of regulatory standards and financial controls for the conduct of its banking operations.

Dissemination. Dissemination of the standard-setting bodies' work to official organisations is facilitated by the FSI.

Activities of BIS-hosted groups in 2009/10

The following pages review the year's principal activities of the nine groups hosted at the BIS.

Financial Stability Board

The Financial Stability Board (FSB) was established by the G20 declaration of 2 April 2009 as the successor to the Financial Stability Forum (FSF). The charter that formally confirms its objectives, mandate, membership and organisational processes became effective on 25 September 2009, when it was endorsed by G20 leaders at the Pittsburgh summit.

The FSB promotes international financial stability by coordinating the work of national financial authorities and international standard-setting bodies in developing strong regulatory, supervisory and other financial sector policies. It fosters a level playing field though coherent implementation across sectors and jurisdictions.

More specifically, as part of its mandate, the FSB:

- assesses vulnerabilities affecting the global financial system and identifies and reviews the regulatory, supervisory and related actions needed to address them and their outcomes;
- promotes coordination and information exchange among authorities responsible for financial stability;
- monitors and advises on market developments and their implications for regulatory policy;
- advises on and monitors best practice in meeting regulatory standards;
- undertakes joint strategic reviews of the policy development work of the international standard-setting bodies to ensure that their work is timely, coordinated, and focused on priorities and addressing gaps;
- sets guidelines for and supports the establishment of supervisory colleges;
- supports contingency planning for cross-border crisis management, particularly with respect to systemically important firms; and
- collaborates with the IMF to conduct early warning exercises.

The FSB comprises senior officials from finance ministries, central banks and financial regulators in 24 countries and territories (including all countries in the G20) as well as from the ECB and the European Commission. It also includes representatives of international financial institutions (the BIS, IMF, OECD and World Bank) and international standard-setting and central bank bodies (the BCBS, CGFS, CPSS, the International Accounting Standards Board (IASB), the IAIS and the International Organization of Securities Commissions (IOSCO)). The FSB is chaired by Mario Draghi, Governor of the Bank of Italy.

The FSB operates through plenary meetings of its membership as well as through the following groups:

- a Steering Committee, chaired by Mario Draghi;
- a Standing Committee for Assessment of Vulnerabilities, chaired by Jaime Caruana, General Manager of the BIS;
- a Standing Committee for Supervisory and Regulatory Cooperation, chaired by Adair Turner, Chairman of the UK Financial Services Authority; and
- a Standing Committee for Standards Implementation, chaired by Tiff Macklem, Associate Deputy Minister of the Department of Finance of Canada.

At its plenary meetings – in June and September 2009 and January 2010 – the FSB advanced the international regulatory policy reform agenda to

strengthen financial stability, setting out clear principles and timetables for implementation. Its September 2009 report, *Improving financial regulation*, set out a reform programme in the following key areas:

Strengthening the global capital and liquidity framework for banks

The FSB and the BCBS, in collaboration with the IMF, are jointly assessing the macroeconomic implications of the implementation of the BCBS capital and liquidity reform proposals. The BCBS will take this assessment into account in framing the appropriate transitional arrangements.

Making global liquidity more robust

In addition to the BCBS-proposed liquidity reforms for banks, the FSB is coordinating work on international policy actions to address system-wide cross-border liquidity risks, including the particular issues that arise for emerging markets.

Reducing the moral hazard posed by systemically important financial institutions

The FSB is developing by end-October 2010 a package of measures to reduce the "too big to fail" problems that these institutions pose. This work covers three areas: reducing the probability and impact of a systemically important firm's failure; improving the capacity to undertake an orderly resolution of a failing firm; and strengthening the core infrastructures and markets. A preliminary assessment and possible policy options will be presented to the June 2010 G20 summit.

Strengthening accounting standards

The FSB continues to encourage work to improve standards on valuation and provisioning and achieve a single set of high-quality global accounting standards. This includes monitoring the implementation of the FSF's April 2009 recommendations that encourage accounting standard setters to consider ways of dampening the potential adverse dynamics of fair value accounting, as part of an effort to enhance transparency and accounting treatments while mitigating procyclicality.

Improving compensation practices

In April 2009, the FSF released *Principles for sound compensation practices* for significant financial institutions. The FSB followed up in September 2009 by issuing implementation standards for those principles. An FSB peer review published in March 2010 said that significant progress had been made by its members in incorporating the principles and standards into domestic regulatory and supervisory frameworks, but it found that effective implementation was far from complete. A follow-up review on compensation will be undertaken in the second quarter of 2011.

Expanding oversight of the financial system

Work is progressing to ensure that all systemically important activities – including those of hedge funds and credit rating agencies – are subjected

to appropriate oversight and regulation. The FSB welcomed the Joint Forum's January 2010 report on the differentiated nature and scope of regulation, which makes recommendations to address current gaps in supervision and regulation, and to increase the consistency of approach across sectors. The FSB will monitor policy development on the issues the report identifies and propose action where issues raised are not yet being addressed.

Strengthening the robustness of the OTC derivatives market

Standards are being strengthened to address systemic risks, including covering capital requirements to reflect the risks of OTC derivatives and further incentivise the move to central counterparties and, where appropriate, organised exchanges. The FSB has established a working group to report by October 2010 on policy options to increase the standardisation of OTC derivatives and to develop a clear process to consistently implement mandatory clearing and trading requirements at the global level.

Relaunching securitisation on a sound basis

The official sector must provide the framework that ensures discipline in the securitisation market as it revives. The FSB is assessing what further steps are needed in areas such as transparency, disclosure and the alignment of incentives.

Promoting adherence to international standards

The FSB is fostering a race to the top by encouraging all jurisdictions to raise their level of adherence to international financial standards. FSB member jurisdictions will lead by example, including by implementing financial standards and disclosing their level of adherence. FSB member jurisdictions are undergoing thematic and single-country peer reviews to evaluate their adherence. The March 2010 peer review of compensation practices was the first such review.

The FSB is also encouraging the adherence of all jurisdictions to international financial standards, including through an initiative launched in March 2010 to identify non-cooperative jurisdictions and assist them in improving their adherence.

Other work

In November 2009, the FSB published reports on three other issues:

- A note reviewing policies to withdraw from exceptional financial support measures set out principles that such exit policies should be preannounced, flexible, transparent and credible. The note includes a report by the staffs of IADI and the IMF on strategies to unwind temporary deposit insurance arrangements.
- A joint report by the IMF, BIS and FSB, *Guidance to assess the systemic importance of financial institutions, markets and instruments: initial considerations*, outlines conceptual and analytical approaches for use by national authorities. It discusses a possible form for general guidelines

that would be sufficiently flexible to apply to a broad range of countries and circumstances.

- A joint report by the IMF and FSB, *The financial crisis and information gaps*, identifies gaps and sets forth proposals for strengthening data collection to better capture the build-up of risk in the financial sector, improve data on international financial network connections, monitor the vulnerability of domestic economies to shocks, and improve the communication of official statistics. The FSB has formed a working group to handle its part of the implementation work.
  FSB: www.financialstabilityboard.org

Basel Committee on Banking Supervision

The Basel Committee on Banking Supervision, chaired by Nout Wellink, President of the Netherlands Bank, seeks to improve supervisory understanding and the quality of banking supervision worldwide. It supports supervisors by providing a forum for exchanging information on national supervisory arrangements, by improving the effectiveness of techniques for supervising international banking, and by setting minimum supervisory standards.

Response to the financial crisis

The Basel Committee's reform programme is at the core of global efforts to mitigate systemic risk and promote more sustainable economic growth. An essential lesson of the financial crisis is the need to build up capital and liquidity buffers in the banking system: the quality and amount of capital must be increased; the leverage ratio must act as a backstop to the risk-based requirement and as a brake on the build-up of sector-wide leverage; and a global liquidity standard must be introduced to provide greater resilience to liquidity shocks both on and off the balance sheet.

Another key lesson is the need to focus supervision not just on the soundness of individual banks but also on broader financial stability objectives. That is, the microprudential foundation of supervision needs to be supplemented with a macroprudential overlay. To mitigate the procyclical behaviour of financial markets, the Committee is promoting capital conservation, countercyclical buffers and loss provisioning that is more forward-looking. In addition, it is proposing a number of steps to address the systemic linkages of global banks and the associated moral hazard these create.

In July 2009, the Committee approved a final package of measures to strengthen the 1996 rules governing trading book capital and to enhance the three pillars of the Basel II Framework.

In December 2009, it published for consultation a comprehensive reform package to substantially reduce the probability and severity of economic and financial stress by strengthening global capital and liquidity regulations. The Committee is conducting an impact assessment of those proposals during the first half of 2010. The Committee's goal is to deliver a fully calibrated set of standards by the end of 2010, with a two-year phase-in to ensure a smooth transition.

Bank capital: improving its quality

A key element of the December 2009 proposals is raising the quality, consistency and transparency of the capital base. The proposal's focus on common shares and retained earnings as the predominant form of Tier 1 capital will help ensure that any large, internationally active bank is in a better position to absorb losses, whether as a going concern or as a firm that is being wound down. The Committee is harmonising the other elements of the capital structure.

The December 2009 proposals also include a review of issues regarding contingent and convertible capital instruments: the criteria by which to judge their loss absorbency and the role of these instruments more generally both within the regulatory capital minimum and as buffers.

Bank capital: expanding risk coverage

During the crisis, the majority of bank losses were in the trading book, which is where most of the industry's leverage was built up. The Committee's July 2009 package called for higher capital requirements to capture the credit risk of complex trading activities; and it introduced a stressed value-at-risk requirement, intended to dampen the cyclicality of the minimum regulatory capital framework.

The July 2009 enhancements to the Basel II Framework strengthened Pillar 1 (minimum capital requirements) by raising the risk weights for resecuritisation exposures – so-called CDOs of ABS (collateralised debt obligations of asset-backed securities). The Committee also applied stricter standards to short-term liquidity facilities for off-balance sheet conduits.

The December 2009 proposals included strengthening the capital requirements for counterparty credit risk exposures arising from derivatives, repurchase agreements (repos) and securities financing activities. These enhancements will also increase incentives to move over-the-counter derivative exposures to central counterparties and exchanges.

Bank capital: introducing a supplementary leverage ratio

The December 2009 package introduced a leverage ratio as a supplementary measure to the Basel II risk-based framework with a view to migrating to a Pillar 1 treatment based on appropriate review and calibration. The supplementary ratio would help contain the build-up of excessive leverage in the banking system, introduce additional safeguards against attempts to game the risk-based requirements and help address model risk. To ensure comparability, the details of the leverage ratio will be harmonised internationally, fully adjusting for any remaining differences in accounting. The ratio will be calibrated so that it serves as a credible supplementary measure to the risk-based requirements, taking into account the forthcoming changes to the Basel II Framework.

Bank capital: reducing procyclicality

One of the most destabilising elements of the crisis was procyclicality – the amplification of financial shocks throughout the financial system and the broader economy. Procyclicality arose through a variety of channels, including accounting standards for both mark to market assets and held-to-maturity

loans, margining practices, and the build-up and release of leverage among financial institutions, firms and consumers.

The Committee has proposed measures to make the banking sector serve as a shock absorber instead of a transmitter of risk: building up capital buffers in good times so that they can be drawn upon in periods of stress; and making provisioning more forward-looking by calculating it on the basis of expected losses.

The build-up of buffers would be achieved through capital conservation measures, including limits on excessive dividend payments, share buybacks and compensation. The Committee is also reviewing a mechanism that would adjust capital buffers countercyclically through a linkage with credit variables.

A move to expected-loss provisioning would capture actual losses more transparently and would be less procyclical than the current incurred-loss provisioning model.

Bank capital: addressing systemic risk and interconnectedness

To assist supervisors in measuring the systemic significance of particular banks, and to reduce the probability and impact of the failure of a systemically important bank, the Committee is evaluating the concept of a capital surcharge for such banks and related supervisory measures.

Improving liquidity risk management and supervision

The inaccurate and ineffective management of liquidity risk was central to the financial crisis. To help address the problem and promote consistent supervisory expectations – and building on the Committee's *Principles for sound liquidity risk management and supervision*, issued in 2008 – the BCBS has recently focused on further enhancing the resilience of internationally active banks to liquidity stresses as well as increasing international harmonisation of liquidity risk supervision.

For such banks, the December 2009 consultative package introduced a global minimum liquidity ratio, which included a 30-day coverage ratio. That ratio would be underpinned by a longer-term structural ratio and a minimum set of tools aimed at identifying and analysing trends in liquidity risk at both the bank and system-wide levels.

Enhancing risk management

The July 2009 enhancements to Basel II included supplemental guidance under Pillar 2 (the supervisory review process) to address the risk management flaws revealed by the crisis. The guidance, which became effective immediately, covered:

- firm-wide governance and risk management;
- the risk of off-balance sheet exposures and securitisation activities;
- risk concentrations; and
- incentives for banks to better manage risk and return over the long term.

The supplemental guidance incorporates the Financial Stability Forum's April 2009 *Principles for sound compensation practices*. Further, the Committee in January 2010 issued a supervisory assessment methodology to promote sound compensation practices at banks.

In May 2009, the Committee issued *Principles for sound stress testing practices and supervision* to address the weaknesses in bank stress tests that were highlighted by the crisis.

Strengthening corporate governance

In March 2010, the Committee released for consultation a set of best governance practices for banks in *Principles for enhancing corporate governance*. The document addresses fundamental deficiencies that became apparent during the financial crisis. Supervisors also have a critical role in this area. Under the Committee's principles, they should establish guidance or rules for implementing best practice and regularly evaluate a bank's policies and practices according to the Committee's principles.

Accounting for financial instruments

The application of fair value accounting to a wider range of financial instruments, together with experiences from the crisis, has highlighted the critical importance of robust risk management and control processes. Hence, in April 2009 the Committee issued guidance for banks in its *Supervisory guidance for assessing banks' financial instrument fair value practices*. The document also provides guidance to supervisors under the Pillar 2 supervisory review process.

In August 2009, the Committee released a set of high-level *Guiding principles for the replacement of IAS 39* to assist the International Accounting Standards Board (IASB) in addressing issues related to provisioning, fair value measurement and related disclosures. The principles will help the IASB produce standards that improve the usefulness and relevance of financial reporting for key stakeholders. Moreover, the G20 recently recommended that the IASB and the Financial Accounting Standards Board, in the United States, achieve convergence between the International Financial Reporting Standards and the United States' generally accepted accounting principles (US GAAP). The Committee's high-level guiding principles will advance those joint efforts, and they will also ensure that accounting reforms address broader concerns about procyclicality and systemic risk.

Improving transparency

The July 2009 Basel II package included enhancements to Pillar 3 (market discipline) to strengthen disclosure requirements for securitisations, off-balance sheet exposures and trading activities. These additional requirements will help reduce market uncertainties about the strength of banks' balance sheets in relation to capital market activities.

Facilitating cross-border bank resolution

In March 2010, the Committee issued its final *Report and recommendations of the Cross-border Bank Resolution Group*. The financial crisis exposed gaps in techniques and tools needed for the complex and multidimensional process of resolving a cross-border bank in an orderly fashion. First issued for consultation in September 2009, the report sets out 10 recommendations

covering three topics: strengthening national resolution powers and their cross-border implementation; firm-specific contingency planning; and reducing contagion.

Establishing and improving deposit insurance systems

In June 2009, the Committee and the International Association of Deposit Insurers published *Core Principles for Effective Deposit Insurance Systems*. The document responds to the need for effective deposit insurance to help maintain public confidence during a crisis. In addressing issues such as coverage, funding and prompt reimbursement, the Core Principles set an important benchmark in establishing or reforming deposit insurance systems.

Expanded Committee membership

In 2009, the Committee and its governing body, the Group of Central Bank Governors and Heads of Supervision, acted to enhance the Committee's ability to pursue its worldwide mission. They agreed to expand the number of member jurisdictions, and thus the Committee's membership, by inviting representatives from Hong Kong SAR and Singapore and from the G20 countries that were not already represented: Argentina, Australia, Brazil, China, India, Indonesia, Korea, Mexico, Russia, Saudi Arabia, South Africa and Turkey. The Basel Committee now consists of 27 member jurisdictions represented by 44 central banks and supervisory authorities.

Basel Committee: www.bis.org/bcbs

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. CGFS members consist of the Deputy Governors and other senior officials of 23 central banks from advanced and emerging market economies and the Economic Adviser of the BIS.

The analysis of private and public sector responses to the financial crisis shaped the Committee's work in the period under review. In particular, various CGFS groups reviewed specific aspects of international banking and funding markets. The reports prepared by these groups were published during the first half of 2010:

- A joint CGFS–Markets Committee study group investigated the performance of cross-border funding markets during the crisis and possible ways to enhance their resilience.
- A CGFS study group reviewed changes in the funding strategies and liquidity management of internationally active banks in response to the financial crisis.
- A CGFS study group analysed the role of margining practices and haircut setting in over-the-counter derivatives and securities lending transactions and recommended policy measures for mitigating procyclicality arising from such practices.

Moreover, the CGFS investigated the implications of the development of macroprudential frameworks and instruments for central banks.

The Committee completed a review of enhancements to credit risk transfer statistics. Also, in March 2010 the CGFS established an ad hoc group to review various requests for enhancements to the BIS statistics collected under its auspices.

In addition to these special initiatives, the CGFS continued its extended monitoring of, inter alia:

- the balance sheet constraints of major banks and the implications for credit supply;
- funding market conditions and the impact of unconventional central bank policies; and
- the financial system implications of rising government debt and growing market concerns about sovereign credit risk.

CGFS: www.bis.org/cgfs

Committee on Payment and Settlement Systems

The Committee on Payment and Settlement Systems (CPSS) contributes to the strengthening of financial market infrastructure by promoting safe and efficient payment, clearing and settlement arrangements. During the year, the membership of the Committee was extended to include 25 central banks from both developed and emerging market economies. The CPSS is chaired by William C Dudley, President and Chief Executive Officer of the Federal Reserve Bank of New York.

The CPSS reviewed its existing *Recommendations for central counterparties* to provide guidance on how the recommendations should be applied to central counterparties (CCPs) that clear over-the-counter (OTC) derivatives. The review was carried out jointly with the Technical Committee of the International Organization of Securities Commissions (IOSCO). When the recommendations were originally published, in 2004, they were aimed at CCPs for exchange-traded derivatives. The recent development of CCPs for OTC derivatives, such as credit default swaps, thus required a review of the ways in which differences between these two types of derivatives – exchange-traded and OTC – affect how the recommendations should be implemented. The CPSS and IOSCO are also providing guidance for the design and operation of trade repositories in OTC derivatives markets.

The CPSS and IOSCO also began a comprehensive review of all three sets of their key standards: the *Core principles for systemically important payment systems* (2001), the *Recommendations for securities settlement systems* (2001) and the above-mentioned *Recommendations for central counterparties* (2004). The review is intended to apply the experience gained since the standards were issued – particularly experience during the financial crisis – to clarify, extend and, where necessary, strengthen the standards and the accompanying guidance. A consultation document will also incorporate the new guidance for CCPs and trade repositories in OTC derivatives.

The Committee continued to facilitate cooperation among non-member central banks and provided support and expertise to workshops and seminars on payment and settlement system issues organised in cooperation with regional central banking organisations.

CPSS: www.bis.org/cpss

Markets Committee

The Markets Committee, chaired by Hiroshi Nakaso, Assistant Governor of the Bank of Japan, is a forum for senior officials from 21 central banks to jointly monitor financial market developments and assess their implications for market functioning and central bank operations.

The post-crisis rebound of global financial markets, accompanied by an uneven recovery in real activity and rising fiscal concerns in some countries, shaped the Committee's discussion in the past year. The Committee examined factors driving the revival of money, credit and asset markets and the role played by public sector support. In particular, the conduct of unconventional central bank policies, whether for alleviating market dislocations or for easing monetary conditions, remained a key theme in Committee deliberations – though the focus shifted over time towards the preparation for prospective exit. The relative calm that prevailed during the period under review also allowed the Committee more time to discuss longer-term structural issues such as the implications of proposed OTC derivatives market reforms.

In addition, the Committee participated with the CGFS in two study groups. One examined the conceptual and practical issues related to unconventional central bank policies; the other assessed the functioning and resilience of cross-border funding markets during the recent crisis. The latter group published a report in March 2010. The Committee updated its *MC compendium: monetary policy frameworks and central bank market operations*, and it participated in the preparation of the 2010 BIS Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity.

Markets Committee: www.bis.org/markets

Central Bank Governance Group

The BIS supports research on the design of the central bank as a public policy institution through its hosting of the Central Bank Governance Group, chaired by Stanley Fischer, Governor of the Bank of Israel. The Group and the Central Bank Governance Network – an informal mechanism to facilitate the flow of information on central bank governance issues between central banks and the BIS – together make up the Central Bank Governance Forum, served by its secretariat at the BIS.

During the past year, the Governance Group produced a report on *Issues in the governance of central banks*. The document reviews current governance arrangements in central banks around the world and discusses issues that arise when decisions are made about the mandate, structure and operations of the central bank.

Beyond that report, the focus of work was on the governance implications of changing financial stability responsibilities of central banks: the macroprudential responsibilities that the central bank might undertake and the relationship between such responsibilities and the governance of the institution. In addition, the BIS continued to meet the needs of individual central banks for governance information. Central banks can access this information through a password-protected website.

Irving Fisher Committee on Central Bank Statistics

Sixty-six central banks and international and regional organisations formally involved in central banking issues are institutional members of the Irving Fisher Committee on Central Bank Statistics, which is chaired by Manuel Marfán, Vice-President of the Central Bank of Chile. The Committee provides a forum for central bank economists and statisticians to address statistical topics related to monetary and financial stability.

In August, the Committee organised 10 sessions at the 57th biennial World Congress of the International Statistical Institute, held in Durban, South Africa. On that occasion, it also co-sponsored a seminar with the South African Reserve Bank for the central banks of the Southern African Development Community; the topic was statistical requirements to support regional economic and financial integration amid the global financial crisis. In addition, the Committee sponsored two regional workshops on inflation measurement, one for the Asian central banks associated with the South East Asian Central Banks (SEACEN) Research and Training Centre and the other for the central banks of the Gulf Cooperation Council. It also organised, in collaboration with Eurostat and the International Association of Official Statistics, a conference on methodological issues related to indices of residential property prices.

IFC: www.bis.org/ifc

International Association of Deposit Insurers

The International Association of Deposit Insurers (IADI) contributes to the stability of financial systems by promoting international cooperation and encouraging wide international contact among deposit insurers and other interested parties. IADI's principal activities involve:

- enhancing the understanding of common interests and issues related to deposit insurance;
- setting out guidance to enhance the effectiveness of deposit insurance systems;
- facilitating the sharing of expertise on deposit insurance issues through training, outreach and educational programmes; and
- providing guidance on the establishment or enhancement of effective deposit insurance systems.

Currently, 78 organisations from around the world are involved in IADI's activities. Sixty of the organisations are deposit insurer members. The others include a number of central banks and other organisations that have an

interest in promoting the adoption or operation of effective deposit insurance systems.

