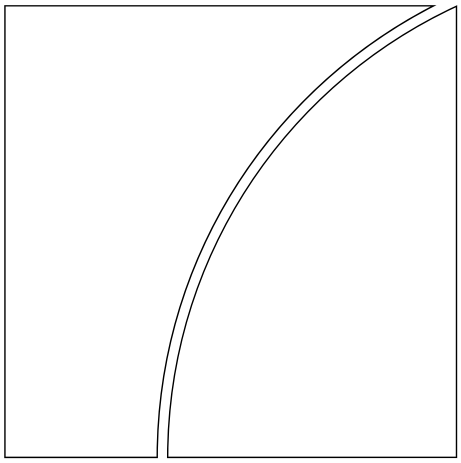
BANK FOR INTERNATIONAL SETTLEMENTS



81st Annual Report

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Basel, 26 June 2011

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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.

The term "country" as used in this publication also covers territorial entities that are not states as understood by international law and practice but for which data are separately and independently maintained.

81st Annual Report

submitted to the Annual General Meeting
of the Bank for International Settlements
held in Basel on 26 June 2011

Ladies and Gentlemen,

It is my pleasure to submit to you the 81st Annual Report of the Bank for International Settlements for the financial year which ended on 31 March 2011.

The net profit for the year amounted to SDR 816.0 million, compared with SDR 1,859.8 million for the preceding year. Details of the results for the financial year 2010/11 may be found on pages 139–42 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 161.1 million in payment of a dividend of SDR 295 per share, payable in any constituent currency of the SDR, or in Swiss francs.

The Board further recommends that SDR 65.5 million be transferred to the general reserve fund, SDR 6.0 million to the special dividend reserve fund and the remainder – amounting to SDR 583.4 million – to the free reserve fund.

If these proposals are approved, the Bank's dividend for the financial year 2010/11 will be payable to shareholders on 1 July 2011.

Basel, 10 June 2011

JAIME CARUANA
General Manager

Overview of the economic chapters

Over the past year, the global economy has continued to improve. In emerging markets, growth has been strong, and advanced economies have been moving towards a self-sustaining recovery. But it would be a mistake for policymakers to relax. From our vantage point, numerous legacies and lessons of the financial crisis require attention. In many advanced economies, high debt levels still burden households as well as financial and non-financial institutions, and the consolidation of fiscal accounts has barely started. International financial imbalances are re-emerging. Highly accommodative monetary policies are fast becoming a threat to price stability. Financial reforms have yet to be completed and fully implemented. And the data frameworks that should serve as an early warning system for financial stress remain underdeveloped. These are the challenges we examine in this year's Annual Report.

Interrelated imbalances made pre-crisis growth in several advanced countries unsustainable. Rapidly increasing debt and asset prices resulted in bloated housing and financial sectors. The boom also masked serious long-term fiscal vulnerabilities that, if left unchecked, could trigger the next crisis. We should make no mistake here: the market turbulence surrounding the fiscal crises in Greece, Ireland and Portugal would pale beside the devastation that would follow a loss of investor confidence in the sovereign debt of a major economy.

Addressing overindebtedness, private as well as public, is the key to building a solid foundation for high, balanced real growth and a stable financial system. That means both driving up private saving and taking substantial action now to reduce deficits in the countries that were at the core of the crisis.

The lessons of the crisis apply to emerging market economies, too. And those where debt is fuelling huge gains in property prices and consumption are running the risk of building up the imbalances that now plague the advanced economies.

Global current account imbalances are still with us, bringing the prospect of disorderly exchange rate adjustments and protectionism. But the imbalances extend beyond current accounts to gross financial flows, which today dwarf the net movements commonly associated with the current account. And they pose perhaps even bigger risks by giving rise to potential financial mismatches and facilitating the transmission of shocks across borders. Not only that, but cross-border financing makes rapid credit growth possible even in the absence of domestic financing. As the experience of the past few years reminded us, a reversal of strong cross-border capital flows can inflict damage on financial systems and ultimately on the real economy.

The imbalances in current accounts and in gross financial flows are related and need to be addressed together. Sound macroeconomic policies will

play a key role in this regard, as will structural domestic policies to encourage saving in deficit countries and encourage consumption in surplus countries. Although the adjustment of real exchange rates is also required, it will not, by itself, be enough. Countries will need to implement policies that strengthen prudential frameworks and the financial infrastructure. Capital controls, best left as a last resort, can offer only temporary relief.

While adjustment by surplus and deficit countries is necessary and mutually beneficial, it is constrained by a fundamental problem: countries may find unilateral adjustment too costly. This means that international coordination is essential to break the policy gridlock.

Turning to monetary policy, the challenges are intensifying even as central banks extend the already prolonged period of accommodation. The persistence of very low interest rates in major advanced economies delays the necessary balance sheet adjustments of households and financial institutions. And it is magnifying the risk that the distortions that arose ahead of the crisis will return. If we are to build a stable future, our attempts to cushion the blow from the last crisis must not sow the seeds of the next one.

Overall, inflation risks have been driven up by the combination of dwindling economic slack and increases in the prices of food, energy and other commodities. The spread of inflation dangers from major emerging market economies to the advanced economies bolsters the conclusion that policy rates should rise globally. At the same time, some countries must weigh the need to tighten with vulnerabilities linked to still-distorted balance sheets and lingering financial sector fragility. But once central banks start lifting rates, they may need to do so more quickly than in past tightening episodes.

With the end of unconventional policy actions in sight, central banks face the risks associated with the resulting large size and complexity of their own balance sheets. Failure to manage those risks could weaken their hard-won credibility in delivering low inflation, as could a late move to tighten policy through conventional channels.

Progress on financial regulatory reform has been impressive. International agreements on stronger capital requirements and new liquidity standards for banks have been reached quickly. Still, a number of critical steps remain. Among these are the full and timely implementation of Basel III; the adoption of measures to address the systemic risks associated with very large global financial institutions; and the design of regimes to ensure the orderly resolution of such institutions in the event of their failure. But the target will keep moving as institutions resume risk-taking and adapt their business models to the new environment. The supervisory framework must be able to keep up, monitoring and managing risks to financial stability regardless of the given perimeter of regulation.

The recent financial crisis revealed gaps in both the data and the analytical frameworks used to assess systemic risk. These gaps hampered policymakers in their efforts to identify and respond to vulnerabilities. To do their job, authorities need a broader and more accurate view of the financial system from multiple vantage points. That picture would show sectoral

balance sheets and their global interlinkages, and it implies a wider sharing of institution-level data within and across jurisdictions. While better data and analytical frameworks will not prevent future crises, experience suggests that the improvements will enable policymakers and market participants alike to identify vulnerabilities previously unseen and pick up the emergence of others much sooner.

I. Building a stable future

Pessimism has become tiresome, so optimism is gaining a foothold. But has the pessimism born of the slow recovery from the financial crisis been superseded by events? Is the optimism justified? Today, various facts support a new attitude. Growth in emerging market economies is robust, and recovery looks to be on a self-sustaining path in the countries that were at the centre of the 2007–09 crisis. Yet the remaining challenges are enormous – towering debt, global imbalances, extremely low interest rates, unfinished regulatory reform, and financial statistics still too weak to illuminate emerging national and international stresses.

Crisis-related expansions of sovereign debt have worsened what were already unsustainable fiscal policy trajectories, and private sector debt remains too high. The result is that, today, policymakers and households have virtually no room for manoeuvre. All financial crises, especially those generated by a credit-fuelled property price boom, leave long-lasting wreckage. But we must guard against policies that would slow the inevitable adjustment. The sooner that advanced economies abandon the leverage-led growth that precipitated the Great Recession, the sooner they will shed the destabilising debt accumulated during the last decade and return to sustainable growth. The time for public and private consolidation is now.

The ongoing global integration of financial markets and financial systems continues to deliver large, tangible economic benefits. But the gains come with risks that require proper management. Aggregate supply and demand seem to be roughly balanced on a global scale. But having declined during the crisis, current account balances are increasing again. That means domestic demand is too high in some countries and too low in others. And while current account imbalances could disappear smoothly and harmlessly, the danger is that they will continue to grow and stoke demands for protectionist measures. It is here that international cooperation and coordination of policy are both most needed and most lacking.

But net flows of capital are not the only challenge; gross flows matter too, and they are staggeringly large. A sudden reversal of such flows could wreak havoc with asset prices, interest rates, and even the prices of goods and services in countries at both ends of the flows. Moreover, international flows make rapid credit growth possible even in the absence of domestic saving. The persistence of unusually low interest rates has played a role in encouraging and facilitating these flows.

Many of the challenges facing us today are a direct consequence of a third consecutive year of extremely accommodative financial conditions. Near zero interest rates in the core advanced economies increasingly risk a reprise of the distortions they were originally designed to combat. Surging growth made emerging market economies the initial focus of concern as inflation began rising nearly two years ago. But now, with the arrival of sharper price increases for food, energy and other commodities, inflation has become a global concern.

The logical conclusion is that, at the global level, current monetary policy settings are inconsistent with price stability.

The progress in financial regulation over the past year represents an enormous achievement. International agreements were reached on stronger capital requirements and new liquidity standards for banks, and implementation has started. But work continues on large challenges that still remain. We need to ensure that systemically important financial institutions can withstand the next big shock when it inevitably comes. We need to build improved resolution regimes within jurisdictions and create agreements across them. And we need to continue building a regulatory perimeter that is sufficiently robust and extensive to encompass every institution that acts like a bank.

Obviously, we also need to ensure universal acceptance of the new regulatory framework being put in place. Investors and financial institutions must understand and accept that the financial landscape has changed and that they need to adapt their behaviour accordingly. The ongoing challenge for regulators and other policymakers is to make the rules incentive compatible – that is, to guarantee that decision-makers in financial institutions find that it is in their own interest to act in a manner that reduces the risk of systemic collapse.

Finally, monitoring financial activity and anticipating stresses require better and more complete data on markets and institutions than we now have. Agreeing on the most practical solutions for these data gaps and quickly implementing them is also essential to the preservation of financial stability.

These challenges – high public and private debt, global imbalances, the risks of continued extreme monetary accommodation, the unfinished financial reform agenda and gaps in financial data – are the subjects of the economic chapters in this year's Annual Report. To set the stage, we first briefly survey the past year's financial and economic events and then summarise the chapters to come.

The year in retrospect

Two developments dominated the economic and financial landscape over the past year: growing confidence that the recovery had become self-sustaining; and continued reverberations of the sovereign debt problems facing a few countries on the periphery of the euro area.

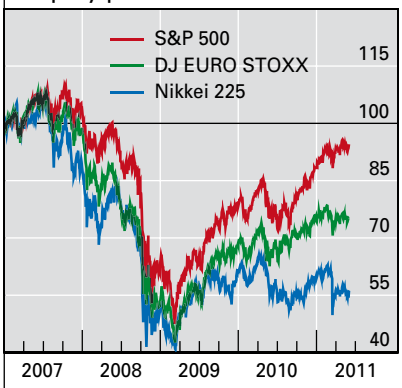
Recovery in advanced economies

Throughout much of 2010, the recovery of the major advanced economies followed a somewhat stumbling path. Weak macroeconomic data, in combination with the unfolding of euro area fiscal problems, prompted fears that growth would stall and possibly even reverse. In response, major central banks delayed policy normalisation and provided stimulus by creating or extending extraordinary measures.

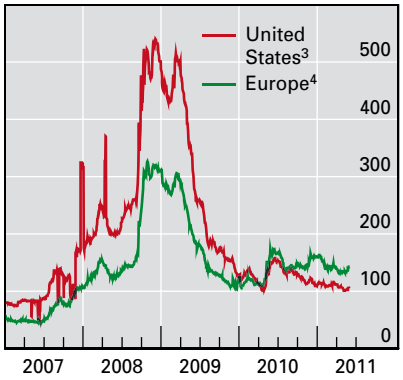
In October 2010, the Bank of Japan announced a ¥5 trillion programme to purchase a variety of assets in an effort to lower risk premia and raise asset prices. A month later, the US Federal Reserve began a second round of Treasury bond purchases – the large-scale asset purchase programme commonly known

Asset prices in selected advanced economies

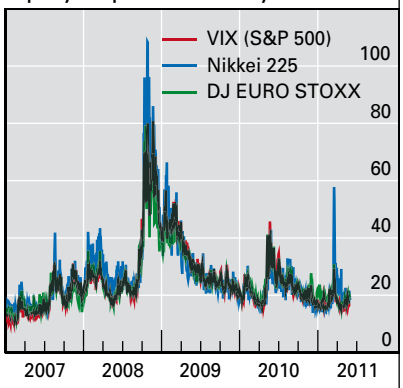
Equity prices[1]



Corporate bond spreads[2]



Equity implied volatility[5]



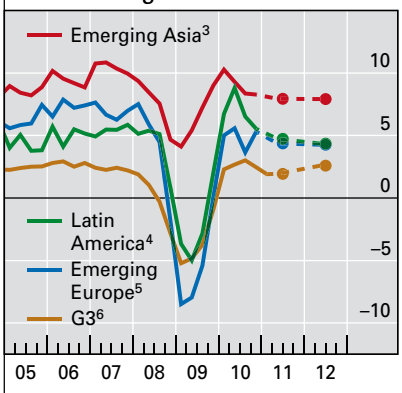
[1] January 2007 average = 100. [2] Indices of investment grade bonds, in basis points. [3] JPMorgan US Liquid Index (JULI). [4] Morgan Aggregate Index Europe (MAGGIE). [5] Volatility implied by the price of at-the-money call option contracts on stock market indices, in per cent.

Sources: Bloomberg; Datastream; JPMorgan Chase. Graph I.1

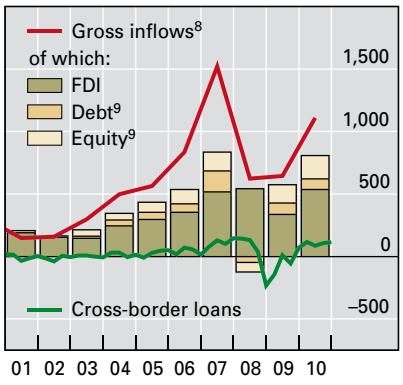
as QE2 – with the intention of adding $600 billion to its holdings by June 2011. Anticipating the Federal Reserve's move, markets had begun bidding up US stock and bond prices long before the early-November announcement. The passage by the US Congress of a further $858 billion stimulus bill in December reinforced the positive market tone. More broadly, an increasingly steady stream of good economic news contributed to the brightening expectations, the rising prices of risky assets and the lowering of implied volatility in Europe, Japan and the United States (Graph I.1).

The divergence of advanced and emerging market economies

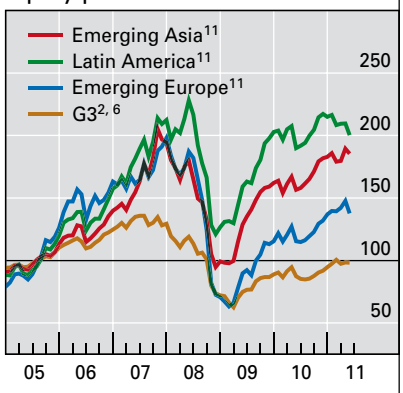
Real GDP growth[1, 2]



Private capital inflows[7]



Equity prices[10]



[1] Quarterly year-on-year changes in real GDP, in per cent. Each dot in 2011 and 2012 represents the latest consensus forecast for the full year. [2] Weighted averages of the economies listed based on 2005 GDP and PPP exchange rates. [3] China, India, Indonesia, Korea, Malaysia and Thailand. [4] Argentina, Brazil, Chile, Mexico and Peru. [5] The Czech Republic, Hungary, Poland, Russia and Turkey. [6] The United States, the euro area and Japan. [7] Sum of 23 major emerging market economies, in billions of US dollars. [8] For 2010, estimates from IMF, *World Economic Outlook*, April 2011. Because of data limitations, data may include official flows. [9] Portfolio investment; breakdown for 2010 based on BIS estimates. [10] Monthly averages of daily indices, in local currency terms; 2005 average = 100. [11] MSCI regional indices.

Sources: IMF; © Consensus Economics; Datastream; MSCI; national data; BIS estimates. Graph I.2

The devastating earthquake and tsunami in Japan in early March 2011 captured world attention but only temporarily dented optimism. As we write, the resulting supply disruptions do not appear serious enough to impede steady global growth.

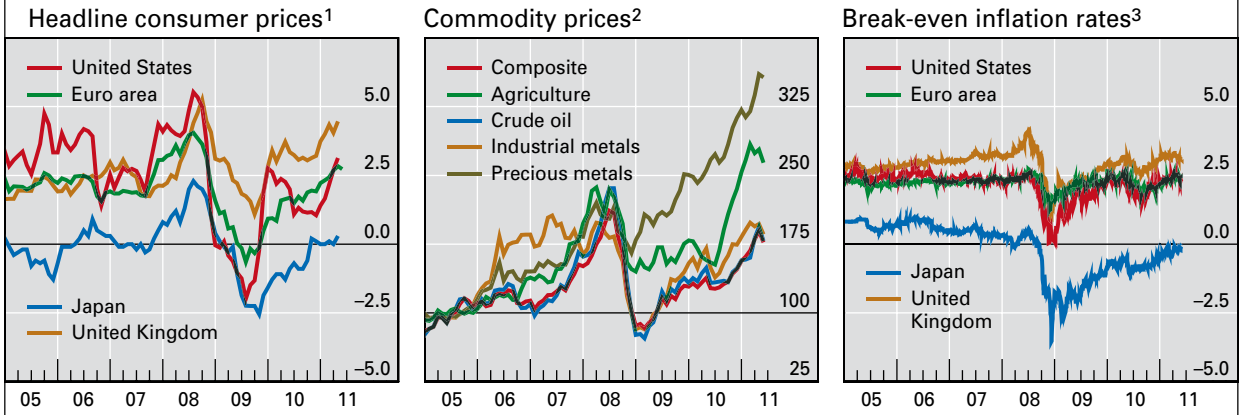
Activity remained strong in major emerging market economies (Graph I.2, left-hand panel). Mindful of the unevenness of the global recovery, investors continued to shift their portfolios towards emerging markets (centre panel), where equity prices outpaced those in advanced economies (right-hand panel). Differential performance persisted until early 2011, when concerns about overheating and inflation, combined with geopolitical worries linked to unrest in the Middle East and North Africa, prompted a retreat from some emerging markets.

While much of the increase in asset prices in the past year reflected improving fundamentals, changing attitudes played a role as well. Market participants had been gradually resuming their willingness to take on risk, as we would expect in the early stages of a cyclical upturn. A related development was the resurgence of financial innovation, with strong growth in new instruments and vehicles such as synthetic exchange-traded funds, commodity-linked notes and commodity-based hedge funds. At one level, the return of innovation is a positive sign. But the arrival of new products with risks untested by market stress vividly brings back memories of the lead-up to the financial crisis. The revival of risk-taking and innovation therefore poses an important challenge for authorities tasked with maintaining financial stability.

Inflation pressures prompt revisions to monetary policy expectations

In major advanced economies, where economic slack dampened upward pressure on consumer prices for some time, inflation expectations started a gradual rise. Along with dwindling slack, a surge in prices for food, energy and other commodities added substantially to near-term inflation pressures for much of the past year (Graph I.3, left-hand and centre panels). The

Inflationary pressures

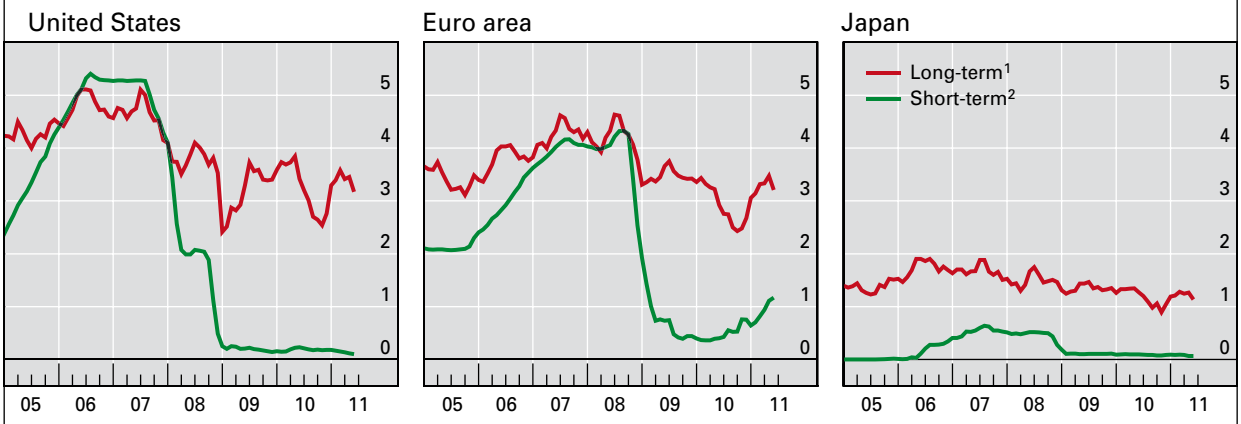


[1] Year-on-year changes, in per cent. [2] S&P Goldman Sachs Commodity Index; monthly averages of daily data, 2005 average = 100. [3] The yield on the 10-year nominal government bond less the yield on the 10-year inflation-indexed government bond, in per cent.

Sources: Bloomberg; Datastream; national data. Graph I.3

Interest rates

In per cent



[1] Ten-year government bond yields (for the euro area, German bund). [2] Three-month overnight index swap (OIS) rates.

Sources: Bloomberg; national data. Graph I.4

significant food price increases reflected weather-related declines in global supply combined with strong demand coming from global growth. For several commodities, low inventories exacerbated upward price pressures, while increased investor interest in commodities as an asset class may also have played a role. Moreover, political unrest in the Middle East and North Africa during the first quarter of 2011 led to concerns of possible supply disruptions, contributing to especially sharp oil price increases.

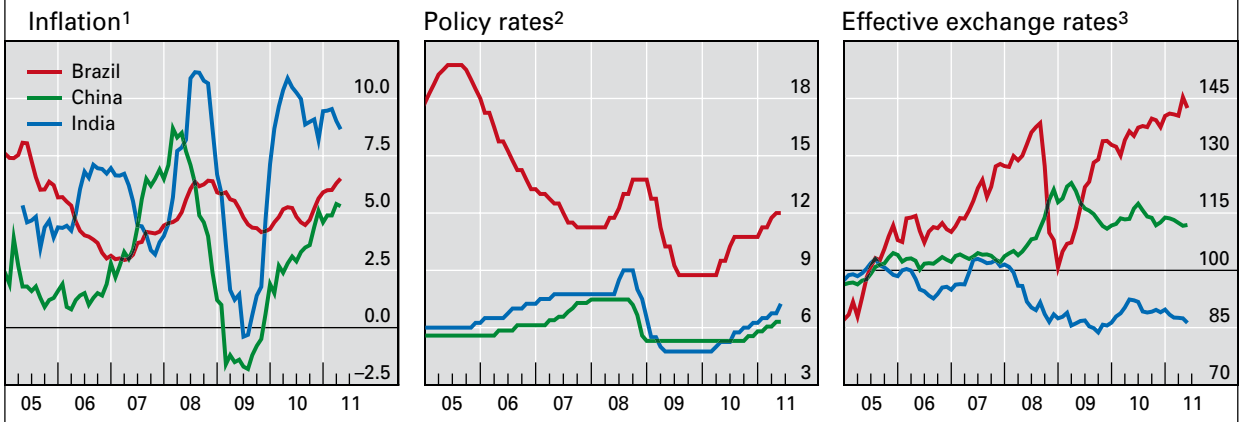
Against this background, 10-year break-even inflation rates in major advanced economies gradually started to climb in mid-2010 (Graph I.3, right-hand panel). Much of the rise, however, was the result of quickly increasing *near-term* inflation compensation (expected inflation and inflation risk premia). But despite the obvious near-term price pressures, break-even inflation expectations at distant horizons remained relatively stable, suggesting that central banks' long-term credibility was intact, at least for the time being.

But controlling inflation in the long term will require policy tightening. And with short-term inflation up, that means a quicker normalisation of policy rates. Expectations that short-term interest rates would rise contributed to the increase in long-term bond yields seen until early 2011 (Graph I.4).

The move among major advanced economies to tighten monetary policy came first in Europe in early 2011. Commodity price increases had helped lift consumer price inflation in the euro area to 2.7% in March, well above the ECB's definition of price stability (close to, but below, 2%). In response, and citing further upside risks to the outlook, the ECB raised policy rates by 25 basis points in April 2011. In the United Kingdom, CPI inflation had exceeded the Bank of England's 2% target since December 2009, reaching a peak of 4.5% in April 2011 (in part due to a VAT increase). As yet, there has been no move by the Monetary Policy Committee, but one wonders how long its current policy can be sustained.

In emerging market economies, inflationary pressures were increasing as well. Brisk economic growth combined with a relatively high weight on food

Selected emerging market economies: inflation, policy rates and exchange rates



[1] Year-on-year changes in consumer prices, in per cent. For India, wholesale prices. [2] For Brazil, target SELIC overnight rate; for China, one-year working capital; for India, repo rate; in per cent. [3] BIS-calculated nominal effective exchange rates; 2005 average = 100; an increase indicates an appreciation.

Sources: Bloomberg; national data; BIS. Graph I.5

and commodities in consumer price indices generated price increases – modest in Brazil, but significant in both China and India (Graph I.5, left-hand panel). In response, authorities continued to take gradual steps to tighten monetary conditions. The People's Bank of China raised both its policy interest rate and its reserve requirement a number of times. The Reserve Bank of India and the Central Bank of Brazil also continued to tighten (Graph I.5, centre panel). Still, real interest rates remained low or even negative in a number of emerging market economies.

With interest rates rising in emerging markets and at or close to record lows in advanced economies, investors shifted their portfolios towards the assets with higher returns. They did that in part by increasing their carry trade positions in emerging market fixed income instruments. Funded at very low interest rates in currencies such as the US dollar and Swiss franc, these positions are bets that the high interest rate differential will more than compensate for possible countervailing moves in exchange rates.

The shift of funding has two potentially damaging effects. First, by exerting upward pressure on exchange rates in the emerging market economies receiving the capital flows, it makes their exports less competitive and puts a brake on their growth. For economies that are overheating, this currency appreciation is part of the natural equilibrating process. Second, large gross cross-border financial flows can fuel unsustainable credit expansions and asset price booms. What begins as a response to strong fundamentals can become a serious threat to financial stability.

To resist, or at least slow, the nominal appreciation of their currencies, several countries have been accumulating additional foreign currency reserves. Some also introduced or increased taxes on foreigners investing in their domestic currency markets: Brazil, which has seen strong currency appreciation (Graph I.5, right-hand panel), raised its transaction tax on foreign fixed income investments. Thailand removed tax breaks for foreign investors on domestic

bonds. Korea renewed a tax on foreign investors' returns on government bond investments.

Lingering fiscal policy concerns in the euro area

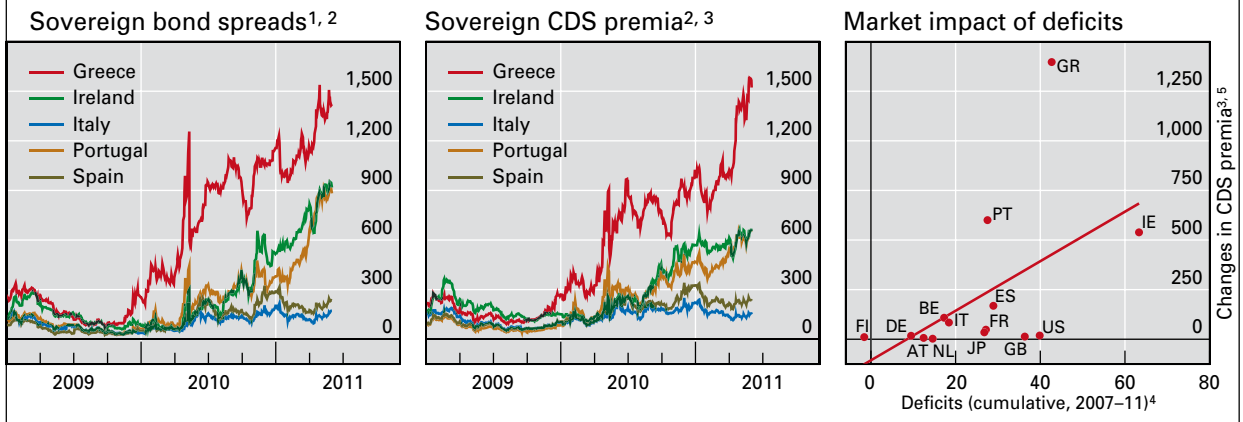
For a number of countries on the periphery of the euro area, concern about the fiscal situation, which had initially surfaced in late 2009, intensified and then lingered throughout the past year. As a result of initial policy actions, peripheral country sovereign bond yields and credit default swap (CDS) spreads receded from their May 2010 peaks. But, shortly thereafter, they began a steady rise (Graph I.6). As the situation in Ireland deteriorated in November, spreads climbed further there, as well as in Greece, Portugal and Spain.