One of the Association's main objectives is to improve the effectiveness of deposit insurance systems through the development of principles and practices.

In June 2009, IADI and the Basel Committee on Banking Supervision, in collaboration with the European Forum of Deposit Insurers (EFDI), published the first international set of *Core Principles for Effective Deposit Insurance Systems*. The Core Principles are designed to serve as a benchmark for jurisdictions in strengthening existing deposit insurance systems and developing new ones. IADI, the BCBS and the IMF are currently collaborating on the development of a Deposit Insurance Core Principles Methodology that can be used in the IMF's Financial Sector Assessment Program (FSAP) to assess and improve national deposit insurance systems, and by the FSB for peer reviews. The EFDI, the European Commission and the World Bank are also participating in this effort, which is to be completed by the end of 2010. After the completion of the methodology, the FSB plans to include the Core Principles in its Compendium of Standards.

At the request of the FSB, IADI and the IMF prepared a joint memorandum on "Unwinding temporary deposit insurance arrangements" that identified specific actions which various jurisdictions had carried out to enhance deposit insurance systems in response to the financial crisis and steps taken to date to unwind temporary measures and full guarantees.

IADI continued to work closely with the FSI on the joint development of training programmes and conferences for deposit insurers, financial sector supervisors and central banks worldwide. The Association was partnered by the FSI and the Basel Committee in hosting its Eighth Annual Conference at the BIS in September 2009, the topic of which was the Core Principles for Effective Deposit Insurance Systems. The event provided a forum to consider how the Core Principles could be applied in supervision and deposit insurance, prerequisites for effective systems, individual principles and practitioners' experience, as well as the next steps – implementation and assessment. During the conference, IADI organised the International Exhibition on Deposit Insurance to share training and research materials.

IADI also entered into a partnership with the FSI to provide IADI members with co-sponsored seminars, such as that on Cross-border Banking Resolution Issues, as well as conferences and e-learning.

IADI's Research and Guidance Committee (RGC) has, together with the BIS's Monetary and Economic Department, developed a worldwide deposit insurance system database that constitutes a critical component of IADI's research priorities. The database will manage IADI's survey data on deposit insurance systems worldwide. IADI recently collected responses to its *Survey on interventions to protect depositors through higher coverage limits or blanket guarantees* and its *Survey on strategic questions on payout systems and processes*. The RGC also released guidance papers on governance, public awareness and funding. Two papers (*Deposit insurance coverage* and *Organizational risk management for deposit insurers*) and four Research Plans have been released for public consultation.

During its eighth year of operation, IADI continued to provide a number of forums for deposit insurers and other safety net participants. Activities included a capacity-building programme and an Executive Training Program component to address deposit insurance programme weaknesses (claims management, payout system tools for meeting fast payout challenges, cross-border issues, and resolution of problem banks). The bank resolution training seminar agenda included the least cost test for determining a bank resolution alternative, large and small bank resolutions, and the use of bridge banks and conservatorships for an orderly resolution process.

IADI's seven regional committees and 12 partner organisations brought together professionals for events such as the Conference on Bank Insolvency in the Caribbean: Law and Best Practice and seminars on Understanding the Fundamentals of Islamic Banking and Deposit Insurance (Middle East and North Africa region and Asia), the Role of Deposit Insurance in the Current Crisis (Latin America) and the Design of Deposit Insurance Systems (Africa) as well as various regional outreach conferences.

IADI: www.iadi.org

International Association of Insurance Supervisors

The International Association of Insurance Supervisors (IAIS), hosted by the BIS since 1998, is the international standard-setting body for prudential supervision of the insurance industry. The IAIS aims to contribute to global financial stability through improved supervision of the insurance industry, the development of standards for supervision, international cooperation based on the exchange of information, and mutual assistance.

The IAIS has been actively involved in assessing the impact of the financial crisis on the insurance sector and responding to recommendations for regulatory reforms from the FSB and G20. The IAIS established the Financial Stability Committee with the primary aim of discussing financial stability issues and supporting the IAIS's participation in the FSB. The Committee's activities include reporting on systemic risk and the insurance sector, consideration of macroprudential tools, and the development of proposals on macroprudential surveillance.

The Joint Forum – the joint working group of the BCBS, IOSCO and the IAIS – published its *Review of the differentiated nature and scope of financial regulation* in January 2010. New Joint Forum workstreams coming out of this report are currently being considered.

Accounting

The IAIS has a strong interest in ensuring high-quality financial reporting that offers a meaningful, economically sound portrayal of insurers' financial health. It closely monitors the international financial reporting developments that will most influence the overall accounting model for regulated insurance enterprises. The International Accounting Standards Board project on accounting for insurance contracts will continue to benefit from the active involvement of the IAIS.

In 2009, the IAIS adopted an issues paper on *The roles of and relationship between the actuary and the external auditor in the preparation and audit of financial reports*. The paper, which discusses the issue from the perspective of the insurance supervisor, discusses roles and responsibilities, communication, reporting, the relationship between external auditor and insurance supervisor, professional standards, and qualifications and regulation.

Capital adequacy and solvency

In October 2009, the IAIS adopted both a standard and a guidance paper on *The structure of capital resources for solvency purposes*. The guidance paper outlines a number of approaches a supervisor could adopt for determining capital resources.

Governance and compliance

In July 2009, the IAIS adopted an issues paper on *Corporate governance*, prepared jointly with the Organisation for Economic Co-operation and Development. The paper discusses governance structures, functions of the board of directors, control functions, the actuarial function and auditors, disclosure and transparency, relationships with stakeholders, and interaction with the supervisor.

Group-wide supervision

In October 2009, the IAIS adopted the guidance paper on *The use of supervisory colleges in group-wide supervision*. The paper discusses supervisory colleges as a mechanism to facilitate cooperation and exchange of information among involved supervisors and the coordination of supervisory activities on a group-wide basis. The paper complements the guidance paper on *The role and responsibilities of a group-wide supervisor*, adopted in 2008.

Internationally active insurance groups

In January 2010, the IAIS Executive Committee approved the development of the Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame). ComFrame will be a multilateral framework reaching beyond the regulatory approaches of individual jurisdictions and regions. It will provide parameters for assessing group structures and group business from a risk management perspective; set out quantitative and qualitative requirements that are specific and focused but not rules-based; and cover the necessary areas of supervisory cooperation and coordination. ComFrame should lead to more consistency and better comparability and alignment regarding each jurisdiction's supervision of internationally active insurance groups. The IAIS will develop ComFrame over the next three years, after which it will undertake an impact assessment.

Reinsurance

Global reinsurers are important to the efficient functioning of insurance markets. They bolster the ultimate security of ceding insurers, thereby protecting customers and contributing to overall financial stability.

The annual IAIS *Global Reinsurance Market Report* is based on unique data provided by more than 50 leading global reinsurers worldwide. These firms have been actively engaged with the IAIS as it seeks to facilitate better understanding, regulation and supervision of this key financial industry. The 2009 report showed that, despite the ongoing financial turmoil, the global reinsurance market has again demonstrated its robustness and resilience. In June 2009, the IAIS published the first midyear edition of the report, *Developments in (re)insurance securitisation*. It supplemented the year-end report by providing a qualitative analysis of the main characteristics, functions and developments in the insurance securitisation market.

Multilateral memorandum of understanding

The IAIS multilateral memorandum of understanding (MMoU) is a framework for cooperation and the exchange of information to improve the effectiveness of cross-border supervision of insurance companies. It is also expected to contribute to the global efforts to enhance the regulation of systemically important financial institutions. The MMoU became operational in June 2009. As of March 2010, a total of eight insurance supervisory authorities are signatories, and another 16 applicants are being validated.

Training

Each year, the IAIS organises some 10–12 regional seminars and workshops to assist insurance supervisors in implementing its principles and standards. These training events are conducted in collaboration with the FSI, national insurance supervisory authorities and other bodies. The FSI has also begun releasing online tutorials addressing insurance sector supervision.

IAIS: www.iaisweb.org

Financial Stability Institute

To fulfil its mandate to support financial stability globally, the Financial Stability Institute (FSI) of the BIS conducts a two-pronged programme designed to disseminate supervisory standards and sound practices.

Meetings, seminars and conferences

The first prong of the FSI programme is its well established series of high-level meetings, seminars and conferences targeted at banking and insurance sector supervisors. In 2009, the FSI organised 52 such events at venues around the world, many of which were held in partnership with regional groups of supervisors. In response to the recent financial crisis and the revisions to key standards being made by standard-setting bodies, the FSI placed special emphasis on issues related directly to financial regulatory reform. More than 2,000 representatives of central banks and banking and insurance supervisory authorities participated in the 2009 events. The FSI also continued its series of high-level meetings for Deputy Governors of central banks and heads of supervisory authorities, with such meetings taking place in Africa, Asia, Latin

America and the Middle East. Last year, besides covering ongoing supervisory issues such as implementation of Basel II, these meetings focused on the financial crisis and regulatory responses such as a macroprudential approach to regulation and supervision.

FSI Connect

The second prong of the FSI programme is FSI Connect, an online information resource and learning tool for financial sector supervisors at all levels of experience and expertise. It includes more than 175 tutorials covering a wide range of topics. The subscribers to FSI Connect consist of more than 200 central banks and supervisory authorities representing more than 8,000 users. The second phase of development of FSI Connect continued in 2009. In October, the first 10 tutorials specifically addressing insurance sector supervision were launched, and work is under way to develop tutorials for IADI.

Research and statistics

The BIS carries out research and analysis on issues of interest to central banks and, increasingly, financial supervisory authorities. Most of this work appears in the Bank's regular outlets, such as the *Annual Report*, the *Quarterly Review* and the *BIS Papers* and *Working Papers* series, as well as in external professional publications and on the Bank's website (www.bis.org). In addition, the research function develops background material for meetings of senior central bankers and provides secretariat and analytical services to the various groupings hosted by the BIS in Basel.

The BIS also collects, aggregates, analyses and disseminates statistical information for central banks and the general public on key elements of the international financial system. The Financial Stability Board and IMF have made recommendations to the G20 regarding data gaps and the financial crisis. Discussions in various forums regarding follow-up to those recommendations have illustrated the importance of BIS statistical activities and the need to continue strengthening them in key areas.

Research focus

In line with the Bank's mission, the focus of BIS research is on monetary and financial stability. As in the previous year, a core theme of the work this year was the global financial crisis – its causes, dynamics and policy implications. One strand of the research used the BIS international banking statistics to cast light on the turmoil. The statistics were the only source that could help identify the US dollar shortage in international markets; and that shortage highlighted the banks' dependence on cross-currency, short-term funding and the consequent disruptions to foreign exchange swap markets. The BIS statistics also helped trace the changes in the geography of international banking associated with the crisis.

A second strand of research focused on the short-term policy responses to the crisis, including financial support packages and unconventional

monetary policy measures. That work was complemented by research on the transmission mechanism of monetary policy, notably the impact of changes in interest rates on risk-taking.

A third strand explored the long-term policy responses within regulatory and supervisory frameworks. Such responses included proposals to implement a stronger macroprudential orientation: methodologies to measure systemic risk, the calibration of prudential tools with respect to the systemic significance of financial institutions, and arrangements for countercyclical capital requirements.

The BIS staff also examined possible improvements to the financial infrastructure, including the use of central counterparties for derivatives and mechanisms to put securitisation on a stronger footing.

The BIS research function organises conferences and workshops, typically bringing together senior policymakers, leading academics and market participants. A principal venue for such gatherings has become the BIS Annual Conference. In June 2009, the Eighth BIS Annual Conference addressed the interactions between the financial system and the macroeconomy, revisiting a theme addressed two years earlier in the light of the new insights provided by the crisis. In September, the BIS and the ECB jointly organised a conference on monetary policy and financial stability.

International financial statistics

The financial crisis has demonstrated that the banking sector raises serious systemic risk issues. The BIS international banking statistics have proven particularly useful for monitoring and analysing financial vulnerabilities. Collected by the BIS in cooperation with central banks, the data cover the international activities of some 7,000 banking institutions from about 40 countries. Last year, central banks from two additional countries began participating: Cyprus and South Africa. Efforts are under way to ensure the participation of the few remaining G20 central banks not reporting such data to the BIS.

The statistics are available on the traditional basis of residency, which follows balance of payments reporting concepts, as well as on a consolidated basis, which tracks cross-border exposures of internationally active banks headquartered in a particular country. The datasets are complementary and provide key breakdowns by currency, maturity and instrument as well as by counterparty sector and country.

The 2010 Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity has been prepared in cooperation with the more than 50 central banks that will participate. It will measure average daily transactions in global markets in April 2010 and amounts outstanding as of June 2010.

Data repository

The BIS also provides a centralised repository of statistical data covering almost all BIS member central banks (the BIS Data Bank), through which

participating institutions share key macroeconomic data. Given the attention paid to financial stability issues, steps have been taken to improve the coverage of these data in several areas. As a follow-up to FSB-IMF recommendations, a growing number of central banks have agreed to post their reported national data on residential property prices on the BIS website.

International statistical initiatives

The BIS has continued its active cooperation with other international organisations and national and international statistical agencies. The BIS is a member of the Inter-Agency Group on Economic and Financial Statistics, together with the ECB, Eurostat, the IMF, the OECD, the United Nations and the World Bank. This group has been tasked with following up on a number of recommendations made by the FSB and IMF to the G20 regarding data gaps and the financial crisis. The group also co-sponsors with the IMF a new dataset website called Principal Global Indicators. The Working Group on Securities Databases, which includes the BIS, ECB and IMF, released the first part of a *Handbook on securities statistics* in May 2009, covering the issuance of debt securities.

The BIS is represented in a number of international committees focused on statistics, inter alia: the IMF Balance of Payments Committee; the IMF Reference Group on Financial Soundness Indicators; the OECD Statistics Committee; the OECD Working Group on Financial Statistics; the UN Statistical Commission; and the ECB Statistics Committee and its various working groups. All these groups worked during the year to address the information gaps revealed by the financial turmoil.

Together with the IMF, the OECD and the World Bank, the BIS maintains the Joint External Debt Hub, which consolidates information on external debt from creditor and debtor sources. The BIS co-sponsors Statistical Data and Metadata Exchange (SDMX), which produces and maintains technical standards and content-oriented guidelines for the dissemination of statistical information. The BIS and a number of central banks have started to use SDMX to provide their statistics on their websites in standardised electronic formats. SDMX is also used for all exchanges of data between the BIS and the central banks participating in the international financial statistics programme and the BIS Data Bank.

Other central bank initiatives to which the BIS lends support

The BIS supports regional central bank groupings and training initiatives as well as central bank cooperation in the areas of counterfeit deterrence, information technology and internal audit.

Regional central bank groupings and central bank training institutes

The BIS contributes to the activities of regional central bank groupings by providing speakers with relevant expertise for their meetings. Such speakers, including from the secretariats of the Basel-based groups and the BIS Representative Offices, were made available to:

- the Centre for Latin American Monetary Studies (capital flows, payment systems, reserve management);
- the South East Asian Central Banks (inflation measurement, payment systems, macroeconomic and monetary policy);
- the Macroeconomic and Financial Management Institute of Eastern and Southern Africa (open market operations, payment systems, reserve management);
- the Gulf Cooperation Council (inflation measurement); and
- the Centre Africain d'Etudes Supérieures en Gestion (Masters in Banking and Finance programme).

BIS experts also contributed to events organised by:

- the Joint Vienna Institute;
- the Bank of France's International Banking and Finance Institute;
- the Bank of England's Centre for Central Banking Studies; and
- the Swiss National Bank's Study Centre in Gerzensee.

At the end of 2009, the mandate for the BIS to support the process of coordinating technical cooperation and training for central banks of former planned economies was officially terminated.

Central Bank Counterfeit Deterrence Group

The Central Bank Counterfeit Deterrence Group (CBCDG) investigates threats to the security of banknotes and proposes common solutions for implementation by note-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 supports the work of the CBCDG and acts occasionally as its agent in contractual arrangements.

Group of Computer Experts

The Group of Computer Experts (GCE) is drawn from a number of BIS member central banks in industrial countries and financial centres. It provides a twice-yearly forum for sharing technical and organisational experiences in the information technology (IT) area.

Common themes for both of the past year's GCE meetings were: the continuing impact of the financial crisis on central bank IT organisations; the increasing use of virtualisation to reduce the number of servers and their associated costs and space requirements; secure remote access; and pandemic preparations. Meeting sessions also covered the adoption of "green IT" and the ongoing migration from mainframes to distributed processing environments.

Additionally, the Working Party on Security Issues (WPSI) meets twice a year on issues related to IT security. Security threats have not diminished in the past year, and central bank IT systems are experiencing more targeted attacks. Information sharing among central banks is working towards more effective alerting about these attacks and safeguarding against them. From the

WPSI perspective, secure communications and business continuity planning remain areas of focus in central banks.

Internal auditors of central banks

Internal auditors of a number of central banks from industrial countries meet regularly to share experience and knowledge. In June 2009, the 23rd Annual Plenary Conference of Heads of Internal Audit was co-hosted by the BIS and the Swiss National Bank. It covered topics such as changes and trends in internal controls, outsourcing issues, talent management practices in internal audit, organisation of compliance functions, and enterprise risk management. In addition, twice a year, the BIS hosts the meetings of the Working Party on IT Audit Methodologies.

BIS Internal Audit has also established information sharing networks for internal audit heads from central banks and monetary authorities in the Asia-Pacific region, and in Latin America and the Caribbean. In September 2009, the sixth meeting of heads of internal audit from central banks in the Asia-Pacific region was hosted by the Bank of Thailand. Discussions focused on the auditing of dealing room activities, fraud prevention and the use of continuous auditing techniques.

Financial services of the Bank

The BIS offers a wide range of financial services tailored specifically to assist central banks and other official monetary authorities in the management of their foreign reserves. Some 130 such institutions, as well as a number of international institutions, make active use of these services.

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 monitors the Bank's credit, liquidity and market risks. Similarly, a compliance and operational risk unit controls the Bank's operational risks.

Scope of 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 tradable instruments (Fixed-Rate Investments at the BIS – FIXBIS, and Medium-Term Instruments – MTIs), in maturities ranging from one week to five years, and structured products with embedded optionality. The BIS also provides short-term liquidity facilities and extends credits to central banks, usually on a collateralised basis. The Bank also acts as trustee and collateral agent (see below).

The Bank transacts foreign exchange and gold on behalf of its customers, providing access to a large liquidity base in the context of, for example,

regular rebalancing of reserve portfolios or major changes in reserve currency allocation. The foreign exchange services of the Bank encompass spot transactions in major currencies and Special Drawing Rights (SDR), as well as swaps, outright forwards, options and dual currency deposits (DCDs). In addition, the Bank provides gold services such as sight accounts, fixed-term deposits, earmarked accounts, upgrading and refining, and location exchanges.

The BIS provides asset management services in sovereign securities and high-grade credit fixed income instruments. These may take the form of either a dedicated portfolio mandate negotiated between the BIS and a customer or an open-end fund structure – the BIS Investment Pool (BISIP) – allowing customers to invest in a common pool of assets. Both investment structures are offered as either single currency or multicurrency mandates in the major world reserve currencies: US dollar, euro, sterling and yen. For multicurrency mandates, the investor can choose from portfolios that are either hedged back into the base currency or left unhedged.

Dedicated mandates are designed according to each customer's particular preferences with regard to investment guidelines and benchmarks. In contrast, BISIPs are similar to mutual funds or unit trust funds but specifically cater to the investment criteria typical of central banks and international institutions. The 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 from two linked trading rooms: one at the Bank's head office in Basel and one at its Asian Office in Hong Kong SAR.

The Banking Department of the BIS also hosts global and regional meetings, seminars and workshops on reserve management issues. These meetings facilitate the exchange of knowledge and experience among reserve managers and promote the development of investment and risk management capabilities in central banks and international organisations.

Financial operations in 2009/10

After an extended period of turbulence, financial markets began to show clearer signs of recovery in the second quarter of 2009. Against this more favourable background, the Bank's customer currency deposit base stabilised at SDR 195.8 billion, after having contracted by SDR 38.9 billion in the previous financial year.

The total balance sheet increased marginally by SDR 3.5 billion in 2009/10, after recording a contraction of SDR 55.8 billion in 2008/09. As a result, the balance sheet total amounted to SDR 258.9 billion at 31 March 2010.

Liabilities

Customer currency and gold placements constitute the largest share of total liabilities (see graph). On 31 March 2010, customer placements (excluding repurchase agreements) amounted to SDR 227.8 billion, compared with SDR 220.3 billion at the end of the previous financial year. Around 86% of customer placements are denominated in currencies, with the remainder in gold.

Currency deposits decreased from SDR 197.2 billion a year ago to SDR 195.8 billion at end-March 2010 – representing some 3.2% of the world's total foreign exchange reserves of nearly SDR 5.3 trillion, up from SDR 4.5 trillion at end-March 2009.[2] The share of currency placements denominated in US dollars was 67%, whereas euro- and sterling-denominated funds accounted for 22% and 5%, respectively.

The net contraction of customer currency placements resulted mainly from the combined decreases of 39% and 9% in investments in MTIs and sight and notice accounts, respectively, and an 80% increase in fixed-term deposits.

Gold deposits amounted to SDR 32.1 billion at end-March 2010, an increase of SDR 9.0 billion over the financial year.

A breakdown of placements with the BIS by geographical region shows that Asian customers account for the highest share.

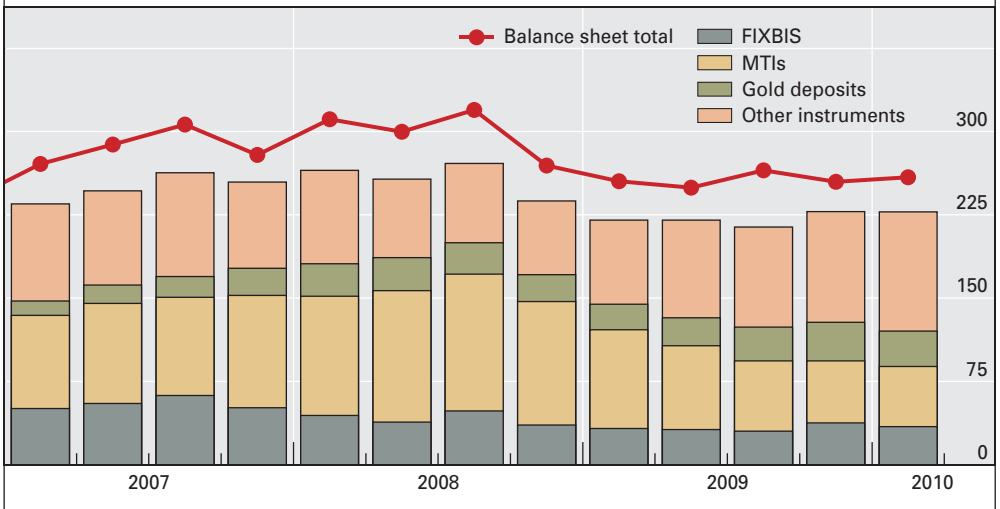
Assets

Most of the assets held by the BIS consist of government and quasi-government securities, including reverse repurchase agreements and, to an extent similar to that in the previous financial year, investments with highly rated commercial banks of international standing. In addition, the Bank owned 120 tonnes of fine gold at 31 March 2010. The Bank's credit exposure is managed in a conservative manner, with almost all of it rated A– or higher at 31 March 2010 (see note 3, "Credit risk", in the "Risk management" section of the financial statements).