Another factor driving up euro area credit spreads in late 2010 was the October agreement between the governments of France and Germany – with subsequent support from the rest of the European Union – making it possible to impose losses on holders of sovereign bonds should a government be unable to service its debt. Faced with soaring credit spreads, finance ministers in several European countries later reiterated their position that such burden-sharing would apply only to bonds issued after 2013. That declaration, together with the later announcement of a support package for Ireland and continued ECB bond purchases, brought temporary calm.

As 2011 began, credit spreads on euro area sovereigns rose once again. But the news was not all bad. Some fiscal austerity measures were announced, and the European Financial Stability Facility (EFSF) successfully launched its first issue of EU bonds in January.

Although the EFSF is scheduled to close down in mid-2013, its function of supporting troubled EU sovereigns will be taken up by a successor, the European Stability Mechanism (ESM). Euro area heads of state or government

Fiscal challenges in euro area countries



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] Five-year nominal yield over five-year nominal German bund yield. [2] In basis points. [3] Five-year on-the-run CDS spreads. [4] Cumulative government deficits as a percentage of GDP for 2007–11 (for 2010–11, estimates and forecasts). [5] Change in sovereign CDS premium between 26 October 2009 and 31 May 2011, in basis points.

Sources: OECD, *Economic Outlook*; Bloomberg; JPMorgan Chase; Markit; BIS calculations. Graph I.6

agreed on some key features of the ESM in early March, when they also adopted a Pact for the Euro, which, among other things, will require euro area states to put the fiscal rules of the EU Stability and Growth Pact into national legislation. Despite this progress, doubts remained about the near-term effectiveness of the agreed facilities and, because of funding questions, about the longer-term adequacy of the ESM.

The crisis deepened in April 2011 when Portugal became the third euro area country to request EU assistance after its government failed to receive domestic support for planned austerity measures and was forced to resign. With negotiations on the support package dragging on, and popular backlashes erupting in several countries, investor sentiment deteriorated further, and the relentless upward trend of credit spreads of crisis-hit countries continued into the second quarter. As a result, the financing burden was seen to be quickly spiralling out of control in Greece, with Portugal and Ireland not far behind. While inflation is one way out of this bind, it is ruled out by an independent ECB set on maintaining price stability. That leaves only two options, neither of which is very appealing. The first is restructuring. But the fallout from a partial default on outstanding sovereign debt would be extremely difficult to control, especially given the losses banks might sustain. The second is mutualisation, in which other euro area countries pick up the tab for those in trouble. The first option would be hard to manage; the second would be hard to sell to an already sceptical European electorate.

Fiscal policy elsewhere

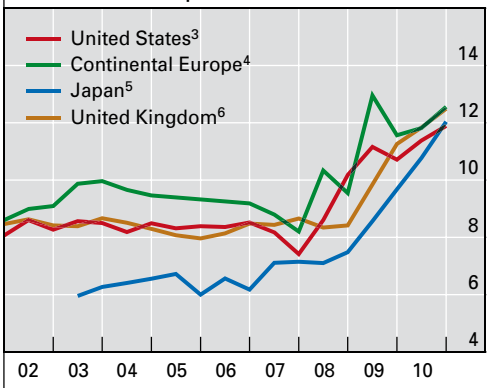
While investor distrust forced European politicians to act repeatedly over the past year, fiscal imbalances in other countries, including the United States, the United Kingdom and Japan, had little market impact (Graph I.6, right-hand panel). Nonetheless, recognising the risks associated with waiting, the UK government that took office in May 2010 announced a range of austerity measures. Rating agencies provided further confirmation of the fiscal dangers facing major advanced sovereigns. In January 2011, Standard & Poor's (S&P) downgraded the credit rating of Japan, and over subsequent months Moody's, S&P and Fitch lowered their outlook for Japan's rating from "stable" to "negative", partly as a result of the prospective costs associated with the March earthquake and tsunami. In April 2011, S&P cut its long-term outlook for US sovereign debt for the first time (also from stable to negative), indicating a higher risk that the United States could lose its AAA rating unless its finances are put on a sounder footing.

Banks' balance sheets improve but remain vulnerable

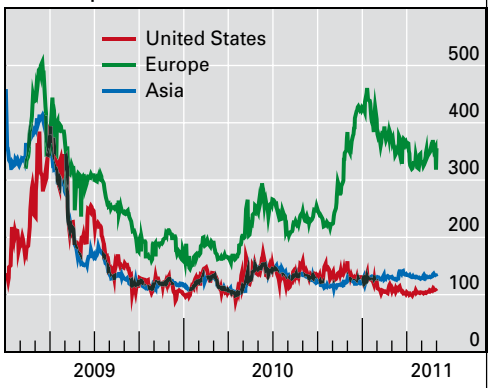
Balance sheets of financial firms continued to improve in advanced economies (Graph I.7, left-hand panel). Rising asset prices and a steep yield curve helped banks generate outsize profits over much of the past year. Lower loan loss provisions contributed as well. However, while bank CDS spreads remained stable in the United States and in Asia, they rose in Europe to levels not seen since 2009 on worries about exposures to the troubled sovereign debt of the euro area periphery (Graph I.7, right-hand panel). The greatest increase in

Bank capital ratios and credit spreads

Tier 1 bank capital[1]



Credit spreads[2]



[1] Average ratio of Tier 1 capital to risk-weighted assets for banks named in each group; ratio weighted by asset size of banks; in per cent. [2] Equally weighted average senior five-year CDS spreads for the banking sector, in basis points. [3] Bank of America, Citigroup, JPMorgan Chase, Wachovia Corporation (to Q2 2008) and Wells Fargo. [4] Banco Santander, BNP Paribas, Commerzbank, Credit Suisse, Deutsche Bank, UBS and UniCredit. [5] Mitsubishi UFJ Financial Group, Mizuho Financial Group and Sumitomo Mitsui Financial Group. [6] Barclays, HSBC and Lloyds TSB Group.

Sources: Bloomberg; JPMorgan Chase. Graph I.7

spreads was for banks in the countries facing the toughest fiscal challenges. But the rise in spreads also affected banks in the core euro area, highlighting the close relationship between fiscal and financial stability: valuation losses on bonds issued by sovereigns in fiscal difficulty reduce the creditworthiness of the banks holding them and lower the amount of collateral they can borrow against.

Following the May 2009 US example, the European Union conducted stress tests to assess the resilience of the EU banking system to a range of adverse economic and financial market shocks. (Swiss regulators conducted a simultaneous test.) The EU results, released in July 2010, showed that only seven of 91 banks tested required additional capital (a combined €3.5 billion).

Initially, financial markets took a positive view of the announcements. Sovereign credit spreads fell and conditions in European money markets improved. But reaction turned negative as sceptical analysts complained that the tests had not been demanding enough. Critics were vindicated when several Irish banks were forced to seek government support only a few months after having received a clean bill of health, thus triggering the Irish sovereign debt crisis. A new stress test in early 2011 showed that the Irish banks would require an additional €24 billion in capital, which would push the total Irish government injection to at least €70 billion.

In the United States, a Federal Reserve assessment of the 19 largest US banks showed that they had made significant progress in bolstering their capital positions over the two years of the crisis, adding more than $300 billion in equity between end-2008 and end-2010. Declared healthy, the US banks were then freed from restrictions on dividend payouts and share buybacks. Several banks immediately announced tens of billions of dollars of increases in such capital expenditures.

The year in prospect

Given the key role of finance in real economic growth, a robust financial environment is a prerequisite for a stable economic future. If we are to create and nurture that financial environment, we must shift public and private finances onto a sustainable path, reduce the large current account balances and gross financial flows arising from international activity, and ensure medium-term price stability. Creating a durable financial environment also requires that we finish regulatory reform and fill key gaps in the currently available data that hinder our ability to detect emerging stresses in financial markets, institutions and instruments.

Fiscal challenges

In the aftermath of the Great Recession, public debt levels have increased dramatically, particularly in mature economies. As previously discussed, in the peripheral euro area countries, the fiscal problems have already sapped investor confidence to the point where sovereign borrowing costs have soared beyond sustainable levels. For well over a year, European policymakers have been scrambling to put together short-term fixes for the hardest-hit countries while debating how to design a viable and credible long-term solution. They need to finish the job, once and for all.

The fiscal woes of a number of euro area countries resulted in eye-popping jumps in their sovereign bond yields and CDS spreads. Yet, as noted, other mature sovereigns with record high fiscal deficits and outsize levels of public debt have not seen any market effects (at least none that are clearly linked to their deteriorating fiscal conditions). Three factors that may be playing a role in the market's seemingly inconsistent treatment of fiscal stress across countries are differences in the distribution of debt between the public and private sectors, differences in the fraction of the countries' sovereign debt that is held by foreigners and whether countries have an independent currency. Countries with lower private debt have more capacity to repay their public debt. And when public debt is held by domestic residents, there may be a greater willingness to repay. In addition, having an independent currency and monetary policy also seems to play a role, as this provides policymakers with greater flexibility.

Nevertheless, either you enjoy the confidence of the markets or you don't. Therefore, a loss of confidence in the ability and willingness of a sovereign to repay its debt is more likely to be characterised by a sudden change in sentiment than by a gradual evolution. This means that governments that put off addressing their fiscal problems run a risk of being punished both suddenly and harshly. And if that day comes, experience teaches us that the fiscal consolidation measures needed to regain the confidence of investors will be substantially larger, more difficult and more painful than they would have been.

As discussed in Chapter II, fiscal authorities must take swift and credible action to bring debt levels down to sustainable levels. This requires taking short-term measures to reduce deficits in the aftermath of a costly recession while addressing longer-term challenges arising from structural imbalances.

In many countries, the structural task involves facing up to the fact that, with their populations ageing, promised pension schemes and social benefits are simply too costly to sustain.[1]

The fiscal challenge is made all the more difficult by the fact that simply returning to the pre-crisis fiscal stance will not be enough. This is true for at least two reasons. First, fiscal positions preceding the financial crisis were made to look unrealistically rosy by the tax revenues arising from unsustainable credit and asset price booms. And second, cyclical surpluses need to be built up as buffers that can be used for stabilisation in the future. Since the government acts like an insurance company, it needs a reserve fund. This means that running a cyclical balance, in which budget surpluses in booms neutralise budget deficits in recessions, is not good enough.

What about the risk that aggressive austerity measures could prove counterproductive, choking off economic growth? In advanced economies, where the recovery appears now to be self-sustaining, this risk is much smaller than it was a year ago. (In most emerging market economies, it is almost non-existent.) But more importantly, in a number of cases the long-run fiscal outlook has not improved, at least not enough. The unavoidable conclusion is that the biggest risk is "doing too little too late" rather than "doing too much too soon".

Private sector balance sheet challenges

Financial stability also requires adjustment to household, financial and non-financial firm balance sheets. Private sector debt remains high in both the United States and Europe, where, as Chapter II argues, maintaining or regaining market confidence requires continued deleveraging.

At the centre of the financial crisis was an unsustainable, debt-driven residential and commercial real estate boom in a number of countries, most prominently the United States. The result was a large stock of household debt, which has not yet fallen enough, and shaky commercial mortgages. Together, these cast a dark shadow over both the financial and real economies in a number of countries.

Troubled financial institutions have made progress in cleaning up their balance sheets. But, again, there is work left to do. They have been valuing impaired assets at more realistic levels, discouraging evergreening of loans, retaining earnings and raising capital in the financial markets. But at the same time as ultra-low interest rates have given banks the breathing space to take the necessary actions, they have weakened incentives to pursue the clean-up. With the time for policy normalisation fast approaching, financial institutions need to quickly finish what they have started. The fact that the financial system has been building up significant interest rate risk as rock-bottom policy rates have persisted underscores the need for urgency.

Apart from balance sheet difficulties, the private sector faces structural problems that will take time to solve. Growth during the pre-crisis years was heavily weighted towards finance and construction. In a number of countries,

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

these sectors grew disproportionately to the rest of the economy and now have to shrink. Like most adjustments, it will be painful in the short run. Not only will this reallocation impose suffering on the people who worked and invested in those sectors, it will weigh on aggregate growth and public revenues as well.

Emerging market economies managed to escape the worst of the crisis, but many now run the risk of building up imbalances very similar to those seen in advanced economies in the lead-up to the crisis. For example, property prices in a number of emerging market economies are advancing at staggeringly rapid rates, and private sector indebtedness is rising fast. Emerging market policymakers should recognise that the lessons from the financial crisis do not apply only to advanced economies.

International imbalances

After a brief, crisis-induced hiatus, global imbalances in financial flows – both net and gross – have returned, creating vulnerabilities and complicating policymaking at all levels. Current account surpluses and deficits are generating large net flows of capital. But a country with large net inflows risks financial instability if its financial sector cannot allocate the new capital efficiently; and it is vulnerable to a sharp and damaging depreciation of its currency if the inflow reverses.

Cross-border flows spur growth and development, benefiting everyone. The flows can have harmful side effects, but impeding them or the cross-border financial integration that facilitates them is not the solution. Instead, their benefits should be protected and the side effects targeted by making structural domestic adjustments, improving international policy coordination and strengthening the financial stability framework.

What we need are policies in deficit countries to encourage saving and policies in surplus countries to encourage consumption. And although not enough by themselves, changes in real exchange rates are also essential; however, major countries resist real exchange rate adjustment. As argued in Chapter III, the policy gridlock must be broken by international coordination that would distribute the burden of adjustment across major surplus and deficit countries. Without such cooperation, the outsize current account imbalances, the large net financial flows they generate and the resulting vulnerabilities will continue to grow.

Large gross financial flows, dangerously obscured by the long-standing concern over current account imbalances, are also creating vulnerabilities. In recent years, these flows have generated enormous gross positions on balance sheets across the globe, in some cases in the absence of any net flows. The financial crisis showed us that the build-up of gross investment positions can lead to substantial currency, liquidity and other mismatches that can propagate and magnify shocks, creating damaging volatility in the international financial system. Moreover, gross international flows make rapid credit growth possible, eliminating the domestic savings restriction that would otherwise temper credit expansions.

As discussed in Chapter III, the principal defence against the risks posed by large gross flows is a set of macroeconomic policies that promote monetary

stability and fiscal sustainability. Regulatory and macroprudential measures play a secondary role, while, as a last resort under extraordinary conditions, capital controls can serve as a stopgap measure.

Monetary policy

Monetary policy challenges, already difficult, are intensifying. The great danger is that long-term inflation expectations will start to climb, and current price developments and policy stances are sending us in the wrong direction. As spare capacity dwindles, food and energy price increases are more likely to have second-round effects on inflation. And the risks to long-term inflation expectations are intensified by continued unconventional monetary policy actions, outsize central bank balance sheets in the core advanced economies and a perceived temptation to inflate away the real value of ballooning government debt.

As discussed in Chapter IV, monetary policymakers have their work cut out for them. They must find a way to normalise policy rates or risk jeopardising their hard-earned credibility as inflation fighters. As the experience of the 1970s and 1980s shows, once inflation expectations take off, a costly, protracted effort is required to rein them in. In emerging market economies, where central banks are still working to establish their anti-inflation credibility, inflationary pressures are rising and authorities face the build-up of risks linked to credit and property price booms.

Given their large-scale government bond purchases, central banks are running the risk of being seen as either working to ease sovereign debt strains or having their policies rendered ineffective by the actions of debt managers. Central banks must guard against even the hint that they are using monetary easing as an excuse to monetise public debt. Markets and the public must remain confident that central bank balance sheet policies are a means of maintaining price stability and that, with inflation threats growing, policy will be normalised very soon.

In this regard, the independence of central banks is the basis for their credibility and provides the best defence against incipient inflation threats. Indeed, the importance of central bank independence is applicable to other policy areas. In particular, it should set the standard for the organisation of macroprudential authorities (see box).

Regulatory reform

Regulatory reform is proceeding rapidly yet deliberately. The Basel Committee on Banking Supervision has agreed on a new framework for capital and liquidity standards, or Basel III, the details of which are described in Chapter V. The reforms create a stronger banking system that will be more efficient in allocating credit to the real economy while being less vulnerable to costly financial crises.

The reforms in Basel III include requirements for both a higher minimum quantity of capital and a better quality of capital to cover more risks. Further, Basel III introduces additional capital buffers that will be adjusted countercyclically to limit the amplitude of credit cycles. It also introduces liquidity standards. One lesson of the crisis was that, left to their own devices,

Central bank governance and financial stability

The recent financial crisis highlighted the need for central banks to play a role in fashioning and executing financial stability policy but raised questions about how best to organise such a function. Since central banks vary widely in their institutional settings, historical contexts and political environments, no single answer will apply. Nonetheless, the crisis provides four broad lessons that can inform efforts worldwide to enhance the financial stability function of central banks:[1]

Central banks must be involved in the formulation and execution of financial stability policy if such policy is to be effective. There are three key reasons. Financial instability can affect the macroeconomic environment, with substantial consequences for economic activity, price stability and the monetary policy transmission process. Central banks are the ultimate source of liquidity for the economy, and appropriate liquidity provision is crucial to financial stability. And central banks have a macroeconomic focus and an understanding of financial markets, institutions and infrastructures – all crucial for the exercise of a macroprudential function.

Clarity about the roles and responsibilities of all authorities involved in financial stability policy – central banks, supervisors, deposit insurers, treasuries and competition authorities – is of paramount importance for effective and rapid decision-making, for managing trade-offs and for accountability. Clarity is needed to reduce the risk of a mismatch between what the public expects and what the central bank can deliver. Knowing who is responsible for what at different stages of a crisis can aid rapid decision-making. And clarity about responsibilities and powers also helps to promote accountability. Even though it is difficult to define and operationalise financial stability concepts, attempting to achieve clarity is thus desirable. Especially for central banks with broad financial stability responsibilities, there may be merit in the public announcement of a financial stability strategy that clarifies the central bank's intentions and how it will reconcile the need to achieve multiple objectives.

The greater the responsibility afforded the central bank for emergency actions to support financial stability, the greater the central bank's risk-bearing capacity will need to be and/or the more robust the mechanisms for transferring financial losses to the treasury. The point at which the treasury takes over responsibility for financial risks, and the mechanisms by which it does so, should be clearly stated.

Central bank accountability for monetary policy actions is now heavily based on transparency. For the most part, transparency will also be needed for financial stability functions. Disclosure of financial stability decision-making and reasoning is therefore essential, though delay in disclosing some elements of the decisions may be necessary if immediate disclosure risks triggering destabilising behaviour.

Under any financial stability mandate, the central bank will need appropriate tools, authorities and safeguards. When the central bank has macroprudential policy responsibilities, it must have either tools that it can use autonomously or the means to prompt or even require action by other authorities that have the power to take appropriate action.

To discharge such mandates, central banks also need access to a wide range of information, including on the quality of collateral, the solvency of institutions seeking liquidity support, the state of systemically important institutions, and the interconnections between institutions, markets and systems. This may require extensive information-sharing between agencies. The power to obtain information directly from financial firms through the legal authority to call for reports and to conduct on-site inspections may be needed.

Central banks' financial stability mandates and governance arrangements need to be compatible with their monetary policy responsibilities. In order to conduct monetary policy successfully, decisions affecting monetary conditions should be made independently by the central bank, which also means that it should have control over its balance sheet.

Where several agencies have related responsibilities for macroprudential policy, inter-agency councils may be useful. Such councils may serve as forums for the exchange of information and advice or for joint decision-making. In the former case, transparency of recommendations and comply-or-explain requirements may reduce the risk that consultation will be perfunctory. In the latter case, the decision-making arrangements need to be clearly specified. In both cases, the design of procedures for making decisions should pay careful attention to the capacity of each authority to discharge its separate and independent duties.

[1] See *Central bank governance and financial stability*, report prepared by a Central Bank Governance Forum study group chaired by Stefan Ingves, 2011.

Four recent examples of new institutional arrangements for macroprudential policy illustrate the different approaches that can be taken in different institutional settings. In Malaysia, a new decision-making board with financial stability responsibilities was created within the central bank in 2009. In the United Kingdom, an interim Financial Policy Committee has been created at the Bank of England pending new legislation. Its purpose is to focus on the macroprudential dimension of financial stability policy – including the use of microprudential policy instruments for overall system stability purposes. In both these cases, the new decision-making bodies reside within the central bank. In contrast, in the new arrangements in the European Union and the United States, inter-agency bodies are responsible for macroprudential policy coordination and decision-making – the European Systemic Risk Board (ESRB) and, in the United States, the Financial Stability Oversight Council (FSOC). Nonetheless, the central banks have the majority of votes in the ESRB and have the prime role in providing it with analysis. In the United States, the FSOC decides whether an institution is systemic, but the Federal Reserve, as the supervisor of systemically important entities, takes the lead in setting heightened regulatory standards for such entities. In all four examples just discussed, the mandates of the macroprudential bodies do not extend to monetary policy; the central banks retain their independent objectives and full ability to make interest rate decisions.

banks and other financial intermediaries will maintain woefully inadequate liquidity buffers. Under Basel III, financial institutions will have to hold sufficient liquidity to be able to weather a variety of shocks.

However, the work is not finished. Significant challenges remain. Among them is the need to ensure that systemically important financial institutions (SIFIs) become, in effect, less so. This means first figuring out which institutions are systemically important and then determining the steps needed to make them sufficiently resilient. Regulators are busy working out how much additional loss absorbency global SIFIs should have. Moreover, while the Financial Stability Board (FSB) has issued recommendations for enhanced supervision of SIFIs, the details still need to be settled by national supervisors, standard setters and the FSB. This process is complicated by the existence of various types of SIFIs. For example, among SIFIs, an insurance company would probably have balance sheet risks that need to be treated differently from those faced by a bank.

Besides making SIFIs more resilient, reducing the externality they create for the financial system at large, we must devise resolution regimes for them to ensure that they can fail in an orderly way. Work is progressing on legal and policy frameworks to enhance authorities' capability to manage and resolve distressed institutions with the least possible disruption to the larger financial system.

Another key to building the foundations of a stable financial system is to extend the regulatory perimeter beyond traditional financial institutions to cover shadow banks – entities that perform maturity or liquidity transformation outside the currently regulated banking system. Shadow banks have the potential to generate substantial systemic risk because they can be highly leveraged and engage in significant amounts of maturity transformation while being closely linked to commercial banks. And, as the name suggests, the shadow banks can do all of this in ways that are less than completely transparent.

Banks – often systemically important ones – typically generate large profits by sponsoring shadow banking activities to which they have significant

direct and indirect exposures, including backup lines of credit and various sorts of credit enhancements. It is exactly that linking of the banking system to the shadow banks, including explicit or implicit guarantees to the holders of shadow bank liabilities, that gives rise to some of the most pernicious financial stability risks. By comparison, mutual funds and hedge funds, although huge in terms of the money involved, pose less of a systemic risk because they are generally less leveraged and have fewer and looser ties to banks.

As we complete the preparation of the new global standards, it is essential that national authorities translate them into legislation and regulations in a timely and globally consistent manner. Financial stability will be jeopardised by any attempt to delay or weaken the agreements.

Finally, even after their implementation, the new rules, as such, will not be sufficient: rigorous enforcement by supervisors within and across national boundaries will play a key role in making sure that financial institutions comply with them.

Measuring and monitoring the threats

The crisis exposed serious shortcomings in our ability to measure financial stability vulnerabilities. As discussed in Chapter VI, regulators and supervisors need better data to improve their measurement and monitoring of systemic risk. Getting those data poses significant analytical challenges.

Currently available data have serious gaps at both the firm and market-wide level. Firm-level data available to authorities are neither detailed nor consistent enough. Market-wide data are available, but they are not well suited to risk management: they reveal systemic stress only after a shock occurs.

We must fill the data gaps as soon as possible. Resource constraints, combined with confidentiality concerns and legal obstacles, require that we set priorities: what can realistically be done, and what should have the highest priority? As expressed in Chapter VI, the highest priority should be given to improvements in two areas: firm-level data and standardised sets of data on aggregate quantities. The first of these demands a new international framework that gives supervisory authorities a complete view of the balance sheet positions of the largest financial institutions and the linkages between them. Without that framework, supervisors will lack the ability to jointly analyse the positions across banks and to detect vulnerabilities at the system level. Moreover, the data must be disseminated internationally to allow an adequate analysis of global systemic risks.

The second area of priority is updating standardised sets of aggregate financial statistics – such as for flow of funds, the balance of payments and trading platforms – to reflect the significant changes in the financial landscape over the past few decades. Updated aggregates would enhance our ability to monitor systemic vulnerabilities of both the bank and non-bank sectors. By exposing sector-level problems, better aggregates would provide a lead for uncovering stress in the firm-level data.

Lastly, the financial system will continue to evolve, not least because of business requirements, innovation and efforts by financial institutions to circumvent costly regulations. Given this fact of life, transaction-level

information from data warehouses and trading platforms can assist regulators and supervisors in identifying markets or activities whose evolution needs more of their attention.

Summing up

Over the past year, the global economy has been moving towards healthy, stable, self-sustaining growth, albeit in fits and starts. Despite that good news, significant work remains to be done.

Even before the financial crisis created the need for massive stimulus, government budgets in many advanced economies were on an unsustainable path. Fiscal authorities need to act quickly and decisively before disaster strikes again. This means addressing the structural imbalances that are among the myriad causes of the crisis as well as a dangerous part of its legacy. In the countries that were at the centre of the crisis, those imbalances include the lingering indebtedness in the private sector – households as well as financial and non-financial firms – which must be cut to levels well below those seen in the middle of the last decade. Structural adjustment for those countries also means eschewing the model of leverage-led growth, a prerequisite for a rebalancing of the global economy.

Large and persistent current account imbalances continue to plague the global economy, while the immense gross financial flows coursing through the system are intensifying risks to financial stability. International cooperation and coordination is particularly needed here if we are to avoid a painfully disorderly adjustment. Nonetheless, even without coordination, deficit countries can and should encourage more saving, and surplus countries more consumption; it is vital that each country first puts its own house in order.

Central bankers have their work cut out for them as well. They confront distortions exacerbated by years of extraordinarily accommodative monetary conditions. Prime among the challenges is the increasing risk to price stability. Output gaps are closing, commodity prices have been surging, and inflation is rising around the globe. The dangers are most acute in emerging market economies, but they also extend to the core advanced economies.

On the regulatory front, where authorities have agreed to a number of important reforms, challenges remain. Systemically important financial institutions must be made more resilient. Resolution regimes must be built to manage the failure of even the largest financial firms. And the regulatory framework of the future must be such that any institution that does the work of a bank will be treated like a bank regardless of its legal form of organisation.

Finally, the crisis exposed large gaps in the data available for measuring financial vulnerabilities and systemic risk. In the short term, the key to addressing the problem is identifying the important gaps that can be most expeditiously filled, and then filling them.

II. Building new foundations for sustainable growth

The imbalances that accompanied the boom in a number of advanced economies are still with us today. In some of those countries, the financial and construction sectors grew out of proportion to the rest of the economy and may have to shrink. The debt taken on by households and firms during the housing boom has heightened their vulnerability to future shocks and may weigh on growth. Many governments cut their debt during the boom years, in some cases considerably. Yet, with hindsight, much of the improvement in public finances was directly or indirectly related to the housing boom and thus transient.

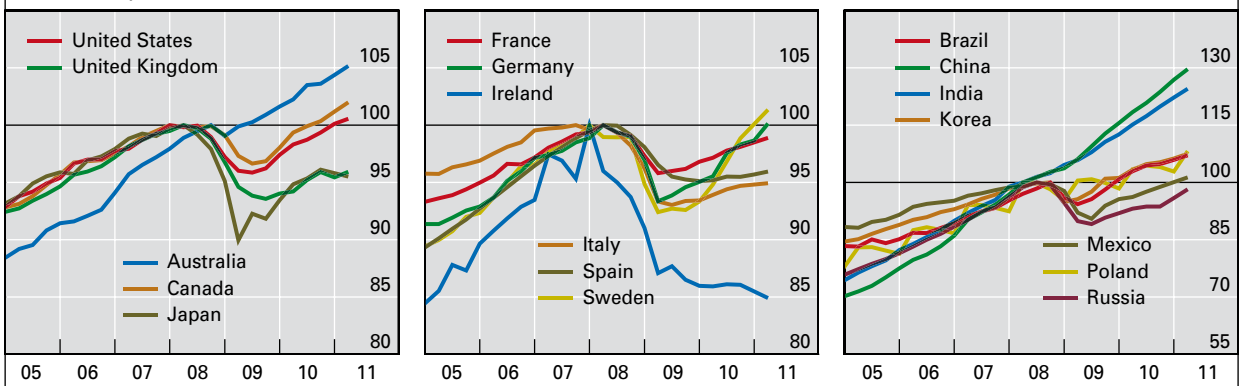
Almost three years after the failure of Lehman Brothers led many advanced economies to their sharpest contraction since the Great Depression, output remains at or below its pre-crisis levels in most instances (Graph II.1, left-hand and centre panels). The persistence of the imbalances that led to the crisis is one reason why the recovery in those cases has so far been tepid.