The Bank's holdings of currency assets totalled SDR 200.0 billion on 31 March 2010, down from SDR 209.3 billion at the end of the previous financial year.

Balance sheet total and customer placements by product

End-quarter figures, in billions of SDR



The sum of the bars indicates total customer placements.

[2] Funds placed by institutions for which foreign exchange reserves data are not available are excluded from the calculation.

The Bank uses various derivative instruments to manage its assets and liabilities efficiently (see note 7 to the financial statements).

Trustee for international government loans

The Bank continued 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 2009 the Bundesamt für zentrale Dienste und offene Vermögensfragen (BADV – Federal Office for Central Services and Unresolved Property Issues) had arranged for payment of approximately €4.6 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.

Representative Offices

The BIS has a Representative Office for Asia and the Pacific (the Asian Office), located in the Hong Kong Special Administrative Region of the People's Republic of China; and a Representative Office for the Americas (the Americas Office), located in Mexico City. The Representative Offices promote cooperation within each region by organising meetings, conducting policy research and fostering the exchange of information and data. The Asian Office also provides banking services to the region's monetary authorities.

The Asian Office

The BIS focused on the policy challenges facing shareholding central banks in the Asia-Pacific region by organising high-level meetings and by pursuing research. A Governor-level research conference on "The International Financial Crisis and Policy Challenges in Asia and the Pacific", organised with the People's Bank of China in Shanghai in August 2009, was the culmination of the three-year BIS Asian Research Programme. After the conference, the Bank placed the resources for research in Asia on a more permanent footing and divided them between work on issues of monetary stability and work on those of financial stability.

Working with the Monetary and Economic Department and the Banking Department of the BIS, the Asian Office held 11 events, typically organised jointly with a central bank or held in collaboration with the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP) or the South East Asian Central Banks (SEACEN) organisation. These included the previously mentioned August 2009 Governor-level research conference in Shanghai; the Fifth High-Level Seminar on Financial Markets, organised with the Central Bank of Malaysia, in Kota Kinabalu in December 2009; and the Special Governors'

Meeting, organised with the Reserve Bank of Australia (RBA), in Sydney in February 2010.

In addition, the Financial Stability Institute and EMEAP held the Sixth FSI-EMEAP Working Group on Banking Supervision High-Level Meeting in Tokyo. The theme of the meeting was "Lessons Learned from the Financial Crisis: An International and Asian Perspective".

The Asian Consultative Council and the Special Governors' Meeting in Asia

The Asian Consultative Council (ACC), established in 2001 as an advisory committee to the BIS Board, continued to offer Governors of shareholding central banks in Asia and the Pacific an effective way of communicating with the Board and an important forum for providing advice to the Asian Office. With Zeti Akhtar Aziz, Governor of the Central Bank of Malaysia, as chair, the ACC held two meetings during the year. At these meetings, Governors gave the benefit of their views on meetings to be organised and research to be carried out.

The February 2010 Special Governors' Meeting in Sydney coincided with other events commemorating the 50th anniversary of the RBA. As in previous such meetings, the 12 representatives of central banks in the region were joined by other Governors from around the globe. They discussed recent economic and financial developments, what exit strategies to follow as the economies in the region continue to recover, and what policies to put in place to foster more resilient financial systems.

Banking activity and the Asian Bond Funds

Central banks in Asia continued to make good use of the services provided by the regional treasury in the Asian Office's dealing room. Indeed, an increasing number of these central banks have now been dealing with the regional treasury in a wider range of products. Beyond offering these products, the BIS Banking Department is working on strengthening its business continuity management, in which the Asian Office is playing a key role. Additional staff resources were shifted from Basel to the Hong Kong back office. Regular cross-training and business continuity tests in the Asian Office's banking operations have been conducted in 2010 to help ensure that, in the event of a business interruption in Basel, critical tasks would be performed through the regional treasury.

As fund administrator, the BIS supported the second Asian Bond Fund (ABF2) initiative of EMEAP, which sought to advance the development of local currency bond markets. In March 2005, the 11 EMEAP central banks had provided seed money from their international reserves to invest in sovereign and quasi-sovereign local currency bonds in eight markets in the region. The Pan Asia Bond Index Fund (PAIF) was listed as an exchange-traded fund on the Tokyo Stock Exchange in June 2009. The overall size of the ABF2 reached $3.52 billion at the end of March 2010, up from $2.86 billion at the end of March 2009. Private sector investment increased to $797 million at the end of March 2010, from $427 million at the end of March 2009. Central bank holdings, which stood at $2.72 billion, were up from $2.43 billion at the end of March 2009.

Research in the Asian Office

The choice of research projects at the Asian Office was influenced by the policy challenges arising from both the lingering imprint of the international financial crisis and the budding recovery in Asia and the Pacific. Progress was made on a series of research projects that were intended to help regional authorities improve monetary policy and operations, develop financial markets, maintain financial stability and strengthen prudential policy.

Early in 2009/10, the research effort was directed at how the international financial crisis had affected the region and at the associated policy challenges. Later in the year, the focus of research shifted to policy issues arising from Asia's leading role in the recovery of the global economy.

On the monetary stability front, the Asian Office emphasised identifying and assessing the new monetary policy challenges facing the region's central banks. The work examined the ability of the region's diverse monetary policy frameworks to deliver low inflation, explored the key spillover channels to the region revealed during the crisis, and deepened the understanding of the challenges posed by capital inflows for central banks in the region.

On the financial stability front, research focused on analysing channels of financial market contagion. These channels included the role of time-varying risk appetites in the pricing of sovereign risk as well as the interaction of credit default swaps and cash bond markets. Methods of identifying systemically important financial institutions in the region were analysed to complement an ongoing monitoring of proposed revisions to supervisory frameworks in terms of their effects on the region's financial institutions. Another strand of research assessed the effectiveness of policy measures to alleviate financial system instability, including a study of loan loss provisioning in the region.

Building on the strong foundation laid by the Asian Research Programme, collaborative research on topics of interest to central banks and supervisors in the region continued to be organised with almost every BIS shareholding central bank in Asia and the Pacific as well as the regional organisations of central banks. This research not only fed into the numerous meetings organised with regional central banks but also led to the publication of several articles in refereed journals and the *BIS Quarterly Review*.

The Americas Office

The economies in Latin America and the Caribbean were affected in various ways by the international financial crisis that began in the major developed countries. Policymakers and researchers in the region have shown a heightened interest in the ensuing international analysis and discussion on how to revise key standards and strengthen financial stability. The Americas Office has thus centred its efforts on closely monitoring developments that would indicate the continued potential for contagion in the economies of Latin America and the Caribbean and on regional dissemination of research and analysis undertaken at the BIS.

As in the past, the Office has devoted its regional efforts not only to BIS member central banks but also to contacts and events with non-shareholding

central banks, regulatory authorities and the academic community. These activities generated several publications.

The Office again sponsored events at the annual meeting of the Latin American and Caribbean Economic Association. For the 2009 meeting, the events included a panel discussion with academics, directors from regional central banks and former Governors and parallel sessions featuring contributed papers.

The Office also co-organised and contributed to meetings at regional central banks, including: the Open Economies Meeting hosted by the Central Bank of the Dominican Republic; the Working Party on Monetary Policy in Latin America, convened at the Central Bank of Chile; a meeting on risk management for reserve managers, held in cooperation with the Central Bank of Brazil; and several training events organised by the Financial Stability Institute in cooperation with regional groupings of supervisors. In November 2009, the Office hosted workshops and meetings for the Group of Computer Experts.

The Office provided speakers to various conferences and meetings convened by regional central banks and by regional organisations such as the Centre for Latin American Monetary Studies (CEMLA), the Fondo Latinoamericano de Reservas (FLAR), the Central American Monetary Council (CMCA) and the Latin American Regional Committee of the International Association of Deposit Insurers (IADI-LARC).

Consultative Council for the Americas

The Office provides the Secretariat to the Consultative Council for the Americas (CCA). The CCA, which comprises the Governors of the BIS member central banks in the Americas, was established in May 2008 as an advisory committee to the BIS Board of Directors. Martín Redrado, then Governor of the Central Bank of Argentina, chaired the CCA until January 2010. Since March 2010, it has been chaired by Henrique de Campos Meirelles, Governor of the Central Bank of Brazil.

CCA members are regularly informed of the work of the BIS and the Americas Office in the region and are invited to comment on ongoing work. The most noteworthy initiative by the CCA in the past year was a March 2010 research conference on "Systemic Risk, Bank Behaviour and Regulation over the Business Cycle". It was conducted with the participation of CCA central banks and academics and hosted by the Central Bank of Argentina.

Governance and management of the BIS

The governance and management of the Bank are conducted at three principal levels:

- the General Meeting of BIS member central banks;
- the BIS Board of Directors; and
- BIS Management.

The BIS has its head office in Basel, Switzerland. At the end of the financial year, the BIS employed 589 staff members from 54 countries.

The General Meeting of BIS member central banks

Fifty-six central banks and monetary authorities are currently members of the BIS.[3] These 56 institutions have rights of voting and representation at General Meetings. The Annual General Meeting (AGM) is held no later than four months after 31 March, the end of the BIS financial year. The AGM decides the distribution of the dividend and profit of the BIS, approves the annual report and the accounts of the Bank, makes adjustments in the allowances paid to Board members and selects the Bank's external auditors.

The BIS Board of Directors

Consisting of 19 members, the Board of Directors is assisted by four subcommittees of Board members: the Administrative Committee, the Audit Committee, the Banking and Risk Management Committee and the Nomination Committee. The main responsibilities of the Board are determining the strategic and policy direction of the BIS and supervising the Bank's Management.

BIS shareholding institutions and members of the BIS Board of Directors are listed on the following pages.

[3] It will be recalled that, due to the constitutional changes in 2003 that transformed the Federal Republic of Yugoslavia, the legal status of the Yugoslav issue of the capital of the BIS had been under review for several years. Following a Board decision of September 2009 and with effect from 23 October 2009, the National Bank of Serbia became the Bank's 56th shareholder. It exercises the rights corresponding to the former Yugoslav issue of BIS shares, which has been redenominated as the Serbian issue.

BIS member central banks

Bank of Algeria

Central Bank of Argentina

Reserve Bank of Australia

Central Bank of the Republic of Austria

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 (Philippines)

National Bank of Poland

Bank of Portugal

National Bank of Romania

Central Bank of the Russian Federation

Saudi Arabian Monetary Agency

National Bank of Serbia

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 (United States)

BIS Board of Directors

Christian Noyer, Paris
Chairman of the Board of Directors

Hans Tietmeyer, Frankfurt am Main
Vice-Chairman

Ben S Bernanke, Washington
Mark Carney, Ottawa
Mario Draghi, Rome
William C Dudley, New York
Philipp Hildebrand, Zurich
Stefan Ingves, Stockholm
Mervyn King, London
Jean-Pierre Landau, Paris
Henrique de Campos Meirelles, Brasília
Guy Quaden, Brussels
Fabrizio Saccomanni, Rome
Masaaki Shirakawa, Tokyo
Jean-Claude Trichet, Frankfurt am Main
Paul Tucker, London
Axel A Weber, Frankfurt am Main
Nout H E M Wellink, Amsterdam
Zhou Xiaochuan, Beijing

Alternates

Andreas Dombret or Karlheinz Bischofberger, Frankfurt am Main
Paul Fisher or Michael Cross, London
Pierre Jaillet or Denis Beau, Paris
Donald L Kohn or D Nathan Sheets, Washington
Peter Praet or Jan Smets, Brussels
Ignazio Visco, Rome

Committees of the Board of Directors

Administrative Committee, chaired by Hans Tietmeyer
Audit Committee, chaired by Mark Carney
Banking and Risk Management Committee, chaired by Stefan Ingves
Nomination Committee, chaired by Christian Noyer

Changes among the Board of Directors

Christian Noyer, Governor of the Bank of France, was elected by the Board in March 2010 to succeed Guillermo Ortiz as Chairman of the Board of Directors for a three-year term commencing on 7 March 2010. The term of Mr Ortiz as Governor of the Bank of Mexico had finished at the end of 2009, at which time he therefore stepped down as a member of the BIS Board and as its Chairman.

In June 2009, the Board had re-elected Mr Ortiz and three other members to three-year terms ending on 30 June 2012. The other re-elected members were Jean-Claude Trichet, President of the European Central Bank; Nout H E M Wellink, President of the Netherlands Bank; and Zhou Xiaochuan, Governor of the People's Bank of China.

In January 2010, the Board elected Henrique de Campos Meirelles, Governor of the Central Bank of Brazil, as a member of the Board for the remainder of Mr Ortiz's term.

At the end of 2009, Jean-Pierre Roth retired as Chairman of the Governing Board of the Swiss National Bank and stepped down from the Board. He had served as a member of the Board since 2001 and as its Chairman from 2006 to 2009. In the month preceding Mr Roth's retirement, his successor as Chairman at the Swiss National Bank, Philipp Hildebrand, was elected by the Board as a member for the remainder of Mr Roth's term, ending on 31 March 2010. In March, the Board re-elected Mr Hildebrand to a three-year term ending on 31 March 2013.

Alfons Vicomte Verplaetse, Honorary Governor of the National Bank of Belgium, retired from the Board at the end of his term, 31 December 2009. Vicomte Verplaetse had been a member of the Board since 1989 and had served as Chairman of the Board between 1997 and 1999.

Ben S Bernanke, Chairman of the Board of Governors of the Federal Reserve System, reappointed William C Dudley, President of the Federal Reserve Bank of New York, to a three-year term ending on 12 September 2012. Mario Draghi, Governor of the Bank of Italy, appointed Fabrizio Saccomanni, Director General of the Bank of Italy, to a three-year term ending on 31 December 2012.

In September 2009, the Board re-elected two members to three-year terms ending on 12 September 2012: Mark Carney, Governor of the Bank of Canada, and Masaaki Shirakawa, Governor of the Bank of Japan.

In memoriam

The Board noted with deep regret the deaths of Johann Schöllhorn on 6 December 2009 at the age of 87, of Lord Richardson of Duntisbourne on 22 January 2010 at the age of 94 and of Philippe Wilmès on 24 May 2010 at the age of 72. All three had served as members of the Board, Mr Schöllhorn from 1976 to 1989, Lord Richardson from 1973 to 1993 and Mr Wilmès from 1991 to 1999.

During the bimonthly meetings in May 2010, the Board and other Governors of BIS shareholding institutions held a minute's silence in memory of Mr Sławomir Skrzypek, President of the National Bank of Poland, who died in

the tragic air crash near Smolensk on 10 April 2010. Mr Skrzypek was one of many Polish dignitaries to lose their lives in the crash.

BIS Management

BIS Management is under the overall direction of the General Manager, who is responsible to the Board of Directors for the conduct of the Bank. The General Manager is advised by the Executive Committee of the BIS, which consists of the General Manager as chair, the Deputy General Manager, the Heads of the three BIS departments – the General Secretariat, the Banking Department and the Monetary and Economic Department – and the General Counsel.

Other senior officials are the Deputy Heads of the departments and the Chairman of the Financial Stability Institute.

General Manager	Jaime Caruana
Deputy General Manager	Hervé Hannoun
Secretary General and Head of General Secretariat	Peter Dittus
Economic Adviser and Head of Monetary and Economic Department	Stephen G Cecchetti
Head of Banking Department	Günter Pleines
General Counsel	Diego Devos
Deputy Secretary General	Jim Etherington
Deputy Head of Banking Department	Louis de Montpellier
Deputy Head of Monetary and Economic Department (Research and Statistics)	Claudio Borio
Deputy Head of Monetary and Economic Department (Policy, Coordination and Administration)	Philip Turner
Chairman, Financial Stability Institute	Josef Tošovský

In January 2010, the Board reappointed Hervé Hannoun as Deputy General Manager until 31 August 2015.

Bank budget policy

The process of formulating the Bank's expenditure budget for the next 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 a draft financial budget. The budget must be approved by the Board before the start of the financial year.

The budget distinguishes between administrative and capital expenditures. In common with organisations similar to the BIS, Management and staff expense – including remuneration, pensions and health, and accident insurance – amounts to around 70% of administrative costs. The other major expenditure categories, each accounting for about 10% of administrative spending, are information technology (IT), telecommunications, and buildings and equipment. Capital spending mainly relates to building expenses and IT investment and can vary significantly from year to year.[4] Most of the Bank's administrative and capital expenditure is incurred in Swiss francs.

Administrative expenses before depreciation for the financial year 2009/10 amounted to 252.2 million Swiss francs, 2.7% below the budget of 259.2 million Swiss francs, while capital expenditure, at 19.2 million Swiss francs, was 2.6 million under budget. The largest sources of the underspending in administrative expenses were lower than budgeted outlays for pensions, IT and telecommunications.[5]

Administrative and capital expenditure in 2009/10 reflected the main priority in the budget, which was to reinforce the Bank's response to the global financial crisis with the following measures:

- Resources devoted to financial stability issues were increased by the creation of additional staff positions to support the work of the Financial Stability Board (FSB), the Basel Committee on Banking Supervision (BCBS) and the Committee on the Global Financial System (CGFS).
- Dealing with the impact of the financial crisis on the BIS banking business continued to be the main priority of the Banking Department and the Risk Control, Finance and Compliance units. Work in the banking business was oriented towards controlling the size and enhancing the management of the banking operations with initiatives to implement integrated risk management and enhance management accounting.

In addition, the budget for 2009/10 advanced the Bank's global outreach activities, further developing them through support for the Consultative Council for the Americas; and through the creation of a permanent economics research unit at the Asian Office following the completion of the three-year Asian Research Programme in September 2009.

In March 2010, the Board approved an increase in the administrative budget for the financial year 2010/11 of 0.9%, to 261.6 million Swiss francs. It approved an increase in the capital budget of 1.6 million Swiss francs, to 23.5 million.

The Bank's business plan, on which the proposed administrative budget for 2010/11 is based, builds on last year's plan and continues to give priority to reinforcing the response of the BIS to the global financial crisis. The budget for 2010/11 provides a further increase in human and financial resources

[4] Some facilities in the BIS Tower were upgraded this year after more than 30 years of use.

[5] 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").

devoted to financial stability issues, in particular to strengthen support of the FSB and BCBS.

Dealing with the aftermath of the financial crisis will be the main priority of the Banking Department and the Risk Control, Finance and Compliance units. Work in the banking business will continue to be oriented towards: carefully managing the balance sheet; enhancing risk management, operational controls and management accounting; and strengthening asset management activities.

Bank 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. Every three years, a comprehensive salary survey is conducted in which BIS salaries are benchmarked against compensation in comparable institutions and market segments. When benchmarking BIS salaries against comparators, the Bank focuses on the upper half of market compensation in order to attract highly qualified staff. The analysis takes into account differences in the taxation of compensation for the staff of the surveyed institutions. The most recent such survey took place in the second half of 2007. In years between comprehensive salary surveys, the salary structure is adjusted primarily on the basis of the rate of inflation in Switzerland and the weighted average real wage increase in industrial countries. As of 1 July 2009, the salary structure was accordingly increased by 2.1%. Movements of salaries of individual staff members within the ranges of the salary structure are based on performance.

BIS staff members have access through the Bank to a contributory health insurance plan and a contributory defined benefit pension plan. Non-locally hired, non-Swiss staff members recruited for a position at the Bank's headquarters, including senior officials, are entitled to an expatriation allowance. In proportion to annual salary, it currently amounts to 14% for unmarried staff members and 18% for married staff members, subject to a ceiling. Expatriate staff members are also entitled to receive an education allowance for their children subject to certain conditions.

With regard to employment in the Representative Offices, a distinction is made between staff members on an international assignment from the headquarters and staff members recruited directly for a position in a Representative Office. The employment conditions of the former are determined in accordance with the Bank's international assignment policy. For staff recruited directly, employment conditions are aligned with those in the market in which the Office is located. Those staff members have access to the same health insurance and pension plans as staff engaged at the Bank's headquarters.

The salaries of senior officials are regularly benchmarked against compensation in comparable institutions and market segments. As with the survey for other staff, the most recent executive compensation survey took place in the second half of 2007. The results confirmed the appropriateness of

the current practice of annually adjusting the salaries of senior officials for the rate of Swiss inflation.

As of 1 July 2009, the annual remuneration of senior officials, before expatriation allowances, is based on the following salary structure:

- General Manager[6] 758,600 Swiss francs
- Deputy General Manager 641,900 Swiss francs
- Heads of Department 583,550 Swiss francs

The Annual General Meeting approves the remuneration of members of the Board of Directors, with adjustments taking place every three years. The total fixed annual remuneration paid to the Board of Directors was 1,049,520 Swiss francs as at 1 April 2010. 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 973,788 Swiss francs.

Net profit and its distribution

The Bank recorded an exceptionally high net profit of SDR 1,859.8 million for the 80th financial year, ended 31 March 2010. This compares with a profit of SDR 446.1 million for the preceding financial year. This profit, which is unlikely to be repeated in the coming financial years, was achieved against a background of recovery in global financial markets, and in particular in the credit markets, where many credit spreads against Libor narrowed back to levels not seen since before September 2008. The lower profit in the previous financial year was incurred in the exceptional market turmoil following the events of September 2008, when a number of important financial institutions failed or were threatened with failure. The principal factors behind the 2009/10 result are discussed below.

Principal factors behind the 2009/10 profit

Net interest income amounted to SDR 1,431.2 million in the financial year 2009/10 compared with the equivalent figure of SDR 1,601.9 million in the preceding financial year. This decrease was mainly attributable to a lower average volume of customer currency deposits in 2009/10 than in the previous year. Intermediation margins, which had been wide in the first six months of the financial year, narrowed as the market turmoil subsided in the second half of the financial year. In these more normal market conditions, interest spreads above Libor earned on risk-weighted assets and interest spreads below Libor paid on the Bank's liabilities both declined.

Net valuation movements amounted to a gain of SDR 520.5 million, compared with a loss of SDR 1,181.7 million last year. The valuation gain in the current financial year was attributable to the impact of narrowing credit spreads (around SDR 670 million), which increased the fair values of the

[6] In addition to the basic salary, the General Manager receives an annual representation allowance and enhanced pension rights.

bonds in the Bank's credit portfolios. Most of the valuation gain took place in the first half of the financial year. The valuation loss for the preceding financial year was mainly attributable to the impact of an exceptional widening of credit spreads on the Bank's borrowed funds bond portfolios in the financial market turmoil at that time.

Operating expense (see note 25 to the financial statements) amounted to SDR 190.8 million, 14.6% above the preceding year's figure of SDR 166.5 million. In terms of Swiss francs, the currency in which most of the Bank's administrative expenses are incurred, operating expense rose by 10.6%. Administrative expenses before depreciation amounted to SDR 177.7 million, 15.1% above the previous year's figure of SDR 154.4 million. The depreciation charge of SDR 13.1 million was SDR 1.0 million above the equivalent figure for 2008/09 (SDR 12.1 million).