Growth in the emerging economies has generally been much faster (Graph II.1, right-hand panel), but some of these economies risk building up their own imbalances. For example, property prices in some cases are advancing at rates reminiscent of those in some of the advanced economies during the pre-crisis housing boom, and private sector debt levels are soaring. To be sure, these indicators are increasing from a low level, but that was also the case for some advanced economies, including Ireland and Spain, in the early 2000s.

The first section of this chapter gives a brief account of growth and its associated imbalances during the years of the housing boom. In the subsequent three sections, we discuss in turn sectoral imbalances, private sector indebtedness and fiscal challenges. In the final section, we draw some lessons for economic policy.

Output in selected economies

Pre-crisis peak = 100[1]



[1] Defined as the highest value of the real GDP index for 2007–08. For China, India and Poland, the peak is defined as the first quarter of 2008.

Sources: Datastream; national data; BIS calculations. Graph II.1

Imbalances, financial crises and growth

Output costs of the crisis are unlikely to be recovered ...

The global financial crisis had enormous costs in many regards, not least in terms of lost output. The major advanced economies may be returning to pre-crisis levels of output, but – with the possible exception of Australia – production is still well below what it would have been had these economies continued on their pre-crisis growth path. Recovering those losses would thus require a substantial period of above-trend expansion, but unfortunately that seems unlikely for several reasons. First, the economic losses produced by the Great Recession, such as the destruction of human capital due to long-term unemployment, may weigh on growth for years to come.[1] Second, growth in the years before the crisis was boosted by a series of unsustainable imbalances whose correction may reduce growth until the excesses have been reabsorbed.

The existence of these imbalances also implies that an extrapolation of pre-crisis growth is neither the correct matrix by which to assess the state of the recovery nor a useful guide for policy. Some of the (physical and human) capital put in place during the boom years is less useful than originally thought. A sizeable part of investment in the construction and financial sectors probably falls into this category. The unsustainability of pre-crisis growth also has to be reflected in measures of potential output, which are important inputs in policy discussions. In order to be useful, such measures, above all those that rely on estimates of the stocks of physical and human capital, have to be adjusted to take into account this obsolescence.[2]

... as suggested by previous crises

The historical record supports the notion that systemic banking crises can have long-lasting, possibly permanent output costs relative to trend. A recent survey of the literature on the costs of financial crises found that post-crisis growth is usually not sufficient to regain the former trend in output.[3] In other words, the output lost during the crisis will probably never be recovered.

The boom in house prices ...

The problems plaguing the advanced economies today have their roots in the pre-crisis boom. House prices went up in many countries in the years before the crisis (Graph II.2), and the countries where prices rose most strongly were, in many cases, those that later suffered the most. Examples are Ireland, Spain and the United Kingdom. Yet there were exceptions. In France, house prices increased by almost as much as those in Spain, yet France was spared many of the financial sector problems that assailed other countries. And it was Germany and Japan, where house prices posted no aggregate increases at all, which experienced some of the sharpest (albeit short-lived) contractions in output among the advanced economies.[4]

[1] For instance, OECD data indicate that, in the United States, the share in total unemployment of those unemployed for more than one year increased from 10.0% in 2006 to 16.3% in 2009.

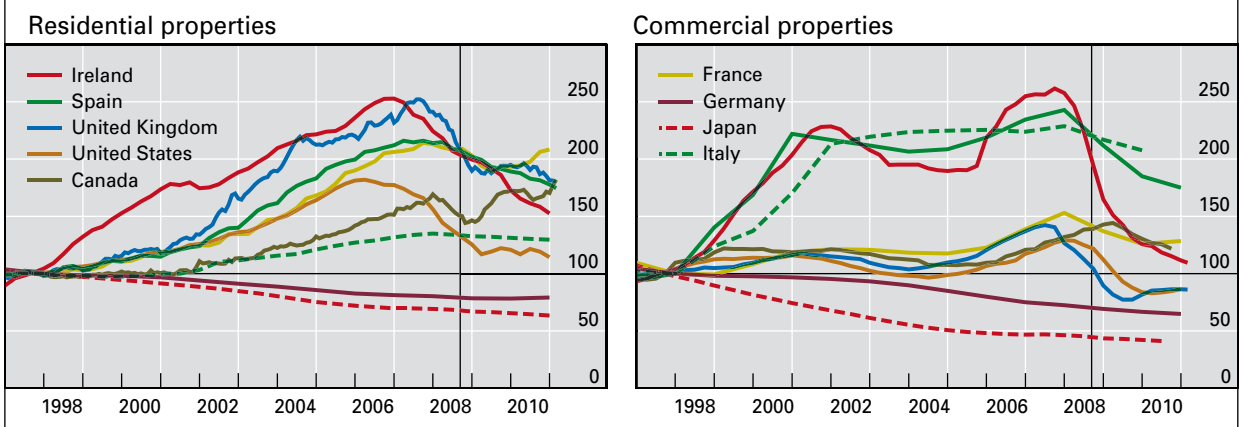
[2] See P Gerlach, "The global output gap: measurement issues and regional disparities", *BIS Quarterly Review*, June 2011, pp 29–37.

[3] Basel Committee on Banking Supervision, *An assessment of the long-term economic impact of stronger capital and liquidity requirements*, August 2010.

[4] The main reason behind the drop in output in these two countries was the contraction in international trade rather than any home-made problems.

Real prices of residential and commercial properties[1]

1997 average = 100



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

[1] Deflated by consumer prices.

Sources: Various real estate associations; national data. Graph II.2

... was fuelled by a build-up of private sector debt

Sharp increases in credit extension to households and corporations fuelled the appreciation in property.[5] The ratio of household debt to GDP (Graph II.3) rose in all countries that experienced a housing boom, far exceeding their long-term trends. Non-financial corporations also added to their debt, with those in the United States being a notable exception. As shown by the left-hand scale of the graph, Irish and Spanish non-financial corporations saw particularly large increases in their debt ratios, with the lion's share of the debt being used to finance real estate. That said, the increase in indebtedness looked much smaller when set against the market value of the real estate portfolios being financed. In the case of Spain, real estate firms increased their ratio of debt to total assets from 50% in 2000 to 63% in 2007.

The housing and credit booms changed the sectoral composition of output. The relative weight of the construction sector rose in all economies where house prices increased. In 2007, construction employed 13% of all workers in Spain, up from 10% a decade earlier (Graph II.4, left-hand panel). In Ireland, the corresponding increase was even sharper, from 8½% to 13%. A similar picture emerges if one measures the share of construction in total value added.[6] Canada, the United Kingdom and the United States also saw growth in the share of construction in employment and GDP, but to a much lesser extent than in Ireland and Spain.

Demand for mortgages drove the growth of the financial sector

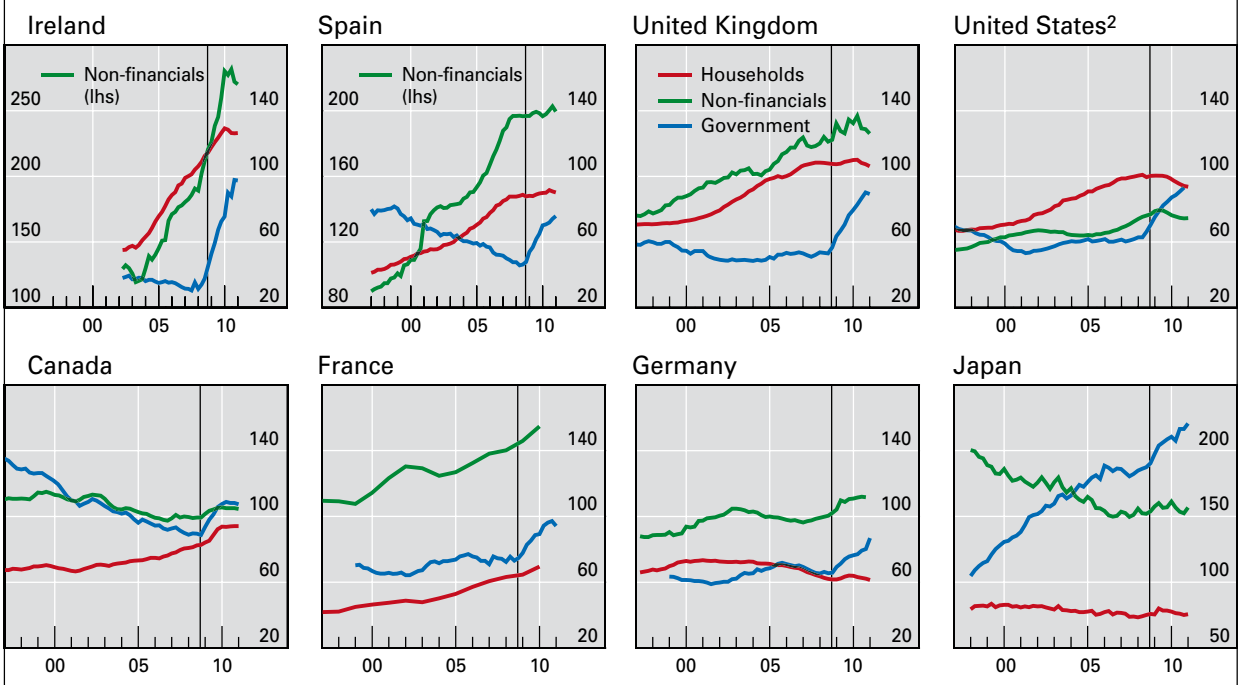
Strong expansion of real estate finance as property prices went up was one factor behind the rapid growth of the financial sector during the pre-crisis

[5] See the discussion in BIS, *80th Annual Report*, June 2010, pp 10–12.

[6] Between 1997 and 2007, the share of construction in GDP went up from 6½% to 10% in Spain and from 5% to 8% in Ireland.

Debt[1]

As a percentage of GDP



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

[1] For households and government, debt is total liabilities. The household sector includes non-profit institutions serving households. Except for the United States, non-financial sector debt is total liabilities minus shares and other equity of non-financial corporations. [2] Debt for the non-financial corporate sector is total credit market instruments.

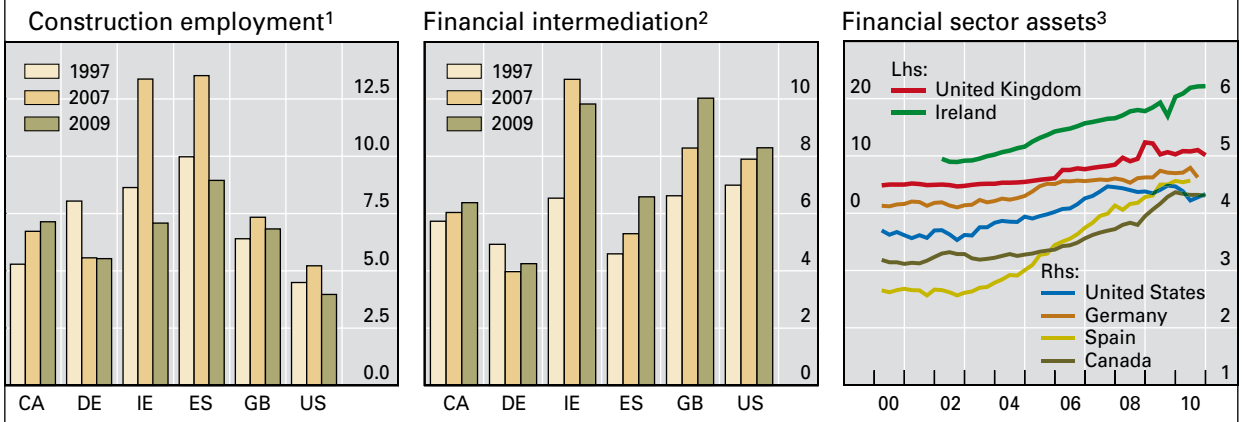
Sources: Central banks; national data; BIS calculations. Graph II.3

period. By almost any measure, the sharpest growth in the financial sector took place in Ireland, where the assets of financial institutions increased from 10 times GDP in 2002, an already high level, to more than 20 times GDP on the eve of the crisis (Graph II.4, right-hand panel). The weight of financial intermediation in total value added in Ireland rose from around 6% in 1997 to more than 10% in 2007 (centre panel). Admittedly, foreign-owned financial institutions – located in Dublin but with little connection to the remainder of the Irish economy – accounted for part of this increase, but the balance sheets of domestic banks also soared. Spain, which unlike Ireland is not an offshore financial centre, also saw a rapid expansion of domestic banks' balance sheets. There, the ratio of bank assets to GDP increased from a stable 2.6 between 2000 and 2003 to more than 4 just before the financial crisis.

The decline in house prices revealed structural weaknesses

The burst of growth originating in the credit and housing booms and the associated expansion of the construction and financial sectors was ultimately not sustainable. This was first revealed when US house prices stopped going up in 2006, and then began to fall. Borrowers whose creditworthiness relied exclusively on future house price appreciation were the first ones to default. As house prices continued to fall, losses started to spread from the subprime to the prime mortgage sector. In other countries house prices peaked somewhat later than in the United States, and so write-offs on home mortgages also increased later, and they generally remained below the US level. However,

Booms in the construction and financial sectors



CA = Canada; DE = Germany; ES = Spain; GB = United Kingdom; IE = Ireland; US = United States.

[1] As a percentage of total employment. [2] Value added by the financial intermediation sector as a percentage of total value added. [3] Total financial assets of financial corporations are measured as multiples of GDP; for the United Kingdom, total financial assets of monetary financial institutions and institutional investors.

Sources: OECD, STAN; Datastream; national data; BIS calculations. Graph II.4

some countries, such as Ireland, Spain and the United Kingdom, saw a surge in non-performing loans to the non-financial corporate sector, in particular property developers.

The construction sector shrank ...

The financial crisis and the Great Recession that followed led to a sharp reversal in the sectoral trends. The construction sector shrank even more rapidly than it had grown before the crisis, probably in response to the large stock of unsold houses. The rate of contraction of the housing sector in Spain and Ireland from 2007 to 2009 was much faster than that during the bust phase of construction cycles in other countries. In Germany, the share of construction in total employment fell from 8.5% at the peak of the unification boom in 1995 to 5.5% in 2006, a change of 3 percentage points in about 10 years. In Spain and Ireland, the share fell by 4 and 6 percentage points, respectively, in just three years.[7]

... but finance did not

Only the financial sector showed no sign of shrinking. Its share in value added receded somewhat in Ireland but increased in Spain and the United States. The ratio of financial sector assets to GDP continued to go up almost everywhere, in part due to unprecedented public support.

Public finances deteriorated sharply as spending increased

Fiscal balances deteriorated significantly during the crisis and have not improved substantially since. Massive outlays by governments to save the financial system were only one reason for the sharp rise in deficits. Together with declining tax revenues and increased overall spending in the wake of the recession, they resulted in unprecedented peacetime deficits. Another reason for the weak state of public finances was the overestimation of potential, or sustainable, output in the boom years. The credit-financed housing boom boosted fiscal revenues, but these revenues disappeared during the crisis.

[7] See the much more extensive discussion of previous construction booms in BIS, *76th Annual Report*, June 2006, pp 26–8.

Some countries used the increase in revenues to reduce their public debt/GDP levels (Graph II.3), but some of the additional revenues were absorbed by increased spending.

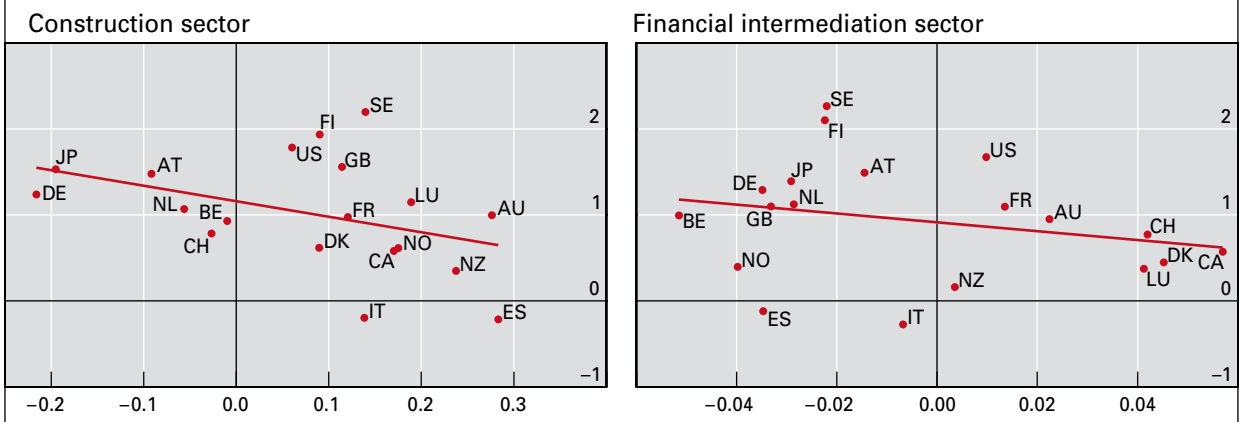
Sectoral imbalances

Unbalanced growth

Growth in the years before the financial crisis was heavily weighted towards the increasingly bloated construction and financial sectors, and the effect of their prolonged rapid expansion was probably to reduce growth in the rest of the economy. Of course, because the financial sector allocates capital throughout the economy, its expansion can actually stimulate overall growth. But as with the growth of any sector, expansion of the construction and financial industries after a point would remove resources from the rest of the economy. The expansion of the capital-intensive construction sector would make it more difficult for other sectors to attract capital. And a massively expanding financial industry would probably make it more difficult for other knowledge-intensive industries to attract highly skilled labour.[8]

The cross-country evidence indicates that, indeed, the boom in construction and financial intermediation coincided with lower productivity growth in the rest of the economy (Graph II.5). The most notable example is the construction sector in Spain, where the employment share (horizontal axis of the left-hand panel) grew on average by 0.3 percentage points each year from 2000 to 2007, while productivity in the rest of the Spanish economy (the vertical axis) saw virtually no gain. The effect also appears for finance (Graph II.5, right-hand

Productivity growth and sectoral imbalances[1]



AT = Austria; AU = Australia; BE = Belgium; CA = Canada; CH = Switzerland; DE = Germany; DK = Denmark; ES = Spain; FI = Finland; FR = France; GB = United Kingdom; IT = Italy; JP = Japan; LU = Luxembourg; NL = Netherlands; NO = Norway; NZ = New Zealand; SE = Sweden; US = United States.

[1] The horizontal axes represent the average annual percentage point change in the share of sectoral employment in total employment from 2000 to 2007. The vertical axes represent the average annual percentage change in labour productivity of the total economy excluding the indicated sector from 2000 to 2007.

Sources: OECD, STAN; BIS calculations. Graph II.5

[8] See T Philippon and A Reshef, "Wages and human capital in the US financial industry: 1909–2006", *NBER Working Papers*, no 14644, January 2009.

panel), although to a lesser degree.[9] However, a more rigorous econometric analysis suggests that the effect in the case of financial intermediation may have been even stronger than for construction (see box).

Other sectors will have to take over from construction and financial intermediation as the engines of growth. Which sectors will do so is difficult to say, since past performance is not necessarily a good guide to the future. Nonetheless, the likely (relative or absolute) stagnation of construction and finance could liberate resources for use in other sectors – so long as authorities do not prevent such a reallocation through subsidies or other measures that preserve the status quo.

Private sector debt reduction

Debt reduction ...

Many of the loans made during the housing boom, particularly its final stages, were extended on the implicit or explicit assumption that house prices would continue to go up. This premise turned out to be false. It is therefore natural that both lenders and borrowers would react and adjust their target rates of debt to the new reality.

... has begun ...

Households in Ireland, Spain, the United Kingdom and the United States have begun to reduce their debt-to-income ratios (Graph II.6), although to varying degrees. In the United States and the United Kingdom, where the process has gone furthest, household debt has fallen by approximately 15 percentage points to 120% and 150% of disposable income, respectively. In the aggregate, Spanish households reduced their debt-to-income ratio by 8 percentage points between 2008 and early 2010, but the ratio has since rebounded. The debt ratio of Irish households has fallen by 7 percentage points from its peak.

... but history suggests that the process is not yet complete

The historical record suggests that households will further reduce their debt. Almost all systemic banking crises that were preceded by an expansion in the ratio of credit to GDP were followed by marked decreases in that ratio.[10] The extent of debt reduction varied across episodes but was generally substantial. On average, private credit-to-GDP fell by 38 percentage points over a period of about five years. The magnitude of the debt reduction was only slightly smaller than that of the increase before the crisis (which was 44 percentage points on average).

Drivers of debt reduction

The debt-to-income ratios of households and other sectors can be reduced in essentially four ways: (i) repayment; (ii) default, write-offs or debt forgiveness; (iii) higher real disposable incomes; and (iv) inflation, by reducing the real value of debt.[11] The available data allow us to break down the decline in the

[9] The fact that the negative relationship is less clear-cut in the case of financial intermediation may have to do with the previously mentioned positive effects that expansion of the financial sector can deliver.

[10] See G Tang and C Upper, "Debt reduction after crises", *BIS Quarterly Review*, September 2010, pp 25–38. Their results are based on a sample of 20 systemic banking crises that were preceded by a build-up in the ratio of credit to the non-financial private sector to GDP. Except in three cases (Argentina, 1995; Paraguay, 1995; and Korea, 1997), these crises were followed by a substantial period of debt reduction.

[11] Assuming that loan contracts are in nominal terms, as is generally the case in the economies we are examining.

The effect of sectoral imbalances on growth: the case of manufacturing

The economics literature has generally found that a larger financial sector is associated with higher GDP growth. Indeed, sectors that face financing difficulties should benefit more from a larger financial sector. The recent experience, however, suggests a more nuanced view. Rapid increases in credit and asset prices may inflate the profitability of the financial sector to the point that it diverts resources away from other sectors. A conjecture is that the sectors most likely to be disadvantaged are those that, like financial services, depend heavily on highly skilled labour. To test this conjecture, we use the propensity to undertake research and development (R&D) as a proxy for the demand for highly skilled labour. Focusing on manufacturing industries, we identify those that have a higher R&D intensity than others. We then estimate whether a fast-growing financial sector – and, separately, whether a fast-growing construction sector – would have a disproportionate effect on the growth of the higher-intensity, versus the lower-intensity, manufacturing industries. The negative coefficients reported in Table II.A for value added growth and employment growth in the financial intermediation and construction sectors (first and third lines and fifth and seventh lines of data) suggest that they would have such an effect and that it would be stronger in the case of finance than in the case of construction.

Sectoral imbalances, R&D intensity and manufacturing growth

Dependent variable: growth rate of real value added

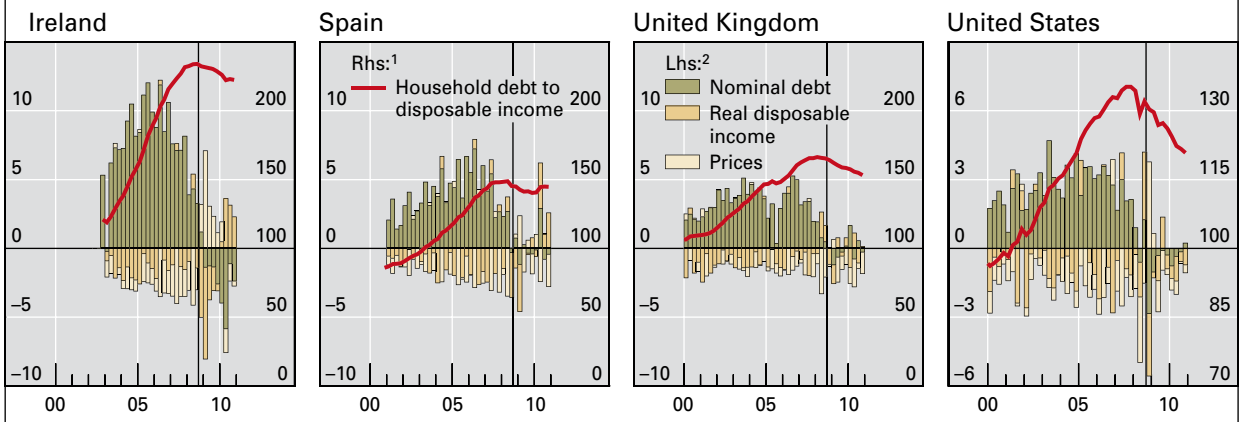
Interaction of R&D intensity with sector growth or sector share for value added or employment[1]	R&D intensity[2]							
	Value added				Manufacturing			
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Financial intermediation sector:								
Value added:								
Growth[3]	**–3.73*****				**–2.36*****			
Initial share in total economy[4]	11.58				5.35			
Employment:								
Growth[3]		**–7.12****				**–5.58*****		
Initial share in total economy[4]		32.13				21.45**		
Construction sector:								
Value added:								
Growth[3]			**–5.36*****				**–2.40*****	
Initial share in total economy[4]			–9.14				–19.71	
Employment:								
Growth[3]				**–5.33*****				**–2.27***
Initial share in total economy[4]				12.6				11.45
Memo:								
Number of observations	*317*	*317*	*338*	*338*	*309*	*309*	*330*	*330*
R^2	*0.36*	*0.325*	*0.355*	*0.325*	*0.339*	*0.325*	*0.331*	*0.302*

Parameters are estimated with a generalised least squares regression based on a cross-country cross-industry panel comprising 18 OECD countries and 27 manufacturing industries. The dependent variable – the growth rate of real value added – is computed for each industry and each country of the sample over the period 2000–07. Estimations include country and industry dummies as well as a control variable for initial conditions (the log of the ratio of industry value added in 2000 to total manufacturing value added in 2000 for each industry in each country of the sample). ***/**/* indicate significance at the 1/5/10% level.

[1] Explanatory variables are defined as the products of the indicated variables. [2] The ratio of R&D expenditures to value added (columns (i)–(iv)) and to total manufacturing R&D expenditures (columns (v)–(viii)) for the corresponding industry in the United States (which for this purpose represents the technological frontier) for the period 1980–89. [3] Computed over the period 2000–07. [4] Computed for the year 2000.

Source: BIS calculations based on OECD STAN data. Table II.A

Household debt ratios



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

[1] In per cent, both in nominal terms. [2] Contributions to the percentage point change in the ratio of household debt to disposable income, in percentage points.

Sources: National data; BIS calculations. Graph II.6

ratio of debt to disposable income into three of these components (Graph II.6): repayment/default (without distinguishing between the two;[12] shown by "Nominal debt" in the graph), real income growth ("Real disposable income") and inflation ("Prices").[13] The relative weight of these drivers varies across countries. Households in all four countries shown in Graph II.6 have cut their nominal debt levels, with Ireland leading, followed by the United States. Real disposable income proved more resilient during the crisis and continued to grow even as GDP fell, thus lowering debt ratios. In Ireland and, to a lesser extent, the United States, the damping effect of repayments/defaults and of growth in real disposable income was at least partly offset by a drop in consumer prices immediately after the crisis, which pushed up the real value of debt.

The drivers of debt reduction have changed with time. The crisis in Ireland and Spain turned out to be more structural than it first appeared, and disposable income in these two countries began to fall in 2010, thus driving up debt ratios.

High debt makes households vulnerable to shocks

To put the debt issue into perspective, it is worth considering what the impact on growth would be if debt ratios were not cut. High debt levels make households (and firms) more vulnerable even to small shocks. In a recent survey, more than one fifth of US households with mortgage debt reported that their mortgage balance exceeded the value of their house.[14] The proportion was higher among the young and those living in states with particularly large

[12] Disentangling the two factors is difficult. Write-offs do not reduce the amount of outstanding debt one-to-one since the buyers of repossessed homes may take on new debt. See M Brown, A Haughwout, D Lee and W van der Klaauw, "The financial crisis at the kitchen table: trends in household debt and credit", Federal Reserve Bank of New York, *Staff Reports*, no 480, December 2010.

[13] For details of this decomposition, see Tang and Upper, op cit.