After taking into account the above factors, the Bank's operating profit amounted to SDR 1,754.4 million, SDR 1,509.1 million above the equivalent figure of SDR 245.3 million recorded in 2008/09.

A net gain of SDR 105.4 million was realised on the sale of investment securities during the financial year, which the Bank acquired when interest rates were higher. In 2008/09, a net gain of SDR 123.8 million was recorded for the sale of investment securities and included gains on sales of securities that were incurred when the investment securities portfolio duration benchmark was reduced from four years to three.

There were no sales of gold investment assets during 2009/10. In 2008/09, a gain (SDR 77.0 million) was recorded on the sale of five tonnes of the Bank's own gold.

As a result of these factors, the net profit for the financial year 2009/10 amounted to SDR 1,859.8 million, SDR 1,413.7 million above the equivalent figure of SDR 446.1 million in the preceding year.

Movements in equity

In addition to the items reflected in the Bank's profit and loss account, unrealised gains and losses on the Bank's own gold investments and investment securities are recorded in the gold revaluation account and securities revaluation account, which form part of the Bank's equity.

The securities revaluation account decreased by SDR 112.5 million as a result of net unrealised losses on investment securities (–SDR 7.1 million) and the transfer to the profit and loss account of realised gains (–SDR 105.4 million) on sales of securities.

The gold revaluation account increased by SDR 456.8 million as a result of unrealised gains on the Bank's own gold holdings of 120 tonnes, which were attributable to the year-on-year appreciation of the gold price.

After taking these gains into account, the Bank's total return[7] for 2009/10 was SDR 2,204.1 million. This represented a return of 14.9% on average equity

[7] The total return is shown as "Total comprehensive income" in the table entitled "Statement of comprehensive income" on page 151 in the financial statements.

(SDR 14,795 million). In 2008/09, the total return was SDR 757.6 million, and the return on average equity (SDR 13,149 million) was 5.8%. Taking into account the payment of the dividend for 2008/09, the Bank's equity increased by SDR 2,059.4 million during the year ended 31 March 2010. This compares with an equivalent increase of SDR 612.9 million in 2008/09.

Proposed dividend

The Board reviewed the dividend policy of the BIS during the financial year 2009/10. The review took 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. In framing the new dividend policy, the Board adopted a number of governing principles, which are:

- First, the need for the Bank to maintain a strong capital base at all times, including during financial stress.
- Second, the dividend should be relatively stable, set at a sustainable level and changing in a predictable manner each year.
- Third, while the Bank's dividend policy should provide guidance for the medium term, the dividend should continue to reflect the prevailing financial circumstances of the Bank and should remain an annual decision of the Board.

The dividend policy, which will be subject to further review by the Board of Directors in five years' time, now takes into account the Bank's capital adequacy requirements rather than the payout ratio. The policy incorporates:

- a normal sustainable dividend in conformity with the medium-term dividend policy decided ex ante which would increase by SDR 10 per annum; and
- a supplementary dividend, which would be decided ex post, while keeping leverage and economic capital within desired ranges.

The policy will ensure that earnings are retained to augment the Bank's capital at a sufficient rate to support the Bank's business and maintain its capital position relative to the size of the balance sheet and its economic capital requirements. In normal circumstances, it will result in a steady progression in annual dividends, while retaining the flexibility to be operable in years of low or high profits. In addition, the final approval of the dividend each May would coincide with the outcome of the annual economic capital allocation process (see note 2 of the capital adequacy section of the financial statements), enabling the Board to pay an appropriate dividend, while ensuring that the Bank's capital base remains strong.

Consistent with the new dividend policy, it is proposed for the financial year 2009/10 to declare:

- a normal dividend of SDR 285 per share, SDR 20 above the dividend for 2008/09. Prior to last year, the dividend had increased by SDR 10 each year in accordance with the medium-term policy agreed by the Board in 2005. The increase of SDR 20 per share would consist of an annual increase of SDR 10 per share and a further increase of SDR 10 per share to compensate for the absence of an increase in the dividend in 2008/09; and

- a supplementary dividend of SDR 400 per share, which would be paid in recognition of the exceptionally high net profit for 2009/10.

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 1,859.8 million for the financial year 2009/10 be applied by the General Meeting in the following manner:

(a) SDR 374.1 million in payment of:
  – a normal dividend of SDR 285 per share, costing SDR 155.6 million; and
  – a supplementary dividend of SDR 400 per share, costing SDR 218.5 million;
(b) SDR 148.6 million to be transferred to the general reserve fund;[8]
(c) SDR 12.0 million to be transferred to the special dividend reserve fund; and
(d) SDR 1,325.1 million, representing the remainder of the available net profit, to be transferred to the free reserve fund.

If approved, the two dividends could be paid out in one amount of SDR 685 per share on 8 July 2010 according to each shareholder's instructions in any constituent currency of the SDR, or in Swiss francs, to the shareholders named in the Bank's share register on 31 March 2010.

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 2010, 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 2010 and the results of its operations for the year then ended. Their report is to be found immediately following the financial statements.

[8] Since the general reserve fund exceeded four times the Bank's paid-up capital at 31 March 2010, 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.

Financial statements

as at 31 March 2010

The financial statements on pages 150–204 for the financial year ended 31 March 2010 were approved on 10 May 2010 for presentation to the Annual General Meeting on 28 June 2010. 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 the Annual General Meeting.

Jaime Caruana
General Manager

Hervé Hannoun
Deputy General Manager

Balance sheet

As at 31 March 2010

SDR millions	Notes	**2010**	2009
Assets			
Cash and sight accounts with banks	3	1,516.2	915.2
Gold and gold loans	4	43,039.8	25,416.2
Treasury bills	5	84,714.8	96,421.9
Securities purchased under resale agreements	5	42,305.9	38,594.4
Loans and advances	6	19,288.6	18,512.7
Government and other securities	5	53,687.7	55,763.7
Derivative financial instruments	7	10,114.7	13,749.1
Accounts receivable	8	4,035.7	5,822.5
Land, buildings and equipment	9	189.9	191.0
Total assets		**258,893.3**	255,386.7
Liabilities			
Currency deposits	10	195,755.1	197,222.2
Gold deposits	11	32,064.1	23,052.1
Derivative financial instruments	7	4,187.4	6,816.8
Accounts payable	13	10,792.4	14,211.5
Other liabilities	14	319.0	368.2
Total liabilities		**243,118.0**	241,670.8
Shareholders' equity			
Share capital	15	683.9	683.9
Statutory reserves	16	10,668.7	10,367.3
Profit and loss account		1,859.8	446.1
Less: shares held in treasury	17	(1.7)	(1.7)
Other equity accounts	18	2,564.6	2,220.3
Total equity		**15,775.3**	13,715.9
Total liabilities and equity		**258,893.3**	255,386.7

Profit and loss account

For the financial year ended 31 March 2010

SDR millions	Notes	**2010**	2009
Interest income	20	4,051.9	8,254.9
Interest expense	21	(2,620.7)	(6,653.0)
Net interest income		**1,431.2**	1,601.9
Net valuation movement	22	520.5	(1,181.7)
Net interest and valuation income		**1,951.7**	420.2
Net fee and commission income	23	10.7	0.4
Net foreign exchange loss	24	(17.2)	(8.8)
Total operating income		**1,945.2**	411.8
Operating expense	25	(190.8)	(166.5)
Operating profit		**1,754.4**	245.3
Net gain on sales of securities available for sale	26	105.4	123.8
Net gain on sales of gold investment assets	27	–	77.0
Net profit for the financial year		**1,859.8**	446.1
Basic and diluted earnings per share (in SDR per share)	28	**3,405.4**	816.8

Statement of comprehensive income

For the financial year ended 31 March 2010

SDR millions	Notes	**2010**	2009
Net profit for the financial year		**1,859.8**	446.1
Unrealised gain / (loss) on securities available for sale	18A	(112.5)	159.1
Unrealised gain on gold investment assets	18B	456.8	152.4
Total comprehensive income for the financial year		**2,204.1**	757.6

Statement of cash flows

For the financial year ended 31 March 2010

SDR millions	Notes	**2010**	2009
Cash flow from / (used in) operating activities			
Interest and similar income received		4,875.0	6,710.8
Interest and similar expenses paid		(2,522.8)	(4,802.1)
Net fee and commission income	23	10.7	0.4
Foreign exchange transaction income	24	0.3	11.6
Operating expenses paid		(177.6)	(154.4)
Non-cash flow items included in operating profit			
Valuation movements on operating assets and liabilities	22	520.5	(1,181.7)
Foreign exchange translation loss	24	(17.5)	(20.4)
Impairment charge on gold assets		–	(18.3)
Change in accruals and amortisation		(921.2)	(288.4)
Change in operating assets and liabilities			
Currency deposit liabilities held at fair value through profit and loss		3,220.0	(29,289.7)
Currency banking assets		6,472.1	44,724.0
Sight and notice deposit account liabilities		(2,839.8)	(8,910.2)
Gold deposits		9,012.0	(6,049.3)
Gold and gold loan banking assets		(17,170.5)	6,055.2
Accounts receivable		(0.7)	(0.3)
Other liabilities / accounts payable		339.9	41.8
Net derivative financial instruments		1,005.0	(5,733.6)
Net cash flow used in operating activities		**1,805.4**	1,095.4
Cash flow from / (used in) investment activities			
Net change in currency investment assets available for sale	5B	(606.4)	1,021.2
Net change in currency investment assets held at fair value through profit and loss		131.1	15.0
Net change in securities sold under repurchase agreements		–	(1,894.1)
Net change in gold investment assets	4B	3.7	295.7
Net purchase of land, buildings and equipment	9	(12.1)	(12.7)
Net cash flow used in investment activities		**(483.7)**	(574.9)

SDR millions	Notes	**2010**	2009
Cash flow used in financing activities			
Dividends paid		(144.7)	(144.7)
Shares repurchased in 2001 – payments to former shareholders		–	(0.1)
Net cash flow used in financing activities		**(144.7)**	(144.8)
Total net cash flow		**1,177.0**	375.7
Net effect of exchange rate changes on cash and cash equivalents		49.8	(23.2)
Net movement in cash and cash equivalents		1,127.2	398.9
Net change in cash and cash equivalents		**1,177.0**	375.7
Cash and cash equivalents, beginning of year	29	**1,311.8**	936.1
Cash and cash equivalents, end of year	29	**2,488.8**	1,311.8

Movements in the Bank's equity

For the financial year ended 31 March 2010

SDR millions	Notes	Share capital	Statutory reserves	Profit and loss	Shares held in treasury	Other equity accounts	Total equity
Equity at 31 March 2008		**683.9**	**9,967.3**	**544.7**	**(1.7)**	**1,908.8**	**13,103.0**
Total comprehensive income	18	–	–	446.1	–	311.5	757.6
Payment of 2007/08 dividend		–	–	(144.7)	–	–	(144.7)
Allocation of 2007/08 profit		–	400.0	(400.0)	–	–	–
Equity at 31 March 2009		**683.9**	**10,367.3**	**446.1**	**(1.7)**	**2,220.3**	**13,715.9**
Total comprehensive income	18	–	–	1,859.8	–	344.3	2,204.1
Payment of 2008/09 dividend		–	–	(144.7)	–	–	(144.7)
Allocation of 2008/09 profit		–	301.4	(301.4)	–	–	–
Equity at 31 March 2010 per balance sheet before proposed profit allocation		**683.9**	**10,668.7**	**1,859.8**	**(1.7)**	**2,564.6**	**15,775.3**
Proposed dividends – normal	15	–	–	(155.6)	–	–	(155.6)
Proposed dividends – supplementary	15	–	–	(218.5)	–	–	(218.5)
Proposed transfers to reserves		–	1,485.7	(1,485.7)	–	–	–
Equity at 31 March 2010 after proposed profit allocation		**683.9**	**12,154.4**	**–**	**(1.7)**	**2,564.6**	**15,401.2**

At 31 March 2010 statutory reserves included share premiums of SDR 811.7 million (2009: SDR 811.7 million).

Statement of proposed profit allocation

For the financial year ended 31 March 2010

SDR millions	Notes	2010
Net profit for the financial year		**1,859.8**
Transfer to legal reserve fund	16	–
Proposed dividends on 546,125 shares:		
Normal – SDR 285 per share		(155.6)
Supplementary – SDR 400 per share		(218.5)
Total proposed dividends		**(374.1)**
Proposed transfers to reserves:		
General reserve fund	16	(148.6)
Special dividend reserve fund	16	(12.0)
Free reserve fund	16	(1,325.1)
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 2010

						2010
SDR millions	Notes	Legal reserve fund	General reserve fund	Special dividend reserve fund	Free reserve fund	Total statutory reserves
Balance at 31 March 2009		**68.3**	**3,049.8**	**154.0**	**7,095.2**	**10,367.3**
Allocation of 2008/09 profit	16	–	30.1	–	271.3	301.4
Balance at 31 March 2010 per balance sheet before proposed profit allocation		**68.3**	**3,079.9**	**154.0**	**7,366.5**	**10,668.7**
Proposed transfers to reserves	16	–	148.6	12.0	1,325.1	1,485.7
Balance at 31 March 2010 after proposed profit allocation		**68.3**	**3,228.5**	**166.0**	**8,691.6**	**12,154.4**

Accounting policies

The accounting policies set out below have been applied to both of the financial years presented unless otherwise stated.

1. 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 with the Bank.

Assets and liabilities in the name of but not controlled by the Bank and in respect of which the economic benefits as well as the rights and obligations do not lie with the Bank are not included in these financial statements. Information on off-balance sheet assets and liabilities is disclosed in note 32.

2. 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. 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.

3. 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.

4. Designation of financial instruments

Upon initial recognition the Bank allocates each financial instrument to one of the following categories:

- Loans and receivables
- Financial assets and financial liabilities held at fair value through profit and loss
- Available for sale financial assets
- Financial liabilities measured at amortised cost

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 5 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 as held at fair value through profit and loss, the Bank does not subsequently change this designation.

5. Asset and liability structure

Assets and liabilities are organised into two sets of portfolios:

A. 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 its 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 and notice accounts with banks, 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 9 below.

All gold financial assets in these portfolios are designated as loans and receivables and all gold financial liabilities are designated as financial liabilities measured at amortised cost.

B. 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.

Except for the currency assets described in the next paragraph, currency assets (other than cash and sight and notice accounts with banks) are designated as available for sale. Related securities sold under repurchase agreements are designated as financial liabilities measured at amortised cost.

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.

6. 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.

7. Notice accounts

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 "Loans and advances".

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.

8. 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 financial liabilities measured at amortised cost. They are included in the balance sheet at their principal value plus accrued interest. Interest is included in interest expense on an accruals basis.

9. 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.

10. 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 received and discounts paid are included in "Interest expense" on an effective interest rate basis.

After the 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".

11. Currency assets held at fair value through profit and loss

Currency assets include treasury bills, securities purchased under resale agreements, loans and advances, 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" on an effective interest rate basis.

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".

12. Currency assets available for sale

Currency assets include treasury bills, securities purchased under resale agreements, loans and advances, 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" on an effective interest rate basis.

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". The movement in fair value is included in the statement of comprehensive income under the heading "Unrealised gain / (loss) on securities available for sale". Realised profits on disposal are included under the profit and loss heading "Net gain on sales of securities available for sale".

13. 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.

14. Gold

Gold comprises gold bars held in custody and 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 17 below.

15. Gold loans

Gold loans comprise fixed-term gold loans to commercial banks. Gold is considered by the Bank to be a financial instrument.

Gold loans 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.

Accrued interest on gold loans is included in "Interest income" on an effective interest rate basis. The treatment of realised and unrealised gains or losses on gold is described in Section 17 below.

16. Gold deposits

Gold deposits comprise sight and fixed-term deposits of gold from central banks. Gold is considered by the Bank to be a financial instrument.

Gold deposits 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.

Accrued interest on gold deposits is included in "Interest expense" on an effective interest rate basis. The treatment of realised and unrealised gains or losses on gold is described in Section 17 below.

17. 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:

A. Banking portfolios, comprising gold deposits and related gold banking assets

The Bank designates gold loans in its banking portfolios as loans and receivables and gold deposits as financial liabilities measured at amortised cost. The gold derivatives included in the portfolios are designated as held at fair value through profit and loss.

Gains or losses on these transactions in gold are included under the profit and loss account heading "Net foreign exchange gain / (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 / (loss)" as net translation gains or losses.

B. 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". The movement in fair value is included in the statement of comprehensive income under the heading "Unrealised gain on 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 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".

18. Securities sold under repurchase agreements

Where these liabilities are associated with the management of currency assets held 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 financial liabilities measured at amortised cost.

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" on an effective interest rate basis.

After trade date, those liabilities that are designated as held 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".

19. 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.

Derivatives 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" on an effective interest rate basis.

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.

Where a derivative contract is embedded within a host contract which is not accounted for as held at fair value through profit and loss, it is separated from the host contract for accounting purposes and treated as though it were a standalone derivative as described above.

20. Valuation policy

The Bank's valuation policy has been approved by the Board of Directors. In this policy the Bank defines how financial instruments are designated, which determines their valuation basis and accounting treatment. This policy is supplemented with detailed valuation procedures.

The majority of the financial instruments on the balance sheet are included at fair value. The Bank defines the fair value of a financial instrument as the amount at which the instrument could be exchanged between knowledgeable, willing parties in an arm's length transaction.

The use of fair values ensures that the financial reporting to the Board and shareholders reflects the way in which the

banking business is managed and is consistent with the risk management and economic performance figures reported to Management.

The Bank considers published price quotations in active markets as the best evidence of fair value. Where no published price quotations exist, the Bank determines fair values using a valuation technique appropriate to the particular financial instrument. Such valuation techniques may involve using market prices of recent arm's length market transactions in similar instruments or may make use of financial models. Where financial models are used, the Bank aims at making maximum use of observable market inputs (eg interest rates and volatilities) as appropriate, and relies as little as possible on its own estimates. Such valuation models comprise discounted cash flow analyses and option pricing models.

Where valuation techniques are used to determine fair values, the valuation models are subject to initial approval and periodic review in line with the requirements of the Bank's model validation policy.

The Bank has an independent valuation control function which periodically reviews the value of its financial instruments, taking into account both the accuracy of the valuations and the valuation methodologies used. Other valuation controls include the review and analysis of daily profit and loss.

The Bank values its assets at the bid price and its liabilities at the offer price. Derivative financial instruments are valued on a bid-offer basis, with valuation reserves, where necessary, included in derivative financial liabilities. Financial assets and liabilities that are not valued at fair value are included in the balance sheet at amortised cost.

21. Impairment of financial assets

Financial assets, other than those designated as held at fair value through profit and loss, are assessed for indications of impairment at each balance sheet date. A financial asset is impaired when there is objective evidence that the estimated future cash flows of the asset have been reduced as a result of one or more events that occurred after the initial recognition of the asset. Evidence of impairment could include significant financial difficulty, default, or probable bankruptcy / financial reorganisation of the counterparty or issuer.

Impairment losses are recognised in the profit and loss account under the heading "Net valuation movement" to the extent that a decline in fair value below amortised cost is considered other than temporary. If the amount of the impairment loss decreases in a subsequent period, the previously recognised impairment loss is reversed through profit and loss to the extent that the carrying amount of the investment does not exceed that which it would have been had the impairment not been recognised.

22. 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 initially recognised at fair value and subsequently included in the balance sheet at amortised cost.

23. 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.

24. 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.

25. 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.

A. 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.

B. 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.

C. 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.

D. 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.

26. 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 and notice accounts with banks, which are very short-term financial assets that typically have notice periods of three days or less.

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-six 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 BIS is composed of the Governors and appointed Directors from the Bank's founding 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 Brazil, Canada, China, Japan, the Netherlands, Sweden and Switzerland, and the President of the European Central Bank.

2. 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, 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 key elements 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.

A. The valuation of financial assets and liabilities

There is no active secondary market for certain of the Bank's financial assets and financial liabilities. Such assets and liabilities are valued using valuation techniques which require judgment to determine appropriate valuation parameters. Changes in assumptions about these parameters could materially affect the reported fair values. The valuation impact of a 1 basis point change in spread assumptions is shown in the table below:

For the financial year ended 31 March

SDR millions	**2010**	2009
Treasury bills	0.3	–
Securities purchased under resale agreements	0.1	0.1
Loans and advances	0.3	0.2
Government and other securities	9.8	9.5
Currency deposits	15.0	18.5
Derivative financial instruments	5.6	8.9

B. The valuation of corporate bonds

In the financial market environment at 31 March 2009 the degree of judgment involved in valuing financial instruments was significant. With few actual market trades in certain financial assets held by the Bank, a high degree of judgment was necessary to select valuation parameters from within a wide range of potential alternative assumptions. This was particularly relevant for the Bank's holdings of corporate bonds (included under the balance sheet heading "Government and other securities"), for which the potential range of alternative spread assumptions was of the order of tens of basis points. Due to improved market conditions, the degree of uncertainty at 31 March 2010 was lower.

Management believes that all of the valuation parameters used by the Bank reflect market conditions at the balance sheet date in a fair and prudent manner.

C. Impairment provision – financial assets

Gold loans include a provision of SDR 23.5 million following an impairment review as at 31 March 2010 (31 March 2009: SDR 18.3 million). The impairment review was conducted at an individual counterparty level, identifying those counterparties which were experiencing significant financial difficulties at the balance sheet date. The increase in the

provision during the financial year ended 31 March 2010 is due to changes in gold prices, which are included under the profit and loss account heading "Net foreign exchange loss". No additional impairment charge was recognised during the financial year (2009: SDR 18.3 million). Impairment charges, when recognised, are included in the profit and loss account under the heading "Net interest income".

D. Actuarial assumptions and medical cost inflation

The valuation of the Bank's pension fund and health care arrangements relies on actuarial assumptions and expectations of inflation and interest rates. Changes to these assumptions will have an impact on the valuation of the Bank's pension fund liabilities and the amounts recognised in the financial statements.

3. 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.

4. Gold and gold loans

A. Total gold holdings

The composition of the Bank's total gold holdings was as follows:

As at 31 March

SDR millions	**2010**	2009
Gold bars held at central banks	41,596.9	22,616.5
Total gold loans	1,442.9	2,799.7
Total gold and gold loan assets	**43,039.8**	25,416.2
Comprising:		
Gold investment assets	2,811.2	2,358.1
Gold and gold loan banking assets	40,228.6	23,058.1

Included in "Gold bars held at central banks" is SDR 8,160.1 million (346 tonnes) (2009: nil) of gold, which the Bank held in connection with gold swap operations, under which the Bank exchanges currencies for physical gold. The Bank has an obligation to return the gold at the end of the contract.

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 which is reported under the balance sheet heading "Other equity accounts"; the movement in this value is included in the statement of comprehensive income under the heading "Unrealised gain on gold investment assets". Realised gains or losses on the disposal of gold investment assets are recognised in the profit and loss account under the heading "Net gain on sales of gold investment assets".

Note 18 provides further analysis of the gold revaluation account. Note 27 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	**2010**	2009
Balance at beginning of year	2,358.1	2,424.4
Net change in gold investment assets		
Disposals of gold	–	(102.0)
Impairment, sight account and other net movements	(3.7)	(193.7)
	(3.7)	(295.7)
Gold price movement	456.8	229.4
Balance at end of year	**2,811.2**	2,358.1

At 31 March 2010 the Bank's gold investment assets amounted to 120 tonnes of fine gold (2009: 120 tonnes).

5. 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 the most part, the investment of the Bank's equity.

Treasury bills are short-term debt securities issued by governments on a discount basis.

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, international institutions and other public sector organisations. This includes advances made as part of committed and uncommitted standby facilities. The balance sheet total "Loans and advances" also includes notice accounts (see note 6).

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 2010	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	**84,652.5**	**–**	**62.3**	**62.3**	**84,714.8**
Securities purchased under resale agreements	**42,305.9**	**–**	**–**	**–**	**42,305.9**
Fixed-term loans and advances	**18,316.0**	**–**	**–**	**–**	**18,316.0**
Government and other securities					
Government	7,863.1	9,563.8	8.9	9,572.7	17,426.9
Financial institutions	18,878.3	677.7	543.2	1,220.9	20,108.1
Other (including public sector securities)	14,838.0	1,314.7	–	1,314.7	16,152.7
	41,579.4	**11,556.2**	**552.1**	**12,108.3**	**53,687.7**
Total currency assets	**186,853.8**	**11,556.2**	**614.4**	**12,170.6**	**199,024.4**

As at 31 March 2009	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	96,399.2	–	22.7	22.7	96,421.9
Securities purchased under resale agreements	38,594.4	–	–	–	38,594.4
Fixed-term loans and advances	18,116.1	–	–	–	18,116.1
Government and other securities					
Government	3,024.1	8,211.8	–	8,211.8	11,235.9
Financial institutions	22,548.1	707.6	710.7	1,418.3	23,966.4
Other (including public sector securities)	18,621.5	1,939.9	–	1,939.9	20,561.4
	44,193.7	10,859.3	710.7	11,570.0	55,763.7
Total currency assets	197,303.4	10,859.3	733.4	11,592.7	208,896.1

B. Currency assets available for sale

The Bank's currency investment assets relate principally to the investment of its equity. They are designated as available for sale unless they are part of an actively traded portfolio.

The table below analyses the movements in the Bank's currency assets available for sale:

For the financial year ended 31 March

SDR millions	**2010**	2009
Balance at beginning of year	10,859.3	11,707.4
Net change in currency assets available for sale		
Additions	5,233.1	10,805.7
Disposals	(3,941.1)	(4,633.8)
Other net movements	(685.6)	(7,193.1)
	606.4	(1,021.2)
Net change in transactions awaiting settlement	97.6	(109.8)
Fair value and other movements	(7.1)	282.9
Balance at end of year	**11,556.2**	10,859.3

Note 18 provides further analysis of the securities revaluation account. Note 26 provides further analysis of the net gain on sales of securities designated as available for sale.

6. Loans and advances

Loans and advances comprise fixed-term loans and notice accounts.

Fixed-term loans are designated as held at fair value through profit and loss. 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, and are included in the balance sheet at amortised cost.

As at 31 March

SDR millions	**2010**	2009
Fixed-term loans and advances	18,316.0	18,116.1
Notice accounts	972.6	396.6
Total loans and advances	**19,288.6**	18,512.7

The amount of the change in fair value recognised in the profit and loss account on fixed-term loans and advances is SDR 38.5 million (2009: SDR – 50.0 million).

7. 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 settled daily with the exchange. Associated margin payments are settled by cash or marketable securities.

Currency and gold 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 or gold at a predetermined price. In consideration, the seller receives a premium from the purchaser.

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. In consideration, the seller receives a premium from the purchaser.

In addition, the Bank sells products to its customers which contain embedded derivatives (see note 10). Where the host contract is not accounted for as held at fair value, embedded derivatives are separated from the host contract for accounting purposes and treated as though they are regular derivatives. As such, the gold currency options embedded in gold dual currency deposits are included within derivatives as currency and gold options.

The table below analyses the fair value of derivative financial instruments:

As at 31 March	2010			2009		
	Notional amounts	Fair values		Notional amounts	Fair values	
SDR millions		Assets	Liabilities		Assets	Liabilities
Bond futures	754.9	0.8	–	1,862.4	1.2	(1.4)
Cross-currency interest rate swaps	345.8	56.1	(401.9)	2,708.0	95.6	(400.7)
Currency and gold forwards	736.2	2.7	(1.1)	3,047.4	7.3	(173.0)
Currency and gold options	6,034.1	47.9	(47.2)	5,030.1	156.6	(158.2)
Currency and gold swaps	108,476.1	3,282.5	(199.8)	99,578.6	2,860.4	(1,294.1)
Forward rate agreements	7,975.6	0.7	(2.9)	10,875.9	20.0	(13.3)
Interest rate futures	2,015.9	–	–	12,430.4	0.3	(0.9)
Interest rate swaps	309,000.7	6,721.1	(3,532.8)	393,413.7	10,600.8	(4,761.2)
Swaptions	845.2	2.9	(1.7)	2,016.9	6.9	(14.0)
Total derivative financial instruments at end of year	**436,184.5**	**10,114.7**	**(4,187.4)**	530,963.4	13,749.1	(6,816.8)
Net derivative financial instruments at end of year			**5,927.3**			6,932.3

8. Accounts receivable

As at 31 March

SDR millions	**2010**	2009
Financial transactions awaiting settlement	4,023.9	5,811.5
Other assets	11.8	11.0
Total accounts receivable	**4,035.7**	5,822.5

"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.

9. Land, buildings and equipment

For the financial year ended 31 March				2010	2009
SDR millions	Land	Buildings	IT and other equipment	Total	Total
Historical cost					
Balance at beginning of year	**41.2**	**238.5**	**81.9**	**361.6**	349.1
Capital expenditure	–	5.4	6.7	12.1	12.7
Disposals and retirements	–	–	–	–	(0.2)
Balance at end of year	**41.2**	**243.9**	**88.6**	**373.7**	361.6
Depreciation					
Accumulated depreciation at beginning of year	**–**	**107.8**	**62.8**	**170.6**	158.7
Depreciation	–	7.4	5.8	13.1	12.1
Disposals and retirements	–	–	–	–	(0.2)
Balance at end of year	**–**	**115.2**	**68.6**	**183.7**	170.6
Net book value at end of year	**41.2**	**128.7**	**20.0**	**189.9**	191.0

The depreciation charge for the financial year ended 31 March 2010 includes an additional charge of SDR 0.1 million for IT and other equipment following an impairment review (2009: SDR 0.4 million).

10. Currency deposits

Currency deposits are book entry claims on the Bank. The currency deposit instruments are analysed in the table below:

As at 31 March		
SDR millions	**2010**	2009
Deposit instruments repayable at one to two days' notice		
Medium-Term Instruments (MTIs)	52,420.8	86,243.7
Callable MTIs	1,717.3	2,652.9
FIXBIS	34,223.7	32,664.4
	88,361.8	121,561.0
Other currency deposits		
FRIBIS	116.9	204.3
Fixed-term deposits	78,434.1	43,633.2
Dual Currency Deposits (DCDs)	95.8	237.4
Sight and notice deposit accounts	28,746.5	31,586.3
	107,393.3	75,661.2
Total currency deposits	**195,755.1**	197,222.2
Comprising:		
Designated as held at fair value through profit and loss	167,008.6	165,635.9
Designated as financial liabilities measured at amortised cost	28,746.5	31,586.3

Medium-Term Instruments (MTIs) are fixed rate investments at the BIS for quarterly maturities of up to 10 years.

Callable MTIs are MTIs that are callable at the option of the Bank at an exercise price of par, with call dates between June 2010 and December 2010 (2009: June 2009 and December 2009). The balance sheet total for callable MTIs includes the fair value of the embedded interest rate option.

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.

Dual Currency Deposits (DCDs) are 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. The balance sheet total for DCDs includes the fair value of the embedded foreign exchange option. These deposits all mature between 21 April 2010 and 12 May 2010 (2009: between 2 April 2009 and 15 May 2009).

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 financial liabilities measured at amortised cost.

The Bank acts as a sole market-maker in certain of its currency deposit liabilities and has undertaken to repay at fair value some of these financial instruments, in whole or in part, at one to two business days' notice.

A. Valuation of currency deposits

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 2010, is SDR 193,896.3 million (2009: SDR 193,629.2 million).

The Bank uses valuation techniques to estimate the fair value of its currency deposits. These valuation techniques comprise discounted cash flow models and option pricing models. The discounted cash flow models value the expected cash flows of financial instruments using discount factors that are partly derived from quoted interest rates (eg Libor and swap rates) and partly based on assumptions about spreads at which each product is offered to and repurchased from customers.

The spread assumptions are based on recent market transactions in each product. Where the product series has been closed to new investors (and thus there are no recent market transactions) the Bank uses the latest quoted spread for the series as the basis for determining the appropriate model inputs.

The option pricing models include assumptions about volatilities that are derived from market quotes.

B. Impact of changes in the Bank's creditworthiness

The fair value of the Bank's liabilities would be affected by any change in its creditworthiness. If the Bank's creditworthiness deteriorated, the value of its liabilities would decrease, and the change in value would be reflected as a valuation movement in the profit and loss account. The Bank regularly assesses its creditworthiness as part of its risk management processes. The Bank's assessment of its creditworthiness did not indicate a change which could have had an impact on the fair value of the Bank's liabilities during the period under review.

11. Gold deposits

Gold deposits placed with the Bank originate entirely from central banks. They are all designated as financial liabilities measured at amortised cost.

12. 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. Securities sold under repurchase agreements originate entirely from commercial banks.

As at 31 March 2010 there were no securities sold under repurchase agreements (2009: nil).

13. 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.

14. Other liabilities

As at 31 March

SDR millions	**2010**	2009
Post-employment benefit obligations (see note 19)		
Staff pensions	12.1	2.4
Directors' pensions	5.2	4.8
Health and accident benefits	217.5	191.6
Short positions in currency assets	66.0	151.6
Payable to former shareholders	0.5	0.5
Other	17.7	17.3
Total other liabilities	**319.0**	368.2

15. Share capital

The Bank's share capital consists of:

As at 31 March

SDR millions	**2010**	2009
Authorised capital: 600,000 shares, each of SDR 5,000 par value, of which SDR 1,250 is paid up	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	**2010**	2009
Issued shares	547,125	547,125
Less: shares held in treasury	(1,000)	(1,000)
Outstanding shares eligible for full dividend	**546,125**	546,125
Dividends per share (in SDR)		
Normal	285	265
Supplementary	400	–
Total dividends per share	**685**	265

16. 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 payment of 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 the Bank's 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.

17. Shares held in treasury

For the financial year ended 31 March	**2010**	2009
Number of shares at beginning of year	1,000	1,000
Movements during the year	–	–
Number of shares at end of year	**1,000**	1,000

The shares held in treasury consist of 1,000 shares of the Albanian issue which were suspended in 1977.

18. 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 4 and 5.

Other equity accounts comprise:

As at 31 March

SDR millions	**2010**	2009
Securities revaluation account	318.6	431.1
Gold revaluation account	2,246.0	1,789.2
Total other equity accounts	**2,564.6**	2,220.3

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	**2010**	2009
Balance at beginning of year	431.1	272.0
Net valuation movement		
Net gain / (loss) on sales	(105.4)	(123.8)
Fair value and other movements	(7.1)	282.9
	(112.5)	159.1
Balance at end of year	**318.6**	431.1

The tables below analyse the balance in the securities revaluation account:

As at 31 March 2010 *SDR millions*	Fair value of assets	Historical cost	Securities revaluation account	Gross gains	Gross losses
Government and other securities and total	**11,556.2**	**11,237.6**	**318.6**	**322.2**	**(3.6)**

As at 31 March 2009 *SDR millions*	Fair value of assets	Historical cost	Securities revaluation account	Gross gains	Gross losses
Government and other securities and total	10,859.3	10,428.2	431.1	447.3	(16.2)

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	**2010**	2009
Balance at beginning of year	1,789.2	1,636.8
Net valuation movement		
Net gain on sales	–	(77.0)
Gold price movement	456.8	229.4
	456.8	152.4
Balance at end of year	**2,246.0**	1,789.2

19. 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.

A. Amounts recognised in the balance sheet

As at 31 March			Staff pensions		
SDR millions	**2010**	2009	2008	2007	2006
Present value of obligation	(913.1)	(747.4)	(709.7)	(653.7)	(606.4)
Fair value of fund assets	762.4	619.6	714.3	648.6	602.2
Funded status	(150.7)	(127.8)	4.6	(5.1)	(4.2)
Unrecognised actuarial losses	138.6	125.4	41.2	47.3	46.8
Unrecognised past service cost	–	–	(45.8)	(42.2)	(42.6)
Liability at end of year	**(12.1)**	(2.4)	–	–	–

As at 31 March			Directors' pensions		
SDR millions	**2010**	2009	2008	2007	2006
Present value of obligation	(6.5)	(5.7)	(5.4)	(4.6)	(4.6)
Fair value of fund assets	–	–	–	–	–
Funded status	(6.5)	(5.7)	(5.4)	(4.6)	(4.6)
Unrecognised actuarial losses	1.3	0.9	0.6	0.3	0.3
Unrecognised past service cost	–	–	–	–	–
Liability at end of year	**(5.2)**	(4.8)	(4.8)	(4.3)	(4.3)

As at 31 March			Post-employment health and accident benefits		
SDR millions	**2010**	2009	2008	2007	2006
Present value of obligation	(284.2)	(225.4)	(208.0)	(186.3)	(183.8)
Fair value of fund assets	–	–	–	–	–
Funded status	(284.2)	(225.4)	(208.0)	(186.3)	(183.8)
Unrecognised actuarial losses	72.3	40.1	30.3	42.0	57.2
Unrecognised past service cost	(5.6)	(6.3)	(7.7)	(7.8)	(8.6)
Liability at end of year	**(217.5)**	(191.6)	(185.4)	(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	**2010**	2009	2008	**2010**	2009	2008	**2010**	2009	2008
Present value of obligation at beginning of year	747.4	709.7	653.7	5.7	5.4	4.6	225.4	208.0	186.3
Current service cost	32.0	29.8	30.5	0.2	0.2	0.2	8.5	7.9	8.2
Employee contributions	4.5	3.9	3.7	–	–	–	–	–	–
Interest cost	24.5	24.9	21.3	0.2	0.2	0.1	7.5	7.4	6.1
Actuarial (gain) / loss	84.3	29.3	(55.7)	–	0.3	–	30.2	11.5	(13.9)
Benefit payments	(28.3)	(24.5)	(23.1)	(0.3)	(0.3)	(0.3)	(2.2)	(1.9)	(1.8)
Exchange differences	48.7	(25.7)	79.3	0.7	(0.1)	0.9	14.8	(7.5)	23.1
Present value of obligation at end of year	**913.1**	747.4	709.7	**6.5**	5.7	5.4	**284.2**	225.4	208.0

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	**2010**	2009	2008
Fair value of fund assets at beginning of year	619.6	714.3	648.6
Expected return on fund assets	31.8	34.0	33.1
Actuarial gain / (loss)	74.4	(99.3)	(44.8)
Employer contributions	20.0	18.3	17.3
Employee contributions	4.5	3.9	3.7
Benefit payments	(28.3)	(24.5)	(23.1)
Exchange differences	40.4	(27.1)	79.5
Fair value of fund assets at end of year	**762.4**	619.6	714.3

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	**2010**	2009	2008	**2010**	2009	2008	**2010**	2009	2008
Current service cost	32.0	29.8	30.5	0.2	0.2	0.2	8.5	7.9	8.2
Interest cost	24.5	24.9	21.3	0.2	0.2	0.1	7.5	7.4	6.1
Less: expected return on fund assets	(31.8)	(34.0)	(33.1)	–	–	–	–	–	–
Less: past service cost	–	–	(1.5)	–	–	–	(1.1)	(6.3)	(1.0)
Net actuarial losses recognised in year	4.4	–	–	0.1	–	–	1.4	–	1.6
Total included in operating expense	**29.1**	20.7	17.2	**0.5**	0.4	0.3	**16.3**	9.0	14.9

The Bank expects to make a contribution to its post-employment arrangements of SDR 24.1 million in 2010/11.

E. Major categories of fund assets as a percentage of total fund assets

As at 31 March

Percentages	**2010**	2009
European equities	7.1	7.4
Other equities	33.4	16.8
European fixed income	18.5	49.9
Other fixed income	30.9	21.8
Other assets	10.1	4.1
Actual return on fund assets	14.4%	–10.5%

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	**2010**	2009
Applicable to all three post-employment benefit arrangements		
Discount rate – market rate of highly rated Swiss corporate bonds	2.75%	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 cost 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% at 31 March 2010 (2009: 1.5%).

The expected rate of return on fund assets is based on long-term expectations for inflation, interest rates, risk premia 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 2009/10 calculation would have the following effects:

For the financial year ended 31 March

SDR millions	**2010**	2009
Increase / (decrease) of the total service and interest cost		
6% medical inflation	5.2	5.0
4% medical inflation	(3.9)	(3.6)

As at 31 March

SDR millions	**2010**	2009
Increase / (decrease) of the benefit obligation		
6% medical inflation	70.0	56.3
4% medical inflation	(53.1)	(42.5)

20. Interest income

For the financial year ended 31 March

SDR millions	**2010**	2009
Currency assets available for sale		
Securities purchased under resale agreements	–	18.5
Government and other securities	317.7	365.0
	317.7	383.5
Currency assets held at fair value through profit and loss		
Treasury bills	529.9	1,253.1
Securities purchased under resale agreements	156.7	1,880.8
Loans and advances	101.7	1,321.1
Government and other securities	959.1	1,766.8
	1,747.4	6,221.8
Assets designated as loans and receivables		
Sight and notice accounts	2.0	16.0
Gold investment assets	2.7	6.4
Gold banking assets	3.1	5.0
Impairment charge on gold banking assets	–	(18.3)
	7.8	9.1
Derivative financial instruments held at fair value through profit and loss	**1,979.0**	1,640.5
Total interest income	**4,051.9**	8,254.9

21. Interest expense

For the financial year ended 31 March

SDR millions	**2010**	2009
Liabilities held at fair value through profit and loss		
Currency deposits	**2,573.8**	6,160.4
Liabilities designated as financial liabilities measured at amortised cost		
Gold deposits	2.0	3.3
Sight and notice deposit accounts	44.9	472.0
Securities sold under repurchase agreements	–	17.3
	46.9	492.6
Total interest expense	**2,620.7**	6,653.0

22. Net valuation movement

The net valuation movement arises entirely on financial instruments designated as held at fair value through profit and loss. Included in the table below for 2009 is a net valuation loss of SDR 4.6 million arising from credit losses on default (2010: nil).

For the financial year ended 31 March

SDR millions	**2010**	2009
Currency assets held at fair value through profit and loss		
Unrealised valuation movements on currency assets	698.6	59.8
Realised gains on currency assets	53.2	34.8
	751.8	94.6
Currency liabilities held at fair value through profit and loss		
Unrealised valuation movements on financial liabilities	1,977.4	(1,549.1)
Realised losses on financial liabilities	(928.4)	(1,139.6)
	1,049.0	(2,688.7)
Valuation movements on derivative financial instruments	**(1,280.3)**	1,412.4
Net valuation movement	**520.5**	(1,181.7)

23. Net fee and commission income

For the financial year ended 31 March

SDR millions	**2010**	2009
Fee and commission income	18.8	8.1
Fee and commission expense	(8.1)	(7.7)
Net fee and commission income	**10.7**	0.4

24. Net foreign exchange loss

For the financial year ended 31 March

SDR millions	**2010**	2009
Net transaction gain	0.3	11.6
Net translation loss	(17.5)	(20.4)
Net foreign exchange loss	**(17.2)**	(8.8)

25. 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	**2010**	2009
Board of Directors		
Directors' fees	2.3	2.0
Pensions to former Directors	0.6	0.5
Travel, external Board meetings and other costs	1.3	1.6
	4.2	4.1
Management and staff		
Remuneration	118.8	114.1
Pensions	51.8	34.3
Other personnel-related expense	44.2	45.4
	214.8	193.8
Office and other expense	**73.7**	65.8
Administrative expense in CHF millions	**292.7**	263.7
Administrative expense in SDR millions	177.7	154.4
Depreciation in SDR millions	13.1	12.1
Operating expense in SDR millions	**190.8**	166.5

The average number of full-time equivalent employees during the financial year ended 31 March 2010 was 540 (2009: 532).

26. Net gain on sales of securities available for sale

For the financial year ended 31 March

SDR millions	**2010**	2009
Disposal proceeds	3,941.1	4,633.8
Amortised cost	(3,835.7)	(4,510.0)
Net gain	**105.4**	123.8
Comprising:		
Gross realised gains	107.7	128.9
Gross realised losses	(2.3)	(5.1)

27. Net gain on sales of gold investment assets

For the financial year ended 31 March

SDR millions	**2010**	2009
Disposal proceeds	–	102.0
Deemed cost (see note 18B)	–	(25.0)
Net realised gain	**–**	77.0

28. Earnings per share

For the financial year ended 31 March	**2010**	2009
Net profit for the financial year (SDR millions)	1,859.8	446.1
Weighted average number of shares entitled to dividend	546,125	546,125
Basic and diluted earnings per share (SDR per share)	**3,405.4**	816.8

The dividends proposed for the financial year ended 31 March 2010 comprise a normal dividend of SDR 285 per share (2009: SDR 265) and a supplementary dividend of SDR 400 per share (2009: nil), for a total of SDR 685 per share (2009: SDR 265).

29. Cash and cash equivalents

For the purposes of the cash flow statement, cash and cash equivalents comprise:

As at 31 March

SDR millions	**2010**	2009
Cash and sight accounts with banks	1,516.2	915.2
Notice accounts	972.6	396.6
Total cash and cash equivalents	**2,488.8**	1,311.8

30. 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 for the Americas.

31. 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	
	2010	2009	**2010**	2009
USD	**0.658**	0.670	**0.644**	0.648
EUR	**0.889**	0.890	**0.909**	0.908
JPY	**0.00704**	0.00677	**0.00694**	0.00654
GBP	**0.998**	0.962	**1.027**	1.088
CHF	**0.625**	0.590	**0.606**	0.584
Gold (in ounces)	**732.9**	614.6	**657.4**	560.4

32. 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	**2010**	2009
Safe custody arrangements	11,115.6	11,082.0
Collateral pledge agreements	88.8	90.0
Portfolio management mandates	8,981.2	6,919.0
Gold bars held under earmark	5,003.9	4,078.9
Total	**25,189.5**	22,169.9

The above table includes the nominal value of securities held under safe custody and collateral pledge arrangements, and the net asset value of portfolio management mandates. Portfolio management mandates include BIS Investment Pools (BISIPs), which are collective investment arrangements for central banks, and dedicated mandates for single central bank investors.

Gold bars held under earmark are included at their weight in gold (translated at the gold market price and USD exchange rate into SDR). At 31 March 2010 gold bars held under earmark amounted to 212 tonnes of fine gold (2009: 212 tonnes).