[14] R Chakrabarti, D Lee, W van der Klaauw and B Zafar, "Household debt and saving during the 2007 recession", Federal Reserve Bank of New York, *Staff Reports*, no 482, January 2011.

increases in house prices – precisely the groups that are also more likely to have lost their jobs in the Great Recession or to have experienced other types of income shocks. In some European economies, the overwhelming majority of mortgages are linked to short-term money market rates. These rates are currently very low, but at some point they will increase and add to households' debt burden, further heightening their vulnerability if debt ratios remain high.

How to reduce debt?

That said, there is a risk that reducing debts rapidly in order to lessen the vulnerability of households to shocks will precipitate a collapse in private consumption. Public policy cannot fully manage this risk. What it can do is facilitate growth in other sectors of the economy that could take over from construction and household consumption as the engine of recovery.

There are also ways to reduce debt that are unlikely to be effective. Surprise inflation is one of them. Admittedly, a burst of surprise inflation will reduce the real value of debt, thus redistributing wealth from lenders (and, ultimately, savers) to borrowers. That said, because surprise inflation is generally associated with lower real incomes if wage contracts are in nominal terms, it could offset the impact on the real value of debt. Moreover, the transfer of wealth will not occur if inflation is anticipated. In this case, higher inflation will tend to drive up nominal interest rates and thus increase borrowers' debt servicing costs. This, in turn, acts like a forced acceleration of repayment. Regardless of whether inflation is anticipated, it imposes the substantial long-term cost of reduced central bank credibility.[15]

Public debt and fiscal consolidation

Public debt has soared since the crisis ...

Public debt surged after the default of Lehman Brothers in September 2008 (Table II.1), particularly in the countries that had experienced housing booms. The deterioration in governments' fiscal position was due to a combination of lower tax revenues and higher spending.

... as automatic stabilisers drove up deficits

There are obvious reasons why deficits increase during recessions. Automatic stabilisers support spending and were one reason why the Great Recession did not turn into another Great Depression. The problem is that the deficits have shown no signs of declining two years into the recovery and that debt levels continue to soar. Today's fiscal deficits are largely structural (Graph II.7), suggesting that governments need to do more to restore fiscal positions. Moreover, the cyclical component of fiscal deficits may be overestimated if, as argued above, measures of potential output are upwardly biased.

The reduction in government debt before the crisis was not sustainable ...

This picture of high structural deficits and rapidly increasing debt levels contrasts with surpluses and declining deficits before the crisis. Several countries did use the good years to reduce their public debt. Government debt in Canada, Ireland, Spain and the United Kingdom fell markedly between 2000 and 2007, and it remained broadly stable in France and the United

[15] In any case, inflation in the advanced economies in the short term is most likely to be of the cost-push variety because of rising commodity prices. Cost-push inflation directly reduces the capacity of households and firms to spend and thus makes debts even more burdensome.

Public debt[1]

As a percentage of GDP

	2002	2007	2010	2011	2012
United States	56.8	62.0	93.6	101.1	107.0
Euro area	75.2	71.6	92.7	95.6	96.5
Germany	62.2	65.3	87.0	87.3	86.9
France	67.3	72.3	94.1	97.3	100.0
Italy	119.4	112.8	126.8	129.0	128.4
Spain	60.3	42.1	66.1	73.6	74.8
Netherlands	60.3	51.5	71.4	74.3	75.2
Belgium	108.4	88.1	100.7	100.7	100.4
Greece	117.6	112.9	147.3	157.1	159.3
Portugal	65.0	75.4	103.1	110.8	115.8
Ireland	35.2	28.8	102.4	120.4	125.6
Japan	152.3	167.0	199.7	212.7	218.7
United Kingdom	40.8	47.2	82.4	88.5	93.3
Total OECD	71.6	73.1	97.6	102.4	105.4

[1] General government gross financial liabilities; for 2011 and 2012, forecasts.

Source: OECD, *Economic Outlook*, vol 2011/1. Table II.1

States. However, this favourable trend concealed vulnerabilities, in particular the reliance of apparently sound fiscal positions on a small number of dynamic sectors such as construction and finance. For example, Suárez (2010) estimates that, in the case of Spain, the "construction and real estate sectors might have inflated fiscal revenues by 2.9 percent of GDP at the peak of the boom".[16]

... being highly dependent on the housing and financial sectors

The view that fiscal accounts can be highly dependent on some particular sectoral developments is borne out by a more systematic investigation. Indeed, government revenues and government total balance do improve considerably when the construction sector expands, after controlling for the usual determinants of fiscal positions (Graph II.8, left-hand panel). For instance, an increase in the construction sector share in value added by 1 percentage point is estimated to improve the cyclically adjusted fiscal balance by 0.3 percentage points of potential GDP. In contrast, changes in the relative size of the financial intermediation sector do not have significant effects on net fiscal positions. The specific effect of construction booms is therefore to boost the revenue side of fiscal accounts. To be sure, this jolt to revenues is likely to come from various sources. Revenues may be driven up by the one-off component associated with construction booms, but the overestimation of potential output can also contribute to improving the cyclically adjusted fiscal position.

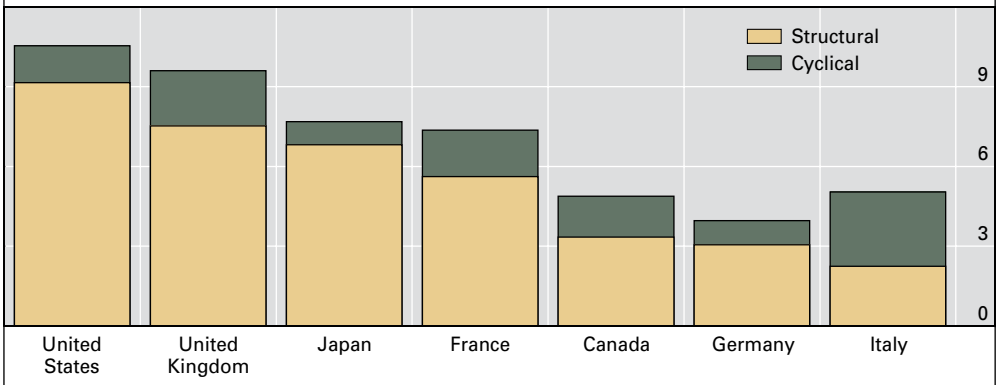
High sensitivity of tax revenue to the bloated construction sector ...

With these calculations in hand, it is possible to compute what fiscal positions would have looked like had the construction boom not happened (Graph II.8, right-hand panel). In the case of Ireland, for instance, the fiscal surplus in 2007 was almost entirely due to the bloated construction sector;

[16] J Suárez, "The Spanish crisis: background and policy challenges", *CEPR Discussion Papers*, no 7909, July 2010.

Fiscal deficits in 2010

As a percentage of GDP



Sources: OECD, *Economic Outlook*; BIS calculations. Graph II.7

without the construction boom, its fiscal position would have been close to balance. In Spain, approximately one third of the surplus in 2007 was due to construction, a result somewhat lower than Suárez's bottom-up estimates but nonetheless substantial.[17]

... could pose challenges ahead

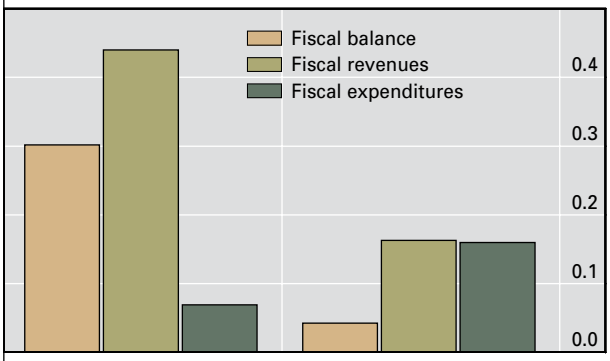
The revenue intensity of construction means that the gap between revenues and expenditures opened by the crisis is unlikely to disappear even as the economy recovers. This, in turn, implies that governments cannot avoid strong measures to adjust their fiscal positions in the short run, in addition to a credible plan over the medium term. Different circumstances call for different approaches to how consolidation should be carried out while minimising its short-term costs in terms of growth. Yet fiscal policy can strongly influence reallocations across industries through measures such as cuts in subsidies to declining industries and support for retraining of workers, which should help to both raise growth and reduce unemployment. For the longer term, this assessment illustrates the need to go beyond balancing budgets over the cycle. Besides some well known challenges ahead – like ageing – the above analysis suggests that the true state of public accounts may reveal itself only during downturns, when sectoral imbalances tend to eliminate what in fact were only temporarily engorged revenues.

Last but not least, the state of public accounts has fundamental implications for financial stability, which calls for further caution. Valuation losses on government bonds, for instance, directly affect the creditworthiness of the institutions holding them and reduce the amount of collateral they can borrow against. This mechanism appears to be at work in Greece, where banks have found it increasingly difficult to raise funding as investors focus on the risk of a restructuring of the country's public debt. But most obviously, large-scale government support for banks in trouble represents a severe drain on the treasury (Ireland is a case in point) which cannot be absorbed in the absence of a strong fiscal position.

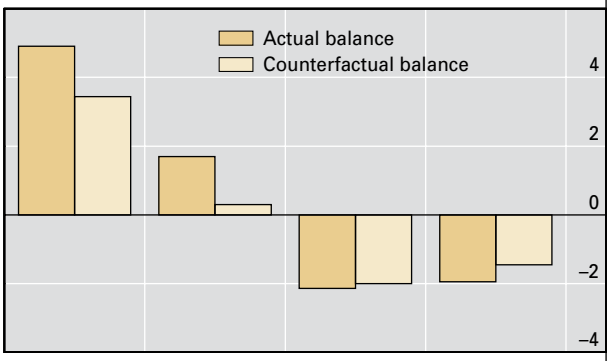
[17] We estimate the effect on revenues to be around 2.2% of GDP, compared with 2.9% in Suárez, op cit.

Fiscal balance in construction and financial booms

Sensitivities[1]



Economic impact with and without the construction boom[2]



[1] Parameters come from a panel data estimation over the period 1990–2007, in which the ratios of the cyclically adjusted fiscal balance, cyclically adjusted fiscal revenue and cyclically adjusted fiscal expenditure to potential GDP are each a function of the share of construction and financial intermediation in GDP, controlling for the lagged dependent variable, the output gap, the lagged ratio of government debt to GDP, and country and time dummies. Set of countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States. [2] Cyclically adjusted fiscal balance in 2007 as a percentage of potential GDP.

Sources: OECD, *Economic Outlook*, STAN; BIS calculations. Graph II.8

Conclusions

Unsustainable growth pre-crisis

The key message of this chapter is that growth during the boom years before the crisis was unsustainable and that the imbalances built up during those years threaten to hold back growth in the advanced economies for some time to come.

The sectoral composition of the economy has to change

Real estate and finance are unlikely to drive growth in the future as much as they did prior to 2007. Many countries are faced with large amounts of unsold properties, and it will take years to absorb this overhang. Similarly, the growth in the financial sector in the years up to 2006–07 was at least partly a response to inadequate regulation and is thus unlikely to be repeated in the coming years (see Chapter V). Therefore the sectoral composition of the economy needs to change if we want to take advantage of new opportunities for growth. Propping up declining sectors risks crowding out more dynamic sectors.

Fix the banking system to restore availability of credit

Policy should also put the banking system in order so that future growth sectors have access to healthy credit. This means that banks need to have sufficient capital to be able to take losses and write off doubtful assets. The example of Japan in the mid-1990s shows that unrecognised losses lead to a misallocation of resources, create uncertainty and thus hinder economic growth. When banks are not forced to write down loans (and shrink their books), they are actually provided with incentives to "evergreen", ie to roll over non-performing loans to firms that should have been bankrupt.[18] In Japan, evergreening contributed to stagnation by preventing restructuring

[18] See J Peek and E Rosengren, "Unnatural selection: perverse incentives and the misallocation of credit in Japan", *American Economic Review*, vol 95, no 4, September 2005, pp 1144–66.

and thus curtailing profit opportunities for healthy firms.[19] It was only after a rigorous examination of banks' non-performing loan portfolios in 1998 and a second round of capital infusions that banks in Japan began to lend again.

Growth will help debt reduction

Getting the economy back on a growth path through the policy measures described above will greatly help the necessary process of public and private debt reduction. But while growth is an essential element of the debt reduction process, it cannot be the only one. Households are already dedicating a significant fraction of their income to repaying debt.

Required: fiscal consolidation …

Government debt, by contrast, continues to go up. Running large budget deficits was appropriate during the crisis and its immediate aftermath, when expansionary fiscal policy helped prevent the worst outcomes. With recovery under way, however, running large deficits is becoming more and more dangerous. Market sentiment can quickly change, forcing governments to take even more drastic measures than those that would have been necessary at an earlier stage.

Fiscal consolidation will not happen overnight, but it has to start now. The measures taken will vary across countries but, if they are to be credible, they will have to address the fundamental weaknesses of the fiscal framework. Depending on the country, governments variously face large future liabilities from ageing populations,[20] unsustainably high entitlements and unbalanced

Boom in the emerging market economies: falling into the same trap?

In per cent

	Real GDP growth	Inflation	Credit growth		Credit/ GDP	General govt fiscal balance/ GDP[1]	General govt structural fiscal balance/ potential GDP[1]	Public debt/ GDP[1]	House price growth	
	2010			2006–10 average	2010					2006–10 average
Brazil	7.5	5.0	26.0	24.7	53.4	–2.9	–3.0	66.1	…	…
India	10.4	9.6[2]	26.8	21.8	53.5	–9.4	–10.0	72.2	…	…
China	10.3	3.3	20.3	20.2	132.0	–2.6	–2.9	17.7	10.6	11.3
	2006			2002–06 average	2006					2002–06 average
Ireland	5.3	2.7	23.4	20.3	181.4	2.9	–4.2	24.8	13.6	10.7
Spain	4.0	3.6	24.3	19.2	167.2	2.0	0.7	39.6	10.4	15.0
United Kingdom	2.8	2.3	13.3	10.6	170.8	–2.6	–2.8	43.1	6.3	11.1
United States	2.7	3.2	9.6	8.3	58.9	–2.0	–2.0	61.1	7.1	8.1

[1] April 2011 estimate. [2] Wholesale prices.

Sources: IMF, *Fiscal Monitor*, *World Economic Outlook*; CEIC; national data. Table II.2

[19] See 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.

[20] See BIS, *80th Annual Report*, June 2010, pp 64–6.

sources of revenues, to name but three factors. Many of the required structural changes will take time to generate lower deficits, and so it is important to start implementing them now. A legislated schedule for their implementation would make such reforms more credible and would reduce uncertainty about possible consolidation measures. That said, promises lose credibility if their implementation cannot be monitored.