The financial instruments held under the above arrangements are deposited with external custodians, either central banks or commercial institutions.

33. Commitments

The Bank provides a number of committed standby facilities for its customers. As at 31 March 2010 the outstanding commitments to extend credit under these committed standby facilities amounted to SDR 4,919.8 million (2009: SDR 8,646.8 million), of which SDR 2,420.7 million was uncollateralised (2009: SDR 234.5 million).

34. The fair value hierarchy

The Bank categorises its financial instrument fair value measurements using a hierarchy that reflects the significance of the inputs used in measuring fair value. The valuation is categorised at the lowest level of input that is significant to the fair value measurement in its entirety. The fair value hierarchy adopted by the Bank uses the following levels for categorising valuation inputs:

Level 1 – unadjusted quoted prices in active markets for identical financial instruments.

Level 2 – inputs other than those in level 1 which are observable for the financial instrument either directly (ie as a price) or indirectly (ie derived from prices for similar financial instruments). This includes observable interest rates, spreads and volatilities.

Level 3 – inputs to valuation models that are not observable in financial markets.

A. Assets measured at fair value

As at 31 March 2010

SDR millions	Level 1	Level 2	Level 3	Total
Financial assets held at fair value through profit and loss				
Treasury bills	62,644.6	22,070.2	–	84,714.8
Securities purchased under resale agreements	–	42,305.9	–	42,305.9
Fixed-term loans	–	18,316.0	–	18,316.0
Government and other securities	13,354.7	28,685.4	91.4	42,131.5
Derivative financial instruments	2.5	10,112.2	–	10,114.7
Financial assets designated as available for sale				
Government and other securities	10,699.4	856.8	–	11,556.2
Total financial assets accounted for at fair value	**86,701.2**	**122,346.5**	**91.4**	**209,139.1**
Financial liabilities held at fair value through profit and loss				
Currency deposits	–	(167,008.6)	–	(167,008.6)
Derivative financial instruments	(12.6)	(4,174.8)	–	(4,187.4)
Other liabilities (short positions in currency assets)	–	(66.0)	–	(66.0)
Total financial liabilities accounted for at fair value	**(12.6)**	**(171,249.4)**	**–**	**(171,262.0)**

The Bank considers published price quotations in active markets as the best evidence of fair value. The financial instruments valued using active market quotes are categorised as level 1.

Where reliable published price quotations are not available for a financial instrument, the Bank determines fair value by using market standard valuation techniques. These valuation techniques include the use of discounted cash flow models as well as other standard market valuation methods. Where financial models are used, the Bank aims at making maximum use of observable market inputs. The financial instruments valued this way are categorised as level 2.

A small percentage of the Bank's financial instruments valuations are produced using valuation techniques that utilise significant unobservable inputs. The financial instruments valued in this manner are categorised as level 3. The financial instruments categorised as level 3 at 31 March 2009 and 2010 comprise illiquid corporate bonds.

The accuracy of the Bank's valuations is ensured through an independent price verification exercise performed by the valuation control function.

B. Reconciliation of assets and liabilities measured at fair value level 3

As at 31 March 2010

SDR millions	Financial assets held at fair value through profit and loss	Financial assets designated as available for sale	Total
Balance at beginning of year	566.6	28.5	595.1
Gains or losses in profit or loss	109.0	–	109.0
Gains or losses in equity	–	1.0	1.0
Total gains or losses	**109.0**	**1.0**	**110.0**
Disposals	(40.5)	–	(40.5)
Transfers out of level 3	(617.5)	(29.5)	(647.0)
Transfers into level 3	73.8	–	73.8
Balance at end of year	**91.4**	**–**	**91.4**
Gains or losses in profit or loss for assets and liabilities held at the end of the reporting period	28.2	–	28.2

35. 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 2010

Percentages	USD	EUR	GBP	JPY	Other currencies
Assets					
Gold loans	–	–	–	–	0.49
Treasury bills	0.31	0.72	0.49	0.11	2.19
Securities purchased under resale agreements	0.12	0.21	0.47	0.05	–
Loans and advances	0.41	0.40	0.51	0.07	0.07
Government and other securities	1.96	2.66	2.19	0.66	4.75
Liabilities					
Currency deposits	1.03	0.73	1.34	0.12	0.28
Gold deposits	–	–	–	–	0.42
Short positions in currency assets	1.68	–	–	–	–

As at 31 March 2009

Percentages	USD	EUR	GBP	JPY	Other currencies
Assets					
Gold loans	–	–	–	–	0.54
Treasury bills	0.88	1.83	0.69	0.23	–
Securities purchased under resale agreements	0.16	0.62	0.63	0.10	–
Loans and advances	0.84	1.29	0.87	0.08	0.40
Government and other securities	2.50	3.24	3.26	0.86	3.88
Liabilities					
Currency deposits	2.00	2.00	2.05	0.16	2.05
Gold deposits	–	–	–	–	0.38
Short positions in currency assets	4.96	–	–	–	–

36. Geographical analysis

A. Total liabilities

As at 31 March

SDR millions	**2010**	2009
Africa and Europe	93,697.7	109,733.3
Asia-Pacific	100,001.4	82,770.5
Americas	40,988.6	40,344.5
International organisations	8,430.3	8,822.5
Total	**243,118.0**	241,670.8

B. Off-balance sheet items

As at 31 March

SDR millions	**2010**	2009
Africa and Europe	6,107.7	5,361.6
Asia-Pacific	17,911.3	16,165.1
Americas	1,170.5	643.2
Total	**25,189.5**	22,169.9

Note 32 provides further analysis of the Bank's off-balance sheet items. A geographical analysis of the Bank's assets is provided in the "Risk management" section below (note 3C).

C. Credit commitments

As at 31 March

SDR millions	**2010**	2009
Africa and Europe	2,861.7	1,073.3
Asia-Pacific	2,058.1	7,573.5
Americas	–	–
Total	**4,919.8**	8,646.8

Note 33 provides further analysis of the Bank's credit commitments.

37. 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 "Governance and management of the BIS". Note 19 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	**2010**	2009
Salaries, allowances and medical cover	6.9	6.4
Post-employment benefits	1.9	1.7
Total compensation in CHF millions	**8.8**	8.1
SDR equivalent	5.5	4.7

Note 25 provides details of the total compensation of the Board of Directors.

The Bank offers personal deposit accounts for all staff members and its Directors. The accounts bear interest at a rate determined by the Bank based on the rate offered by the Swiss National Bank on staff accounts. The movements and total balance on personal deposit 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	**2010**	2009
Balance at beginning of year	12.8	18.0
Deposits taken including interest income (net of withholding tax) and new entrants	8.6	3.4
Withdrawals and departures	(1.7)	(8.6)
Balance at end of year in CHF millions	**19.7**	12.8
SDR equivalent	12.3	7.6
Interest expense on deposits in CHF millions	0.4	0.7
SDR equivalent	0.2	0.4

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.

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 staff accounts plus 1%. The total balance of blocked accounts at 31 March 2010 was SDR 20.0 million (2009: SDR 19.2 million). They are reported under the balance sheet heading "Currency deposits".

B. Related party central banks and connected institutions

The BIS provides banking services to its customers, who are predominantly central banks, monetary authorities and international financial 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	**2010**	2009
Balance at beginning of year	50,475.4	53,998.3
Deposits taken	356,011.2	120,912.0
Maturities, repayments and fair value movements	(351,789.4)	(123,325.4)
Net movement on notice accounts	2,815.4	(1,109.5)
Balance at end of year	**57,512.6**	50,475.4
Percentage of total currency deposits at end of year	29.4%	25.6%

Gold deposits from related party central banks and connected institutions

For the financial year ended 31 March

SDR millions	**2010**	2009
Balance at beginning of year	19,468.7	26,336.1
Deposits taken	40.8	55.0
Net withdrawals and gold price movements	(40.8)	(218.8)
Net movement on gold sight accounts	8,220.0	(6,703.6)
Balance at end of year	**27,688.7**	19,468.7
Percentage of total gold deposits at end of year	86.4%	84.5%

Securities purchased under resale transactions with related party central banks and connected institutions

For the financial year ended 31 March

SDR millions	**2010**	2009
Balance at beginning of year	4,602.5	3,271.9
Collateralised deposits placed	903,642.0	889,828.4
Maturities and fair value movements	(903,301.8)	(888,497.8)
Balance at end of year	**4,942.7**	4,602.5
Percentage of total securities purchased under resale agreements at end of year	11.7%	11.9%

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 1,417.9 million as at 31 March 2010 (2009: SDR 881.5 million). Gold held in sight accounts with related party central banks and connected institutions totalled SDR 41,575.7 million as at 31 March 2010 (2009: SDR 22,605.8 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 2010 was SDR 19,431.3 million (2009: SDR 6,510.0 million).

38. Contingent liabilities

At 31 March 2010, the Bank had no material contingent liabilities.

Capital adequacy

1. Capital

The table below shows the composition of the Bank's Tier 1 and total capital as at 31 March 2010.

As at 31 March

SDR millions	**2010**	2009
Share capital	683.9	683.9
Statutory reserves per balance sheet	10,668.7	10,367.3
Less: shares held in treasury	(1.7)	(1.7)
Tier 1 capital	**11,350.9**	11,049.5
Profit and loss account	1,859.8	446.1
Other equity accounts	2,564.6	2,220.3
Total capital	**15,775.3**	13,715.9

The Bank assesses its capital adequacy continuously. The assessment is supported by an annual capital and business planning process.

The Bank has implemented a risk framework that is consistent with the revised *International Convergence of Capital Measurement and Capital Standards* (Basel II Framework) issued by the Basel Committee on Banking Supervision in June 2006. The implementation includes all three pillars of the Framework, and takes the particular scope and nature of the Bank's activities into account. Since the Bank is not subject to national banking supervisory regulation, the application of Pillar 2 is limited to the Bank's own assessment of capital adequacy. This assessment is based primarily on an economic capital methodology which is more comprehensive and geared to a substantially higher solvency level than the minimum Pillar 1 capital level required by the Basel II Framework.

2. Economic capital

The Bank's own assessment of its capital adequacy is performed on the basis of its economic capital frameworks for market risk, credit risk, operational risk and other risks. These are designed to determine the amount of equity needed to absorb losses arising from its exposures to a statistical level of confidence consistent with the objective to maintain superior credit quality. The Bank's economic capital frameworks measure economic capital to a 99.995% confidence interval assuming a one-year holding period, except for other risks. The amount of economic capital set aside for other risks is based on Management's assessment of risks which are not, or not fully, reflected in the Bank's economic capital calculations.

The following table summarises the Bank's economic capital utilisation for credit risk, market risk, operational risk and other risks:

As at 31 March

SDR millions	**2010**	2009
Credit risk	5,659.8	5,673.7
Market risk	2,708.7	3,099.8
Operational risk	475.0	425.0
Other risks	300.0	300.0
Total economic capital utilisation	**9,143.5**	9,498.5

3. Risk-weighted assets and minimum capital requirements under the Basel II Framework

The Basel II Framework includes several approaches for calculating risk-weighted assets and the corresponding minimum capital requirements. In principle, the minimum capital requirements are determined by taking 8% of the risk-weighted assets.

The following table summarises the relevant exposure types and approaches as well as the risk-weighted assets and the minimum capital requirements for credit risk, market risk and operational risk.

As at 31 March		**2010**			2009		
	Approach used	Amount of exposure	Risk-weighted assets (A)	Minimum capital requirement (B)	Amount of exposure	Risk-weighted assets (A)	Minimum capital requirement (B)
SDR millions							
Credit risk							
Exposure to sovereigns, banks and corporates	Advanced internal ratings-based approach, where (B) is derived as (A) x 8%	207,871.9	9,027.4	722.2	225,017.7	10,114.8	809.2
Securitisation exposures, externally managed portfolios and other assets	Standardised approach, where (B) is derived as (A) x 8%	2,820.7	1,159.5	92.8	3,342.2	1,291.0	103.3
Market risk							
Exposure to foreign exchange risk and gold price risk	Internal models approach, where (A) is derived as (B) / 8%	–	10,768.1	861.4	–	15,783.5	1,262.7
Operational risk	Advanced measurement approach, where (A) is derived as (B) / 8%	–	2,256.3	180.5	–	2,250.0	180.0
Total			**23,211.3**	**1,856.9**		29,439.3	2,355.2

For credit risk, the Bank has adopted the advanced internal ratings-based approach for the majority of its exposures. Under this approach, the risk weighting for a transaction is determined by the relevant Basel II risk weight function using the Bank's own estimates for key inputs. For certain exposures, the Bank has adopted the standardised approach. Under this approach, risk weightings are mapped to exposure types.

Risk-weighted assets for market risk are derived following an internal models approach. For operational risk, the advanced measurement approach is used. Both these approaches rely on value-at-risk (VaR) methodologies. The minimum capital requirements are derived from the VaR figures and are translated into risk-weighted assets taking into account the 8% minimum capital requirement.

More details on the assumptions underlying the calculations are provided in the sections on credit risk, market risk and operational risk.

4. Tier 1 capital ratio

The capital ratio measures capital adequacy by comparing the Bank's Tier 1 capital with its risk-weighted assets. The table below shows the Bank's Tier 1 capital ratio, consistent with the Basel II Framework.

As at 31 March

SDR millions	**2010**	2009
Tier 1 capital	11,350.9	11,049.5
Less: expected loss	–	(13.9)
Tier 1 capital net of expected loss (A)	**11,350.9**	11,035.6
Total risk-weighted assets (B)	23,211.3	29,439.3
Tier 1 capital ratio (A) / (B)	**48.9%**	37.5%

As required by the Basel II Framework, expected loss is calculated for credit risk exposures subject to the advanced internal ratings-based approach. The expected loss is calculated at the balance sheet date taking into account the impairment provision which is reflected in the Bank's financial statements. Note 2 provides details of the impairment provision. In accordance with the requirements of the Basel II Framework, the expected loss is compared with the impairment provision and any shortfall is deducted from the Bank's Tier 1 capital. At 31 March 2010, the impairment provision exceeded the expected loss.

The Bank maintains a very high creditworthiness and performs a comprehensive capital assessment considering its specific characteristics. As such, it maintains a capital position substantially in excess of the minimum requirement.

Risk management

1. Risks faced by the Bank

The Bank supports its customers, predominantly central banks, monetary authorities and international financial institutions, in the management of their reserves and related financial activities.

Banking activities form an essential element of meeting the Bank's objectives and as such ensure its financial strength and independence. The BIS engages in banking activities that are customer-related as well as activities that are related to the investment of its equity, each of which may give rise to financial risk comprising credit risk, market risk and liquidity risk. The Bank is also exposed to operational risk.

Within the risk framework defined by the Board of Directors, the Management of the Bank has established risk management policies designed to ensure that risks are identified, appropriately measured and limited as well as monitored and reported.

2. Risk management approach and organisation

General approach

The Bank maintains superior credit quality and adopts a prudent approach to financial risk-taking, by:

- maintaining an exceptionally strong capital position;
- investing its assets predominantly in high credit quality financial instruments;
- seeking to diversify its assets across a range of sectors;
- adopting a conservative approach to its tactical market risk-taking and carefully managing market risk associated with the Bank's strategic positions, which include its gold holdings; and
- maintaining a high level of liquidity.

A. Organisation

Under Article 39 of the Bank's Statutes, the General Manager is responsible to the Board for the management of the Bank, and is assisted by the Deputy General Manager. The Deputy General Manager is responsible for the Bank's independent risk control and compliance functions. The General Manager and the Deputy General Manager are supported by senior management advisory committees.

The key advisory committees are the Executive Committee, the Finance Committee and the Compliance and Operational Risk Committee. The first two committees are chaired by the General Manager and the third by the Deputy General Manager, and all include other senior members of the Bank's Management. The Executive Committee advises the General Manager primarily on the Bank's strategic planning and the allocation of resources, as well as on decisions related to the broad financial objectives for the banking activities and operational risk management. The Finance Committee advises the General Manager on the financial management and policy issues related to the banking business, including the allocation of economic capital to risk categories. The Compliance and Operational Risk Committee acts as an advisory committee to the Deputy General Manager and ensures the coordination of compliance matters and operational risk management throughout the Bank.

The independent risk control function for financial risks is performed by the Risk Control unit. The independent operational risk control function is shared between Risk Control, which maintains the operational risk quantification, and the Compliance and Operational Risk Unit. Both units report directly to the Deputy General Manager.

The Bank's compliance function is performed by the Compliance and Operational Risk Unit. The objective of this function is to provide reasonable assurance that the activities of the Bank and its staff conform to 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 and Operational Risk Unit identifies and assesses compliance risks and guides and educates staff on compliance issues. The Head of the Compliance and Operational Risk Unit also has a direct reporting line to the Audit Committee, which is an advisory committee to the Board of Directors.

The Finance unit and the Legal Service complement the Bank's risk management. The Finance unit operates an independent valuation control function, produces the Bank's financial statements and controls the Bank's expenditure by setting and monitoring the annual budget. The objective of the independent valuation control function is to ensure that the Bank's valuations comply with its valuation policy and procedures, and that the processes and procedures which influence the Bank's valuations conform to best practice guidelines. The Finance unit has a direct reporting line to the Secretary General.

The Legal Service provides legal advice and support covering a wide range of issues relating to the Bank's activities. The Legal Service has a direct reporting line to the General Manager.

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 has a direct reporting line to the Audit Committee and is responsible to the General Manager and the Deputy General Manager.

B. Risk monitoring and reporting

The Bank's financial and operational risk profile, position and performance are monitored on an ongoing basis by the relevant units. Financial risk and compliance reports aimed at various management levels are regularly provided to enable Management to adequately assess the Bank's risk profile and financial condition.

Management reports financial and risk information to the Board of Directors on a bimonthly basis. Furthermore, the Audit Committee receives regular reports from Internal Audit, the Compliance and Operational Risk Unit and the Finance unit. The Banking and Risk Management Committee, another advisory committee to the Board, receives an annual report from the Risk Control unit. The preparation of reports is subject to comprehensive policies and procedures, thus ensuring strong controls.

C. 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.

The Bank's model validation policy defines the roles and responsibilities and processes related to the implementation of new or materially changed risk models.

A key methodology used by the Bank to measure and manage risk is the calculation of economic capital based on value-at-risk (VaR) techniques. VaR expresses the statistical estimate of the maximum potential loss on the current positions of the Bank measured to a specified level of confidence and a specified time horizon.

The Bank's economic capital calculation is designed to measure the amount of equity needed to absorb losses arising from its exposures to a statistical level of confidence determined by the Bank's aim to remain of the highest creditworthiness.

The Bank assesses its capital adequacy on the basis of economic capital frameworks for market risk, credit risk, operational risk and other risks, supplemented by sensitivity and risk factor analyses. The Bank's economic capital frameworks measure economic capital to a 99.995% confidence interval assuming a one-year holding period.

The Bank allocates economic capital to the above risk categories. An additional amount of economic capital is set aside based on Management's assessment of risks which are not, or not fully, reflected in the economic capital calculations.

A comprehensive stress testing framework complements the Bank's risk assessment including its VaR and economic capital calculations for financial risk. The Bank's key market risk factors and credit exposures are stress-tested. The stress testing includes the analysis of severe historical and adverse hypothetical macroeconomic scenarios, as well as sensitivity tests of extreme but still plausible movements of the key risk factors identified. The Bank also performs stress tests related to liquidity risk.

3. Credit risk

Credit risk arises because a counterparty may fail to meet its obligations in accordance with the agreed contractual terms and conditions.

The Bank manages credit risk within a framework and policies set by the Board of Directors and Management. These are complemented by more detailed guidelines and procedures at the level of the independent risk control function.

A. Credit risk assessment

Credit risk is continuously controlled at both a counterparty and an aggregated level. As part of the independent risk control function, individual counterparty credit assessments are performed subject to a well defined internal rating process, involving 18 rating grades. As part of this process, counterparty financial statements and market information are analysed. The rating methodologies depend on the nature of the counterparty. Based on the internal rating and specific counterparty features, the Bank sets a series of credit limits covering individual counterparties and countries. Internal ratings are assigned to all counterparties. In principle, the ratings and related limits are reviewed at least annually. The main assessment criterion in these reviews is the ability of the counterparties to meet interest and principal repayment obligations in a timely manner.

Credit risk limits at the counterparty level are approved by the Bank's Management and fit within a framework set by the Board of Directors.

On an aggregated level credit risk, including default and country transfer risk, is measured, monitored and limited based on the Bank's economic capital calculation for credit risk. To calculate economic capital for credit risk, the Bank uses a portfolio VaR model. Management limits the Bank's overall exposure to credit risk by allocating an amount of economic capital to credit risk.

B. Credit risk mitigation

Credit risk is mitigated through the use of collateral and legally enforceable netting or setoff agreements. The corresponding assets and liabilities are not offset on the balance sheet.

The Bank obtains collateral, under reverse repurchase agreements, some derivative financial instrument contracts and certain drawn-down facility agreements, to mitigate counterparty default risk in accordance with the respective policies and procedures. The collateral value is monitored on an ongoing basis and, where appropriate, additional collateral is requested.

The Bank mitigates settlement risk by using established clearing centres and by settling transactions where possible through a delivery versus payment settlement mechanism. Daily settlement risk limits are monitored on a continuous basis.

C. Default risk

The exposures set out in the table below are based on the carrying value of the assets on the balance sheet as categorised by sector, geographical region and credit quality. Gold and gold loans exclude gold held in custody, and accounts receivable do not include unsettled liability issues, because these items do not represent credit exposures of the Bank. The carrying value is the fair value of the financial instruments, including derivatives, except in the case of very short-term financial instruments (sight and notice accounts) and gold, which are shown at amortised cost net of any impairment charge. Commitments are shown at their notional amounts.

Default risk by asset class and issuer type

The following tables do not take into account any collateral held or other credit enhancements available to the Bank.

As at 31 March 2010 *SDR millions*	Sovereign and central banks	Public sector	Banks	Corporate	Securitisation	Total
On-balance sheet						
Cash and sight accounts with banks	1,419.9	–	96.3	–	–	1,516.2
Gold and gold loans	–	–	1,440.6	23.5	–	1,464.1
Treasury bills	84,714.8	–	–	–	–	84,714.8
Securities purchased under resale agreements	4,942.7	–	35,497.5	1,865.7	–	42,305.9
Loans and advances	2,887.0	655.4	15,746.2	–	–	19,288.6
Government and other securities	24,325.0	12,411.4	12,464.5	2,378.4	2,108.4	53,687.7
Derivatives	48.7	139.1	9,926.1	0.8	–	10,114.7
Accounts receivable	182.6	–	378.8	9.4	–	570.8
Total on-balance sheet exposure	**118,520.7**	**13,205.9**	**75,550.0**	**4,277.8**	**2,108.4**	**213,662.8**
Commitments						
Undrawn unsecured facilities	2,420.7	–	–	–	–	2,420.7
Undrawn secured facilities	2,499.1	–	–	–	–	2,499.1
Total commitments	**4,919.8**	**–**	**–**	**–**	**–**	**4,919.8**
Total exposure	**123,440.5**	**13,205.9**	**75,550.0**	**4,277.8**	**2,108.4**	**218,582.6**

As at 31 March 2009 *SDR millions*	Sovereign and central banks	Public sector	Banks	Corporate	Securitisation	Total
On-balance sheet						
Cash and sight accounts with banks	884.6	–	30.6	–	–	915.2
Gold and gold loans	–	–	2,672.1	138.3	–	2,810.4
Treasury bills	96,421.9	–	–	–	–	96,421.9
Securities purchased under resale agreements	4,691.5	–	32,970.0	932.9	–	38,594.4
Loans and advances	7,542.6	502.0	10,468.1	–	–	18,512.7
Government and other securities	20,437.1	11,889.9	19,161.3	1,849.3	2,426.1	55,763.7
Derivatives	102.0	49.9	13,597.2	–	–	13,749.1
Accounts receivable	–	–	722.5	11.0	–	733.5
Total on-balance sheet exposure	130,079.7	12,441.8	79,621.8	2,931.5	2,426.1	227,500.9
Commitments						
Undrawn unsecured facilities	234.5	–	–	–	–	234.5
Undrawn secured facilities	8,412.3	–	–	–	–	8,412.3
Total commitments	8,646.8	–	–	–	–	8,646.8
Total exposure	138,726.5	12,441.8	79,621.8	2,931.5	2,426.1	236,147.7

The vast majority of the Bank's assets are invested in securities issued by G10 governments and financial institutions rated A– or above by at least one of the major external credit assessment institutions. Limitations on the number of high-quality counterparties in these sectors mean that the Bank is exposed to single-name concentration risk.

Default risk by geographical region

The following tables do not take into account any collateral held or other credit enhancements available to the Bank.

As at 31 March 2010

SDR millions	Africa and Europe	Asia-Pacific	Americas	International institutions	Total
On-balance sheet					
Cash and sight accounts with banks	1,425.4	0.8	90.0	–	1,516.2
Gold and gold loans	967.5	258.8	237.8	–	1,464.1
Treasury bills	43,846.7	40,642.0	226.1	–	84,714.8
Securities purchased under resale agreements	37,363.3	4,777.9	164.7	–	42,305.9
Loans and advances	14,323.0	3,554.4	822.5	588.7	19,288.6
Government and other securities	33,323.6	4,219.2	9,656.9	6,488.0	53,687.7
Derivatives	7,106.0	237.3	2,771.4	–	10,114.7
Accounts receivable	99.7	91.6	379.5	–	570.8
Total on-balance sheet exposure	**138,455.2**	**53,782.0**	**14,348.9**	**7,076.7**	**213,662.8**
Commitments					
Undrawn unsecured facilities	2,223.4	197.3	–	–	2,420.7
Undrawn secured facilities	638.3	1,860.8	–	–	2,499.1
Total commitments	**2,861.7**	**2,058.1**	**–**	**–**	**4,919.8**
Total exposure	**141,316.9**	**55,840.1**	**14,348.9**	**7,076.7**	**218,582.6**

As at 31 March 2009

SDR millions	Africa and Europe	Asia-Pacific	Americas	International institutions	Total
On-balance sheet					
Cash and sight accounts with banks	882.9	0.4	31.9	–	915.2
Gold and gold loans	2,087.9	345.1	377.4	–	2,810.4
Treasury bills	45,541.2	43,128.2	7,752.5	–	96,421.9
Securities purchased under resale agreements	33,522.9	4,273.9	797.6	–	38,594.4
Loans and advances	13,573.1	2,417.3	2,278.7	243.6	18,512.7
Government and other securities	32,430.8	5,750.7	11,008.1	6,574.1	55,763.7
Derivatives	9,835.8	185.4	3,727.9	–	13,749.1
Accounts receivable	232.5	119.0	382.0	–	733.5
Total on-balance sheet exposure	138,107.1	56,220.0	26,356.1	6,817.7	227,500.9
Commitments					
Undrawn unsecured facilities	33.5	201.0	–	–	234.5
Undrawn secured facilities	1,039.8	7,372.5	–	–	8,412.3
Total commitments	1,073.3	7,573.5	–	–	8,646.8
Total exposure	139,180.4	63,793.5	26,356.1	6,817.7	236,147.7

The Bank has allocated exposures to regions based on the country of incorporation of each legal entity.

Default risk per class of financial asset

The following tables do not take into account any collateral held or other credit enhancements available to the Bank.

As at 31 March 2010 *SDR millions*	AAA	AA	A	BBB	BB and below	Unrated	Totals
On-balance sheet							
Cash and sight accounts with banks	1,418.2	6.6	90.7	0.6	–	0.1	1,516.2
Gold and gold loans	–	347.4	1,093.2	23.5	–	–	1,464.1
Treasury bills	29,892.4	45,901.5	8,920.9	–	–	–	84,714.8
Securities purchased under resale agreements	164.8	9,935.1	32,206.0	–	–	–	42,305.9
Loans and advances	1,731.9	3,962.9	12,705.2	230.8	657.8	–	19,288.6
Government and other securities	33,369.9	12,306.2	7,710.4	301.2	–	–	53,687.7
Derivatives	147.4	1,563.4	8,365.3	1.4	37.2	–	10,114.7
Accounts receivable	467.7	91.6	–	–	–	11.5	570.8
Total on-balance sheet exposures	**67,192.3**	**74,114.7**	**71,091.7**	**557.5**	**695.0**	**11.6**	**213,662.8**
Percentages	*31.4%*	*34.7%*	*33.3%*	*0.3%*	*0.3%*	–	*100%*
Commitments							
Unsecured	2,223.4	–	–	197.3	–	–	2,420.7
Secured	219.1	468.3	700.1	871.7	239.9	–	2,499.1
Total commitments	**2,442.5**	**468.3**	**700.1**	**1,069.0**	**239.9**	**–**	**4,919.8**
Total exposure	**69,634.8**	**74,583.0**	**71,791.8**	**1,626.5**	**934.9**	**11.6**	**218,582.6**

As at 31 March 2009 *SDR millions*	AAA	AA	A	BBB	BB and below	Unrated	Totals
On-balance sheet							
Cash and sight accounts with banks	883.3	4.6	5.8	0.4	–	21.1	915.2
Gold and gold loans	–	685.9	1,986.2	138.3	–	–	2,810.4
Treasury bills	38,974.5	48,490.5	8,956.9	–	–	–	96,421.9
Securities purchased under resale agreements	328.6	18,359.8	19,816.9	89.1	–	–	38,594.4
Loans and advances	4,482.1	3,403.7	7,322.8	167.5	3,136.6	–	18,512.7
Government and other securities	32,972.5	13,715.2	8,988.2	87.8	–	–	55,763.7
Derivatives	383.8	1,999.4	11,268.0	–	97.9	–	13,749.1
Accounts receivable	397.7	–	221.5	103.3	–	11.0	733.5
Total on-balance sheet exposures	78,422.5	86,659.1	58,566.3	586.4	3,234.5	32.1	227,500.9
Percentages	*34.5%*	*38.1%*	*25.8%*	*0.2%*	*1.4%*	–	*100%*
Commitments							
Unsecured	–	–	–	234.5	–	–	234.5
Secured	–	2,432.9	4,178.5	1,572.3	228.6	–	8,412.3
Total commitments	–	2,432.9	4,178.5	1,806.8	228.6	–	8,646.8
Total exposure	78,422.5	89,092.0	62,744.8	2,393.2	3,463.1	32.1	236,147.7

The ratings shown reflect the Bank's internal ratings expressed as equivalent external ratings. The vast majority of the Bank's exposure is rated equivalent to A– or above.

A financial asset is considered past due when a counterparty fails to make a payment on the contractual due date. The Bank revalues virtually all of its financial assets to fair value on a daily basis and reviews its valuations monthly, taking into account necessary adjustments for impairment.

Gold loans include a provision of SDR 23.5 million following an impairment review as at 31 March 2010 (31 March 2009: SDR 18.3 million). The increase in the provision during the financial year ended 31 March 2010 is due to changes in gold prices.

D. Credit risk mitigation and collateral

As at 31 March	2010		2009	
SDR millions	Fair value of relevant contracts	Fair value of collateral	Fair value of relevant contracts	Fair value of collateral
Collateral obtained for				
Securities purchased under resale agreements	34,301.6	35,055.3	33,625.0	33,725.5
Loans and advances	1,512.8	2,170.6	3,136.5	5,013.4
Derivatives	4,144.6	4,425.2	4,957.3	4,542.4
Total	**39,959.0**	**41,651.1**	41,718.8	43,281.3

The Bank did not provide collateral on any of its financial instruments contracts at 31 March 2010 (2009: nil).

The above table shows the collateral obtained by the Bank. It excludes transactions which have yet to settle (on which neither cash nor collateral have been exchanged). The Bank obtains collateral as part of reverse repurchase agreements and collateral agreements for certain derivatives. The Bank is allowed to sell or pledge this collateral, but must deliver equivalent financial instruments upon the expiry of the contract. Furthermore, the Bank grants to its customers collateralised loans and advances under committed and uncommitted standby facilities.

The Bank accepts sovereign securities as collateral for derivatives. Eligible collateral for reverse repurchase agreements comprises sovereign and supranational debt as well as US agency securities. Eligible collateral for loans and advances includes currency deposits with the Bank and units in the BIS Investment Pools (BISIPs) and securities in portfolios managed by the BIS. As at 31 March 2010 the total amount of undrawn committed collateralised facilities which could be drawn down subject to collateralisation by the customer was SDR 2,499.1 million (2009: SDR 8,412.3 million).

Due to the default of a counterparty during the financial year ended 31 March 2009, the Bank seized and sold SDR 735.5 million of US Treasury bills held as collateral. No default occurred during the financial year ended 31 March 2010, thus the Bank did not seize any collateral during the reporting period.

E. Economic capital for credit risk

The Bank determines economic capital for credit risk using a VaR methodology on the basis of a portfolio VaR model, assuming a one-year time horizon and a 99.995% confidence interval. The table below shows the key figures of the Bank's exposure to credit risk in terms of economic capital utilisation over the past two financial years.

For the financial year ended 31 March	2010				2009			
SDR millions	Average	High	Low	At 31 March	Average	High	Low	At 31 March
Economic capital utilisation for credit risk	5,653.2	6,072.9	5,110.5	**5,659.8**	6,080.1	6,596.3	5,389.1	5,673.7

F. Minimum capital requirements for credit risk

Exposures to sovereigns, banks and corporates

For the calculation of risk-weighted assets for exposures to banks, sovereigns and corporates, the Bank has adopted an approach that is consistent with the advanced internal ratings-based approach for the majority of its exposures.

As a general rule, under this approach risk-weighted assets are determined by multiplying the credit risk exposures with risk weights derived from the relevant Basel II risk weight function using the Bank's own estimates for key inputs. These estimates for key inputs are also relevant to the Bank's economic capital calculation for credit risk.

The credit risk exposure for a transaction or position is referred to as the exposure at default (EAD). The Bank determines the EAD as the notional amount of all on- and off-balance sheet credit exposures, except derivatives. The EAD for derivatives is calculated using an approach consistent with the internal models method proposed under the Basel II Framework. In line with this methodology, the Bank calculates effective expected positive exposures that are then multiplied by a factor alpha as set out in the Framework.

Key inputs to the risk weight function are a counterparty's estimated one-year probability of default (PD) as well as the estimated loss-given-default (LGD) and maturity for each transaction.

Due to the high credit quality of the Bank's investments and the conservative credit risk management process at the BIS, the Bank is not in a position to estimate PDs and LGDs based on its own default experience. The Bank calibrates counterparty PD estimates through a mapping of internal rating grades to external credit assessments taking external default data into account. Similarly, LGD estimates are derived from external data. Where appropriate, these estimates are adjusted to reflect the risk-reducing effect of collateral obtained giving consideration to market price volatility, remargining and revaluation frequency.

The table below details the calculation of risk-weighted assets. The exposures are measured taking netting and collateral benefits into account. The total amount of exposures reported in the table as at 31 March 2010 includes SDR 4,687.7 million (2009: SDR 7,024.8 million) for interest rate contracts and SDR 6,028.4 million (2009: SDR 5,108.0 million) for FX and gold contracts.

As at 31 March 2010

Internal rating grades expressed as equivalent external rating grades	Amount of exposure	Exposure-weighted PD	Exposure-weighted average LGD	Exposure-weighted average risk weight	Risk-weighted assets
Percentages / SDR millions	*SDR millions*	*%*	*%*	*%*	*SDR millions*
AAA	64,185.5	0.006	31.8	2.7	1,705.0
AA	70,006.0	0.02	28.3	3.8	2,689.4
A	70,804.3	0.06	21.0	5.9	4,147.2
BBB	1,916.2	0.31	16.9	12.0	230.8
BB and below	959.9	9.85	6.2	26.6	255.0
Total	**207,871.9**				**9,027.4**

As at 31 March 2009

Internal rating grades expressed as equivalent external rating grades	Amount of exposure	Exposure-weighted PD	Exposure-weighted average LGD	Exposure-weighted average risk weight	Risk-weighted assets
Percentages / SDR millions	*SDR millions*	*%*	*%*	*%*	*SDR millions*
AAA	73,642.3	0.005	30.8	2.4	1,803.0
AA	86,205.5	0.02	25.3	3.6	3,109.3
A	59,283.3	0.05	23.9	6.9	4,119.8
BBB	3,848.8	0.62	11.8	11.0	425.3
BB and below	2,037.8	11.34	7.7	32.3	657.4
Total	225,017.7				10,114.8

Securitisation exposures

The Bank only invests in highly rated securitisation exposures based on traditional, ie non-synthetic, securitisation structures. Risk-weighted assets for these exposures are determined using the standardised approach.

Given the scope of the Bank's activities, risk-weighted assets under the Basel II Framework are determined according to the standardised approach for securitisation. Under this approach, external credit assessments of the securities are used to determine the relevant risk weights. External credit assessment institutions used for this purpose are Moody's Investors Service, Standard & Poor's and Fitch Ratings. Risk-weighted assets are then derived as the product of the notional amounts of the exposures and the associated risk weights.

The following table shows the Bank's investments in securitisation analysed by type of securitised assets:

As at 31 March 2010

SDR millions	External rating	Amount of exposures	Risk weight	Risk-weighted assets
Residential mortgage-backed securities	AAA	471.6	20%	94.3
Securities backed by credit card receivables	AAA	857.6	20%	171.5
Securities backed by other receivables (government-sponsored)	AAA	747.2	20%	149.5
Total		**2,076.4**		**415.3**

As at 31 March 2009

SDR millions	External rating	Amount of exposures	Risk weight	Risk-weighted assets
Residential mortgage-backed securities	AAA	649.3	20%	129.9
Securities backed by credit card receivables	AAA	1,176.8	20%	235.3
Securities backed by other receivables (government-sponsored)	AAA	737.9	20%	147.6
Total		2,564.0		512.8

4. Market risk

The Bank is exposed to market risk through adverse movements in market prices. The main components of the Bank's market risk are gold price risk, interest rate risk and foreign exchange risk. The Bank measures market risk and calculates economic capital based on a VaR methodology using a Monte Carlo simulation technique. Risk factor volatilities and correlations are estimated using a one-year observation period. Furthermore, the Bank computes sensitivities to certain market risk factors.

In line with the Bank's objective to maintain its superior credit quality, economic capital is measured at the 99.995% confidence interval assuming a one-year holding period. The Bank's Management manages market risk economic capital usage within a framework set by the Board of Directors. VaR limits are supplemented by operating limits.

VaR models depend on statistical assumptions and the quality of available market data and, while forward-looking, they extrapolate from past events.

To ensure that models provide a reliable measure of potential losses over the one-year time horizon, the Bank has established a comprehensive regular backtesting framework, comparing daily performance with corresponding VaR estimates. The results are analysed and reported to Management.

The Bank also supplements its market risk measurement based on VaR modelling and related economic capital calculations with a series of stress tests. These include severe historical scenarios, adverse hypothetical macroeconomic scenarios and sensitivity tests of gold price, interest rate and foreign exchange rate movements.

A. Gold price risk

Gold price risk is the exposure of the Bank's financial condition to adverse movements in the price of gold.

The Bank is exposed to gold price risk principally through its holdings of gold investment assets, which amount to 120 tonnes (2009: 120 tonnes). These gold investment assets are held in custody or placed on deposit with commercial banks. At 31 March 2010 the Bank's net gold investment assets was SDR 2,811.2 million (2009: SDR 2,358.1 million), approximately 18% of its equity (2009: 17%). The Bank sometimes also has small exposures to gold price risk emerging from its banking activities with central and commercial banks. Gold price risk is measured within the Bank's VaR methodology, including its economic capital framework and stress tests.

B. Interest rate risk

Interest rate risk is the exposure of the Bank's financial condition to adverse movements in interest rates, including credit spreads.

The Bank is exposed to interest rate risk through the interest bearing assets relating to the management of its equity held in its investment portfolios and investments relating to its banking portfolios. The investment portfolios are managed using a fixed duration benchmark of bonds.

The Bank measures and monitors interest rate risk using a VaR methodology and sensitivity analyses taking into account movements in relevant money market rates, government bonds, swap rates and credit spreads.

The tables below show the impact on the Bank's equity of a 1% upward shift in the relevant yield curve per time band:

As at 31 March 2010

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)	(8.4)	(12.8)	(20.4)	(11.3)	(16.4)	(48.1)
Japanese yen	0.3	(2.6)	(6.7)	(12.2)	(16.0)	(5.8)	(0.9)
Pound sterling	0.6	(1.0)	(4.9)	(7.3)	(12.8)	(6.3)	–
Swiss franc	0.2	(0.2)	(0.4)	(0.6)	(0.7)	(2.9)	4.6
US dollar	16.8	(18.4)	(17.4)	(34.1)	(49.0)	(20.7)	(19.4)
Other currencies	16.9	15.5	(9.4)	0.5	(0.4)	(0.4)	–
Total	**31.1**	**(15.1)**	**(51.6)**	**(74.1)**	**(90.2)**	**(52.5)**	**(63.8)**

As at 31 March 2009

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	(5.4)	(5.5)	(11.9)	(16.5)	(24.0)	(15.1)	(13.9)
Japanese yen	1.0	(1.3)	(6.6)	(11.3)	(14.6)	(5.1)	(1.7)
Pound sterling	0.2	(1.3)	(3.6)	(12.9)	(8.7)	(1.7)	(1.9)
Swiss franc	(0.1)	(0.2)	(0.6)	(0.6)	(0.7)	(1.4)	2.7
US dollar	(0.6)	(7.6)	(41.5)	(13.8)	(29.1)	(22.6)	(29.3)
Other currencies	(0.1)	(6.0)	(1.2)	(10.8)	(0.8)	–	–
Total	(5.0)	(21.9)	(65.4)	(65.9)	(77.9)	(45.9)	(44.1)

C. Foreign exchange risk

The Bank's functional currency, the SDR, is a composite currency comprising fixed amounts of USD, EUR, JPY and GBP. Currency risk is the exposure of the Bank's financial condition to adverse movements in exchange rates. The Bank is exposed to foreign exchange risk primarily through the assets relating to the management of its equity. The Bank is also exposed to foreign exchange 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 foreign exchange exposures by matching the relevant assets to the constituent currencies of the SDR on a regular basis, and by limiting currency exposures arising from customer deposits and foreign exchange transaction intermediation.

Foreign exchange risk is measured and monitored based on the Bank's VaR methodology and sensitivity analyses considering movements in key foreign exchange rates.

The following tables show the Bank's assets and liabilities by currency and gold exposure. The net foreign exchange and gold position in these tables therefore includes the Bank's gold investments. To determine the Bank's net foreign exchange exposure, the gold amounts need to be removed. The SDR neutral position is then deducted from the net foreign exchange position excluding gold to arrive at the net currency exposure of the Bank on an SDR neutral basis.

As at 31 March 2010 *SDR millions*	SDR	USD	EUR	GBP	JPY	CHF	Gold	Other currencies	Total
Assets									
Cash and sight accounts with banks	–	92.1	110.2	6.7	–	1,303.0	–	4.2	1,516.2
Gold and gold loans	–	11.1	–	–	–	–	43,028.7	–	43,039.8
Treasury bills	–	226.1	37,727.4	3,309.1	40,642.0	374.8	–	2,435.4	84,714.8
Securities purchased under resale agreements	–	164.8	33,618.8	3,744.4	4,777.9	–	–	–	42,305.9
Loans and advances	474.0	8,424.2	4,049.1	552.6	460.2	4,492.9	–	835.6	19,288.6
Government and other securities	–	24,646.8	22,876.5	3,088.0	1,587.0	32.6	–	1,456.8	53,687.7
Derivative financial instruments	3.3	92,178.4	(34,182.7)	455.8	(41,264.4)	(661.0)	(5,295.8)	(1,118.9)	10,114.7
Accounts receivable	0.1	2,300.2	1,456.2	66.4	92.7	8.6	–	111.5	4,035.7
Land, buildings and equipment	185.8	–	–	–	–	4.1	–	–	189.9
Total	**663.2**	**128,043.7**	**65,655.5**	**11,223.0**	**6,295.4**	**5,555.0**	**37,732.9**	**3,724.6**	**258,893.3**
Liabilities									
Currency deposits	(1,821.3)	(132,064.1)	(43,134.8)	(10,403.6)	(4,423.6)	(1,240.5)	–	(2,667.2)	(195,755.1)
Gold deposits	–	(7.1)	–	–	–	–	(32,057.0)	–	(32,064.1)
Derivative financial instruments	12.1	12,211.3	(8,789.8)	515.2	99.4	(4,305.3)	(2,867.1)	(1,063.2)	(4,187.4)
Accounts payable	–	(2,064.0)	(8,619.2)	(17.6)	(91.6)	–	–	–	(10,792.4)
Other liabilities	–	(67.2)	(0.3)	–	–	(251.5)	–	–	(319.0)
Total	**(1,809.2)**	**(121,991.1)**	**(60,544.1)**	**(9,906.0)**	**(4,415.8)**	**(5,797.3)**	**(34,924.1)**	**(3,730.4)**	**(243,118.0)**
Net currency and gold position	**(1,146.0)**	**6,052.6**	**5,111.4**	**1,317.0**	**1,879.6**	**(242.3)**	**2,808.8**	**(5.8)**	**15,775.3**
Adjustment for gold investment assets	–	–	–	–	–	–	(2,808.8)	–	(2,808.8)
Net currency position	**(1,146.0)**	**6,052.6**	**5,111.4**	**1,317.0**	**1,879.6**	**(242.3)**	**–**	**(5.8)**	**12,966.5**
SDR neutral position	1,146.0	(5,866.7)	(5,145.9)	(1,272.2)	(1,827.7)	–	–	–	(12,966.5)
Net currency exposure on SDR neutral basis	**–**	**185.9**	**(34.5)**	**44.8**	**51.9**	**(242.3)**	**–**	**(5.8)**	**–**

As at 31 March 2009 *SDR millions*	SDR	USD	EUR	GBP	JPY	CHF	Gold	Other currencies	Total
Assets									
Cash and sight accounts with banks	–	28.9	175.2	6.4	–	696.2	–	8.5	915.2
Gold and gold loans	–	19.1	–	–	–	–	25,397.1	–	25,416.2
Treasury bills	–	7,752.5	43,738.8	1,802.4	43,128.2	–	–	–	96,421.9
Securities purchased under resale agreements	–	797.6	27,986.9	5,536.0	4,273.9	–	–	–	38,594.4
Loans and advances	243.7	8,999.5	7,619.1	1,077.5	4.0	443.5	–	125.4	18,512.7
Government and other securities	–	27,233.4	22,706.3	2,704.9	1,437.8	30.6	–	1,650.7	55,763.7
Derivative financial instruments	21.0	65,576.9	(12,368.7)	370.2	(41,023.4)	191.4	–	981.7	13,749.1
Accounts receivable	0.1	3,719.7	959.8	988.6	110.1	11.1	–	33.1	5,822.5
Land, buildings and equipment	183.1	–	–	–	–	7.9	–	–	191.0
Total	447.9	114,127.6	90,817.4	12,486.0	7,930.6	1,380.7	25,397.1	2,799.4	255,386.7
Liabilities									
Currency deposits	(2,015.5)	(134,278.9)	(41,524.2)	(11,597.5)	(3,935.6)	(1,220.8)	–	(2,649.7)	(197,222.2)
Gold deposits	–	(13.0)	–	–	–	–	(23,039.1)	–	(23,052.1)
Derivative financial instruments	2.2	26,485.3	(34,192.0)	2,970.0	(1,846.9)	(144.5)	–	(90.9)	(6,816.8)
Accounts payable	–	(532.0)	(10,482.5)	(2,662.2)	(442.3)	–	–	(92.5)	(14,211.5)
Other liabilities	–	(153.3)	(0.4)	–	–	(214.5)	–	–	(368.2)
Total	(2,013.3)	(108,491.9)	(86,199.1)	(11,289.7)	(6,224.8)	(1,579.8)	(23,039.1)	(2,833.1)	(241,670.8)
Net currency and gold position	(1,565.4)	5,635.7	4,618.3	1,196.3	1,705.8	(199.1)	2,358.0	(33.7)	13,715.9
Adjustment for gold investment assets	–	–	–	–	–	–	(2,358.0)	–	(2,358.0)
Net currency position	(1,565.4)	5,635.7	4,618.3	1,196.3	1,705.8	(199.1)	–	(33.7)	11,357.9
SDR neutral position	1,565.4	(5,472.6)	(4,718.3)	(1,122.7)	(1,609.7)	–	–	–	(11,357.9)
Net currency exposure on SDR neutral basis	–	163.1	(100.0)	73.6	96.1	(199.1)	–	(33.7)	–

D. Economic capital for market risk

The Bank measures market risk based on a VaR methodology using a Monte Carlo simulation technique taking correlations between risk factors into account. Economic capital for market risk is also calculated following this methodology measured to the 99.995% confidence interval and assuming a one-year holding period. The Bank measures its gold price risk relative to changes in the USD value of gold. The foreign exchange risk component, resulting from changes in the USD exchange rate versus the SDR, is included in the measurement of foreign exchange risk. The table below shows the key figures of the Bank's exposure to market risk in terms of economic capital utilisation over the past two financial years.

For the financial year ended 31 March

	2010				2009			
SDR millions	Average	High	Low	At 31 March	Average	High	Low	At 31 March
Economic capital utilisation for market risk	2,803.0	3,097.8	2,374.1	**2,708.7**	2,614.0	3,386.9	1,928.0	3,099.8

The table below provides a further analysis of the Bank's market risk exposure by category of risk.

For the financial year ended 31 March

	2010				2009			
SDR millions	Average	High	Low	At 31 March	Average	High	Low	At 31 March
Gold price risk	1,870.9	2,013.0	1,721.9	**1,900.9**	1,690.5	2,325.1	1,312.6	2,009.1
Interest rate risk	1,790.8	2,182.7	1,434.4	**1,647.9**	1,972.7	2,519.9	1,404.8	2,209.1
Foreign exchange risk	715.2	800.4	651.3	**658.4**	502.7	769.0	301.6	769.0
Correlation and diversification effects	(1,573.9)	(1,815.3)	(1,454.9)	**(1,498.5)**	(1,551.9)	(2,073.7)	(1,164.2)	(1,887.4)

E. Minimum capital requirements for market risk

For the calculation of minimum capital requirements for market risk under the Basel II Framework, the Bank has adopted a banking book approach consistent with the scope and nature of its business activities. Consequently, market risk-weighted assets are determined for gold price risk and foreign exchange risk, but not interest rate risk. The related minimum capital requirement is derived using the VaR-based internal models method. Under this method, VaR calculations are performed using the Bank's VaR methodology, assuming a 99% confidence interval, a 10-day holding period and a one-year historical observation period.

The actual minimum capital requirement is derived as the higher of the VaR on the calculation date and the average of the daily VaR measures on each of the preceding 60 business days (including the calculation date) subject to a multiplication factor of three plus a potential add-on depending on backtesting results. For the period under consideration, the number of backtesting outliers observed remained within the range where no add-on is required. The table below summarises the market risk development relevant to the calculation of minimum capital requirements over the reporting period and shows the Bank's minimum capital requirement for market risk and the related risk-weighted assets as at 31 March 2010.

As at 31 March

	2010			2009		
SDR millions	VaR	Risk-weighted assets (A)	Minimum capital requirement (B)	VaR	Risk-weighted assets (A)	Minimum capital requirement (B)
Market risk, where (A) is derived as (B) / 8%	287.1	10,768.1	**861.4**	420.9	15,783.5	1,262.7

5. Liquidity risk

Liquidity risk arises when the Bank may not be able to meet expected or unexpected current or future cash flows and collateral needs without affecting its daily operations or its financial condition.

Outstanding balances in the currency and gold deposits from central banks, international organisations and other public institutions are the key drivers 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 so that it can meet the requirements of its customers at all times.

The Bank has developed a liquidity management framework based on a statistical model underpinned by conservative 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 at least 100% of the potential liquidity requirement. In addition, liquidity stress tests assuming extreme withdrawal scenarios are performed. These stress tests specify additional liquidity requirements to be met by holdings of liquid assets. The Bank's liquidity has consistently been materially above its minimum liquidity ratio and the requirements of its stress tests.

The Bank's currency and gold deposits, principally from central banks and international institutions, comprise 93% (2009: 91%) of its total liabilities. At 31 March 2010 currency and gold deposits originated from 174 depositors (2009: 161). Within these deposits, there are significant individual customer concentrations, with six customers each contributing in excess of 5% of the total on a settlement date basis (2009: seven customers).

The following tables show the maturity profile of cash flows for financial assets and liabilities. The amounts disclosed are the undiscounted cash flows to which the Bank is committed.

As at 31 March 2010

SDR millions	Up to 1 month	1 to 3 months	3 to 6 months	6 to 12 months	1 to 2 years	2 to 5 years	5 to 10 years	Over 10 years	Total
Assets									
Cash and sight accounts with banks	1,516.2	–	–	–	–	–	–	–	1,516.2
Gold and gold loans	41,621.2	188.2	0.2	233.8	285.6	743.1	–	–	43,072.1
Treasury bills	18,983.6	44,817.9	10,718.1	10,160.9	–	–	–	–	84,680.5
Securities purchased under resale agreements	30,810.0	2,779.5	749.9	–	–	–	–	–	34,339.4
Loans and advances	8,977.2	9,138.4	132.8	3.7	17.2	957.9	–	–	19,227.2
Government and other securities	1,798.3	3,172.6	5,605.1	10,821.8	9,349.3	18,426.1	7,214.9	533.3	56,921.4
Total	**103,706.5**	**60,096.6**	**17,206.1**	**21,220.2**	**9,652.1**	**20,127.1**	**7,214.9**	**533.3**	**239,756.8**
Liabilities									
Currency deposits									
Deposit instruments repayable at 1–2 days' notice	(7,600.9)	(15,852.5)	(10,355.5)	(9,688.4)	(16,571.6)	(27,601.1)	(3,398.3)	–	(91,068.3)
Other currency deposits	(78,823.0)	(17,938.3)	(6,997.4)	(1,095.1)	–	–	–	–	(104,853.8)
Gold deposits	(31,382.9)	–	–	(232.7)	(66.6)	(386.5)	–	–	(32,068.7)
Securities sold short	(0.3)	(0.7)	(2.0)	(1.0)	(4.0)	(12.0)	(20.2)	(78.9)	(119.1)
Total	**(117,807.1)**	**(33,791.5)**	**(17,354.9)**	**(11,017.2)**	**(16,642.2)**	**(27,999.6)**	**(3,418.5)**	**(78.9)**	**(228,109.9)**
Derivatives									
Net settled									
Interest rate contracts	863.1	376.2	625.1	573.6	899.0	609.7	36.8	–	3,983.5
Gross settled									
Exchange rate and gold price contracts									
Inflows	31,532.0	50,905.4	15,319.8	10,702.2	–	–	–	–	108,459.4
Outflows	(30,879.9)	(49,419.5)	(14,768.8)	(10,284.6)	–	–	–	–	(105,352.8)
Subtotal	652.1	1,485.9	551.0	417.6	–	–	–	–	3,106.6
Interest rate contracts – gross settled									
Inflows	35.7	219.0	203.8	136.1	110.8	1,013.0	373.9	–	2,092.3
Outflows	(42.9)	(248.5)	(253.6)	(166.4)	(139.2)	(1,148.2)	(417.0)	–	(2,415.8)
Subtotal	(7.2)	(29.5)	(49.8)	(30.3)	(28.4)	(135.2)	(43.1)	–	(323.5)
Total derivatives	**1,508.0**	**1,832.6**	**1,126.3**	**960.9**	**870.6**	**474.5**	**(6.3)**	**–**	**6,766.6**
Total future undiscounted cash flows	**(12,592.6)**	**28,137.7**	**977.5**	**11,163.9**	**(6,119.5)**	**(7,398.0)**	**3,790.1**	**454.4**	**18,413.5**

As at 31 March 2009

SDR millions	Up to 1 month	1 to 3 months	3 to 6 months	6 to 12 months	1 to 2 years	2 to 5 years	5 to 10 years	Over 10 years	Total
Assets									
Cash and sight accounts with banks	915.2	–	–	–	–	–	–	–	915.2
Gold and gold loans	22,856.0	458.0	265.1	630.6	375.3	698.4	167.0	–	25,450.4
Treasury bills	17,346.9	48,193.3	15,306.8	15,178.4	–	–	–	–	96,025.4
Securities purchased under resale agreements	25,396.5	240.8	1,444.0	–	–	–	–	–	27,081.3
Loans and advances	9,533.3	7,931.7	804.1	–	–	–	–	–	18,269.1
Government and other securities	3,800.4	7,106.2	3,880.8	4,934.0	12,920.3	17,782.8	9,247.2	921.8	60,593.5
Total	79,848.3	63,930.0	21,700.8	20,743.0	13,295.6	18,481.2	9,414.2	921.8	228,334.9
Liabilities									
Currency deposits									
Deposit instruments repayable at 1–2 days' notice	(11,144.1)	(19,693.4)	(15,143.3)	(20,590.2)	(18,218.1)	(29,301.2)	(7,309.7)	–	(121,400.0)
Other currency deposits	(68,805.4)	(4,635.1)	(1,348.5)	(22.6)	–	–	–	–	(74,811.6)
Gold deposits	(21,768.0)	(200.1)	(216.8)	(296.7)	(195.7)	(216.3)	(165.4)	–	(23,059.0)
Securities sold short	(0.8)	(1.7)	(2.5)	(4.9)	(9.8)	(29.7)	(49.9)	(185.4)	(284.7)
Total	(101,718.3)	(24,530.3)	(16,711.1)	(20,914.4)	(18,423.6)	(29,547.2)	(7,525.0)	(185.4)	(219,555.3)
Derivatives									
Net settled									
Interest rate contracts	(1,304.0)	588.3	940.4	1,049.2	1,483.8	1,486.7	187.4	0.1	4,431.9
Gross settled									
Exchange rate and gold price contracts									
Inflows	29,504.3	53,304.7	8,576.4	10,940.4	–	–	–	–	102,325.8
Outflows	(28,771.1)	(52,297.6)	(8,568.4)	(11,221.9)	–	–	–	–	(100,859.0)
Subtotal	733.2	1,007.1	8.0	(281.5)	–	–	–	–	1,466.8
Interest rate contracts – gross settled									
Inflows	2.8	53.4	320.9	164.5	610.2	665.5	841.1	–	2,658.4
Outflows	(2.1)	(67.1)	(339.2)	(197.2)	(695.6)	(747.4)	(920.3)	–	(2,968.9)
Subtotal	0.7	(13.7)	(18.3)	(32.7)	(85.4)	(81.9)	(79.2)	–	(310.5)
Total derivatives	(570.1)	1,581.7	930.1	735.0	1,398.4	1,404.8	108.2	0.1	5,588.2
Total future undiscounted cash flows	(22,440.1)	40,981.4	5,919.8	563.6	(3,729.6)	(9,661.2)	1,997.4	736.5	14,367.8

The Bank writes options in the ordinary course of its banking business. The table below discloses the fair value of the written options analysed by exercise date:

Written options

SDR millions	Up to 1 month	1 to 3 months	3 to 6 months	6 to 12 months	1 to 2 years	2 to 5 years	5 to 10 years	Over 10 years	Total
As at 31 March 2010	–	(5.9)	(8.4)	(32.0)	(1.2)	(1.4)	–	–	**(48.9)**
As at 31 March 2009	(1.2)	(10.2)	(8.4)	(138.4)	(1.8)	(7.9)	(4.3)	–	(172.2)

The table below shows the contractual expiry date of the credit commitments as at the balance sheet date:

Contractual expiry date

SDR millions	Up to 1 month	1 to 3 months	3 to 6 months	6 to 12 months	1 to 2 years	2 to 5 years	5 to 10 years	Maturity undefined	Total
As at 31 March 2010	2,683.8	–	–	375.2	–	–	–	1,860.8	**4,919.8**
As at 31 March 2009	33.5	335.0	–	6,601.2	–	–	–	1,677.1	8,646.8

6. 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, as outlined below:

- 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.
- External events: the occurrence of an event having an adverse impact on the Bank but outside its control.

Operational risk includes legal risk, but excludes strategic risk.

The Bank's operational risk management framework, policies and procedures comprise the management and measurement of operational risk, including the determination of the relevant key parameters and inputs, business continuity planning and the monitoring of key risk indicators.

The Bank has established a procedure of immediate reporting for operational risk-related incidents. The Compliance and Operational Risk Unit develops action plans with the respective units and follows up on their implementation on a regular basis.

For the measurement of operational risk economic capital and operational risk-weighted assets, the Bank has adopted a VaR approach using a Monte Carlo simulation technique that is consistent with the advanced measurement approach proposed under the Basel II Framework. In line with the assumptions of the Basel II Framework, the quantification of operational risk does not take reputational risk into account. Internal and external loss data, scenario estimates and control self-assessments to reflect changes in the business and control environment of the Bank are key inputs in the calculations. The Bank does not incorporate potential protection it may obtain from insurance in the measurement of operational risk.

A. Economic capital for operational risk

Consistent with the parameters used in the calculation of economic capital for financial risk, the Bank measures economic capital for operational risk to the 99.995% confidence interval assuming a one-year time horizon. The table below shows the key figures of the Bank's exposure to operational risk in terms of economic capital utilisation over the past two financial years.

For the financial year ended 31 March

	2010				2009			
SDR millions	Average	High	Low	At 31 March	Average	High	Low	At 31 March
Economic capital utilisation for operational risk	460.4	475.0	450.0	**475.0**	412.5	425.0	400.0	425.0

B. Minimum capital requirements for operational risk

In line with the key parameters of the Basel II Framework, the calculation of the minimum capital requirement for operational risk is determined assuming a 99.9% confidence interval and a one-year time horizon. The table below summarises the key figures of the Bank's exposure to operational risk in terms of minimum capital requirements over the past two financial years.

As at 31 March	**2010**			2009		
SDR millions	VaR	Risk-weighted assets (A)	Minimum capital requirement (B)	VaR	Risk-weighted assets (A)	Minimum capital requirement (B)
Operational risk, where (A) is derived as (B) / 8%	180.5	2,256.3	**180.5**	180.0	2,250.0	180.0

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 of the Bank for International Settlements. These financial statements incorporate the balance sheet as at 31 March 2010, the profit and loss account for the year then ended as required by the Bank's Statutes, and the statement of cash flows and 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 2010 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

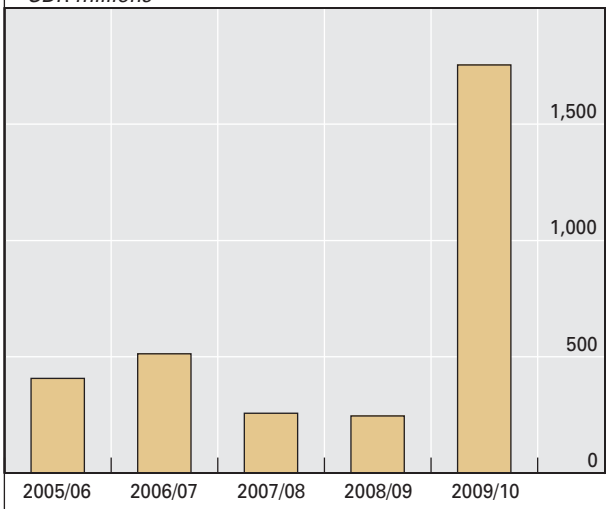
Mark D. Ward Erich Schaerli

Zurich, 10 May 2010

Five-year graphical summary

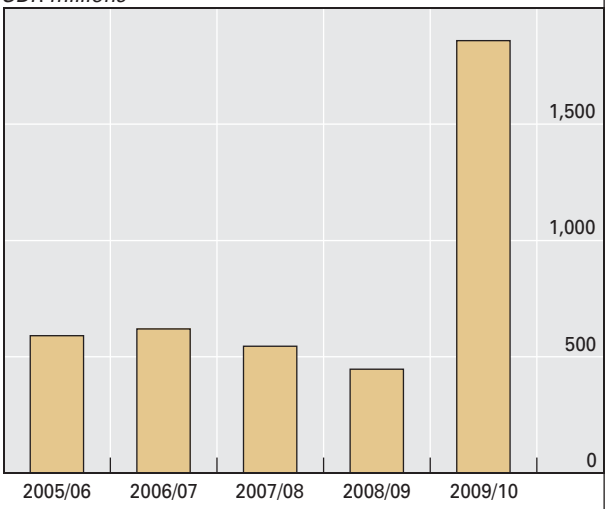
Operating profit

SDR millions



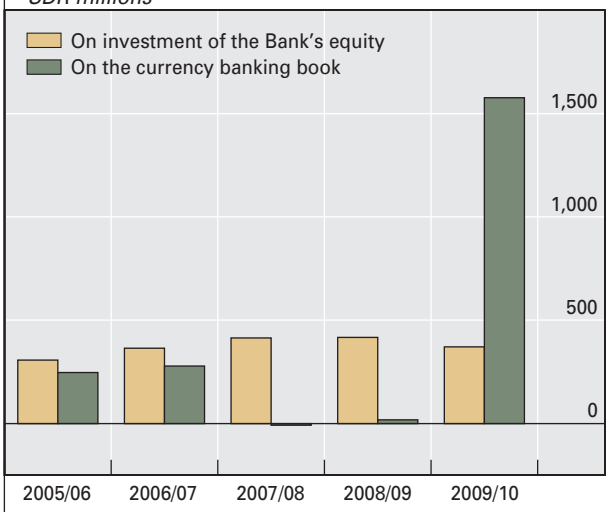
Net profit

SDR millions



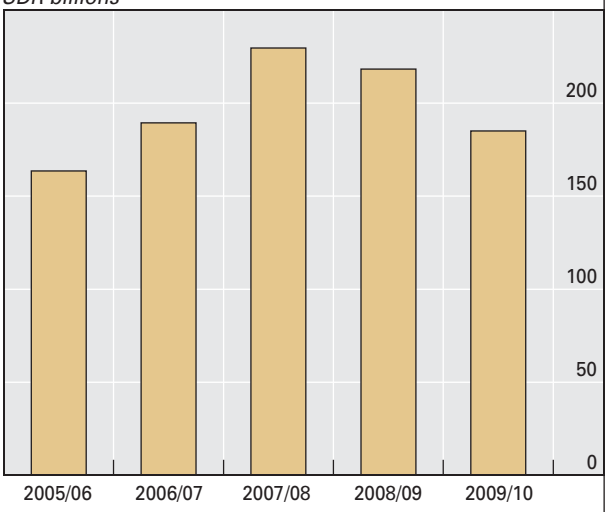
Net interest earned on currency investments

SDR millions



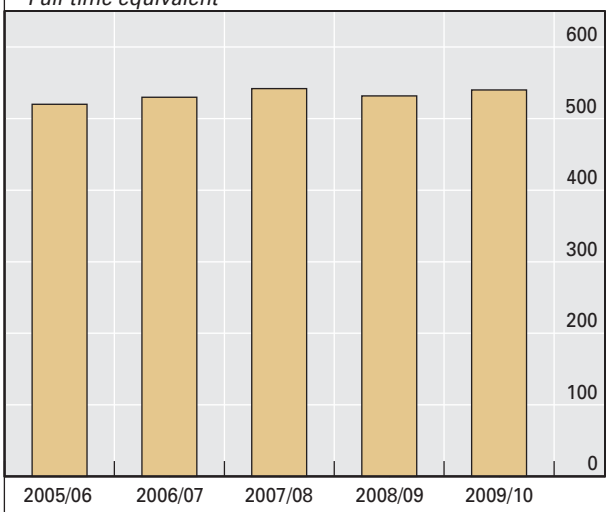
Average currency deposits (settlement date basis)

SDR billions



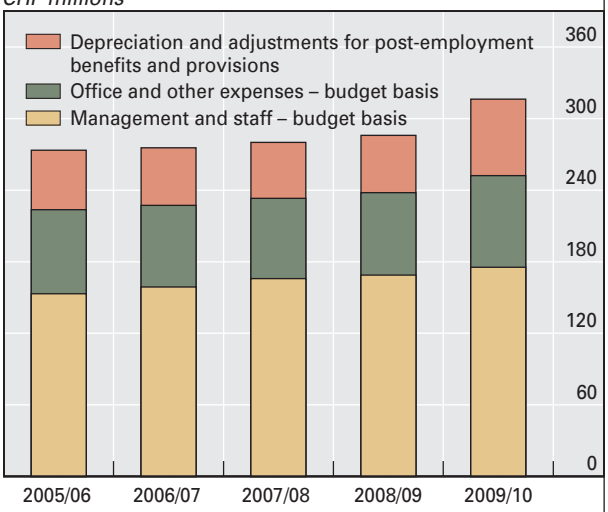
Average number of employees

Full-time equivalent



Operating expense

CHF millions



The financial information in the top four panels has been restated to reflect a change in the accounting policy made in the previous years' accounts.

Printed in Switzerland Werner Druck AG, Basel