... and new fiscal strategies

But fiscal challenges go beyond the immediate need to reduce deficits and bring down debt levels. More structural changes to the tax system are needed to avoid a rerun of the credit booms that ultimately led to the crisis. The tax system is still biased towards debt accumulation, for example through the tax deductibility of some interest payments. More generally, with government taxes and expenditures accounting for an increasing fraction of total output in the future, the distortions implied by fiscal policy will become ever more important, and even revenue-neutral reforms that reduce these distortions could be beneficial.

The crisis has revealed important weaknesses in fiscal frameworks, which need to be addressed. In particular, budgeting before the crisis did not take into account the sensitivity of public finances to asset price and credit booms. If we do not want to repeat this mistake, we need better measures of cyclically adjusted deficits that not only filter out the impact of the normal business cycle but also that of asset price and credit booms. In addition, we need fiscal rules that ensure that temporary increases in revenues are treated as such and do not lead to excessive optimism in assessing fiscal accounts.

In addition, the close relationship between fiscal and financial stability during the crisis highlights the importance of fiscal room for manoeuvre to deal with future crises, even those not caused by the financial sector. Governments faced with natural disasters, for example, will be able to respond more quickly and thoroughly if they can mobilise large amounts of resources without approaching their borrowing limits.

Similar imbalances are building up in emerging economies

At this writing, many emerging market economies are experiencing rapid growth, booming housing markets and rising indebtedness in the private sector. For instance, Brazil, China and India all saw credit grow by an annual average of more than 20% between 2006 and 2010, equal to or greater than the rates of growth recorded in Ireland and Spain (Table II.2). The emerging market economies escaped the worst of the last crisis. If they can heed what perhaps was its most important lesson – that prevention is better than cure – they may be able to avoid suffering their own version of it.

III. The risks of international imbalances: beyond current accounts

Globalisation provides large, measurable economic benefits. It expands trade flows and allows consumers to enjoy a range of goods and services vastly larger than that produced by their domestic economy. And the international financial flows associated with globalisation free firms' investment decisions from domestic financing constraints while allowing investors to reduce risks and optimise returns by globally diversifying their assets. International financial flows thus enhance the efficiency with which capital and know-how are allocated.

Yet, by widening the scope for economic activity, globalisation also widens the potential exposure to instability. The same international links that increased welfare and efficiency in recent decades served as a powerful propagation channel for financial and economic shocks during the 2007–09 crisis. In the early stages, rapidly falling asset prices wreaked havoc on the balance sheets of international investors; in the later stages, a collapse in world trade punished many export-oriented economies.

Before the financial crisis, the main risk to the global economy was thought to be the presence of large current account surpluses and deficits. Thereafter, at the height of the crisis, threats to the solvency of major financial institutions were the focus of attention. Now, with the waning of the crisis, the discussion is returning to the risks posed by current accounts; and indeed, though they declined during the crisis, global current account imbalances remain large.

Certainly, one risk of persistent current account imbalances is that they will drive policymakers towards protectionism. Furthermore, net financial flows, which necessarily run from economies with a current account surplus to those with a deficit, create risks. An economy with large net financial inflows may suffer a sharp and disorderly depreciation of its currency should those flows suddenly reverse. Also, the financial sector may be unable to efficiently absorb these inflows, which could lead to financial instability.

Current account imbalances are declining, but only slowly. Structural adjustment in terms of saving and investment is ongoing in major surplus and deficit countries, which will reduce imbalances in the long run. Real exchange rate adjustment is also helping to reduce current account imbalances. In the near term, accelerating the real exchange rate adjustment would require more flexibility in terms of domestic prices or nominal exchange rates or both. Because policymakers need to maintain price stability, the burden of adjustment in the real exchange rate should rest on the nominal exchange rate.

International coordination could help distribute the burden of adjustment across major surplus and deficit countries and break the current policy gridlock. For example, given that the costs of increased exchange rate flexibility would fall on China, the United States could share the burden by pursuing tighter fiscal and monetary policies. Furthermore, among surplus emerging economies,

the country that allows its currency to appreciate first loses competitiveness relative to its peers. Coordination would reduce this first-mover disadvantage.

The dangers posed by imbalances in current accounts and in net capital flows are important, but the financial crisis also highlighted the need to look beyond them. If we are to fully appreciate the growing risks of financial imbalances, we must also look to gross financial flows. Gross financial inflows and outflows are substantially larger than the net flows associated with the current account and are often large even where current account balances are negligible. It is these gross flows, not the net, that must be accommodated by the receiving financial sector; and a sudden stop of gross flows risks economic crisis in the receiving economy.

Gross flows also pose a threat to the extent that they contribute to vulnerabilities in the interconnected balance sheets of financial institutions, firms and households around the world. They can result in currency, liquidity and credit risk mismatches because the attributes of assets acquired through outflows are unlikely to exactly match those of the liabilities acquired through inflows – both at the level of individual market participants and in the aggregate. Furthermore, even if balance sheet positions are perfectly matched, they still give rise to counterparty risks. During the financial crisis, a sudden deterioration in balance sheets caused a large decline in economic activity, demonstrating that even seemingly small differences between the attributes of assets and liabilities – along with counterparty risks – can form a powerful propagation channel for shocks.

The first line of defence in managing the risks associated with gross financial flows and financial imbalances is the use of macroeconomic policies that maintain monetary stability and fiscal sustainability. Monetary policy can also be used to "lean against the wind" and resist outsize increases in credit and asset prices. Policies that strengthen prudential frameworks and the financial infrastructure form a useful second line of defence that can limit financial imbalances and minimise the fallout in the event of a crisis. As a last resort, and in extraordinary circumstances, capital controls might be used as a stopgap measure to temporarily address some risks of large gross financial inflows. Furthermore, steps being taken to fill current data gaps will allow a better assessment of vulnerabilities that may develop in international balance sheets.

Finally, current account and financial imbalances are linked. The financial crisis showed that effectively managing the risks posed by both types of imbalance is crucial for sustainable global growth and financial stability. Further, some of the risks arising from current account imbalances are similar to those arising from gross flows. As noted, a sudden reversal of either can trigger domestic economic and financial crises. And some policy measures that would ameliorate one form of imbalance would also address the other. For instance, increased nominal exchange rate flexibility would not only accelerate adjustment in current account imbalances, but would also contribute to financial stability in surplus emerging economies by relieving inflationary pressures.

We first discuss today's large current account imbalances and the potential for using policy coordination to reduce the risks they pose. We then analyse

the risks associated with large gross financial flows and the most effective policy responses. We conclude by showing how current account and financial imbalances are related.

Current account balances: risks and responses

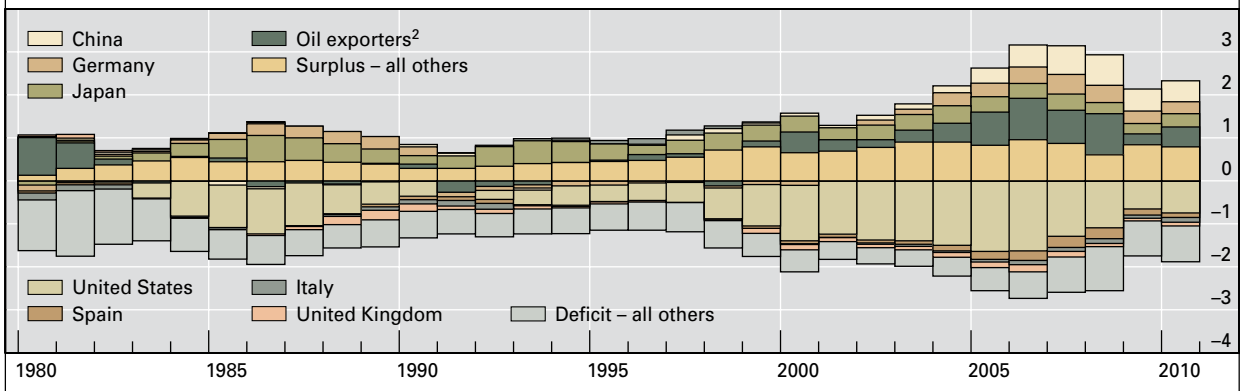
Current account balances remain substantial (Graph III.1). The United States, Italy, Spain and the United Kingdom run large, persistent deficits while China, Japan and Germany run large, persistent surpluses. Summed together as positive quantities, current account surpluses and deficits remained around 2% of global GDP during the 1980s and early 1990s and then rose steadily in the lead-up to the financial crisis, to around 6%. Although it has since decreased to 4%, the aggregate sum remains high by historical standards.

Current account balances are concentrated. Most of the growth in the balances since 1994 has occurred in the United States and East Asia (Graph III.2, left-hand panel) and in the euro area (centre panel). Comparing the 1980–94 period with 2000–10, the average regional balance as a share of regional GDP rose about 2.6 percentage points for the United States and East Asia and 1.7 percentage points in the euro area, but only about 1.1 percentage points in the rest of the world. This concentration explains why policy discussion often focuses on a few countries with the largest balances, including China and the United States.

Because much of the reduction in current account balances during the crisis was a cyclical phenomenon, rather than structural, future increases are likely. For example, many advanced economies with current account deficits, including the United States, experienced sharp contractions in private domestic demand; as these economies recover and private consumption and investment grow again, domestic demand is likely to increase. Without substantial fiscal consolidation, the increased demand is likely to further widen current account

Global current account balances[1]

As a percentage of world GDP

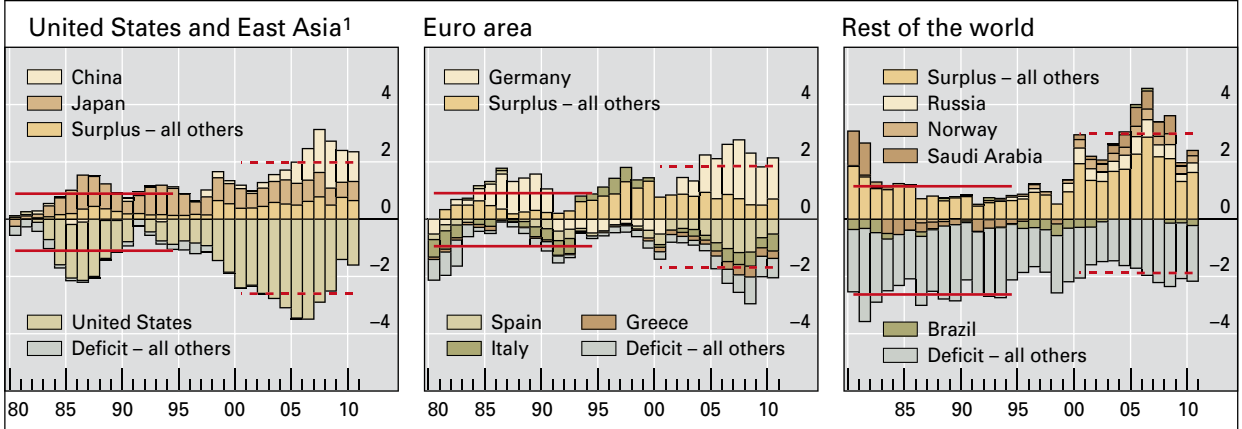


[1] Data for 2010 are IMF estimates. [2] Algeria, Angola, Azerbaijan, Bahrain, Brunei, the Republic of Congo, Ecuador, Equatorial Guinea, Gabon, Iran, Iraq, Kazakhstan, Kuwait, Libya, Nigeria, Oman, Qatar, Russia, Saudi Arabia, Sudan, Syria, Trinidad and Tobago, Turkmenistan, the United Arab Emirates, Venezuela and Yemen.

Source: IMF, *World Economic Outlook*. Graph III.1

Regional current account balances

As a percentage of GDP



The red lines denote surplus and deficit averages for the economies listed for the periods 1980–94 (solid) and 2000–10 (dashed).

[1] China, Chinese Taipei, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore and Thailand.

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

deficits. Conversely, macroeconomic stimulus spurred economic growth in emerging economies with current account surpluses, notably China; the phase-out of the stimulus is likely to reduce domestic demand and may boost current account surpluses.

Risks

Current account imbalances risk disorderly exchange rate adjustment …

Persistently large current account deficits are unsustainable and so must eventually come to an end. The question, therefore, is not whether, but how, these imbalances will be corrected. The main risk is that the adjustment will be disorderly and detrimental to global macroeconomic and financial stability.

Should the financial flows complementing current account deficits suddenly reverse course, economies with large deficits will suffer disorderly currency depreciations. Before the financial crisis, the large US current account deficit was regarded as a major threat to global stability because of the risk it posed of a disorderly decline in the value of the US dollar. The current ability of the United States to easily finance its deficit cannot be taken for granted. Past examples of a number of smaller economies in deficit suggest that market confidence can evaporate quickly, forcing sudden and costly adjustment. An abrupt rebalancing of global demand following a precipitous depreciation of the US dollar would have far-reaching ramifications for the global economy.

The domestic financial sector might also struggle to efficiently absorb the financial inflows that are the counterpart to the current account deficit. A failure to allocate these inflows to productive uses is especially likely if financial institutions are not well regulated. The resulting capital misallocation – to real estate lending, for example – might lead to boom-bust cycles and eventually to financial instability. In fact, some economists attribute the pre-crisis housing boom in the United States partly to large capital inflows, which are the

counterpart of current account deficits. Continuing global imbalances mean that similar financial stability risks will also continue.

... and protectionism

Last but not least, current account imbalances might prompt deficit countries to turn to protectionist measures. The risk is especially large if the policies of the surplus countries are seen as putting deficit countries at a competitive disadvantage. Escalating protectionism could eventually lead to trade wars. Policymakers are currently showing some resistance to such an approach, but the risk of a turn in that direction seems to be growing.

The policy impasse

Reducing current account imbalances requires a rebalancing of global demand. Deficit countries need to shift from domestic to external sources of demand, and surplus countries need to shift in the opposite direction. Viewing the required change in terms of quantities, deficit countries require some combination of increased domestic saving and reduced consumption or investment; and surplus economies require the opposite. In terms of prices, a real depreciation of deficit country currencies would increase international competitiveness and help bring about the desired changes in quantities. Real appreciation of the currencies of surplus countries would work towards the same end. Achieving those adjustments in the real exchange rate requires flexibility of domestic prices and wages or of nominal exchange rates or both.

However, adjustment is slow ...

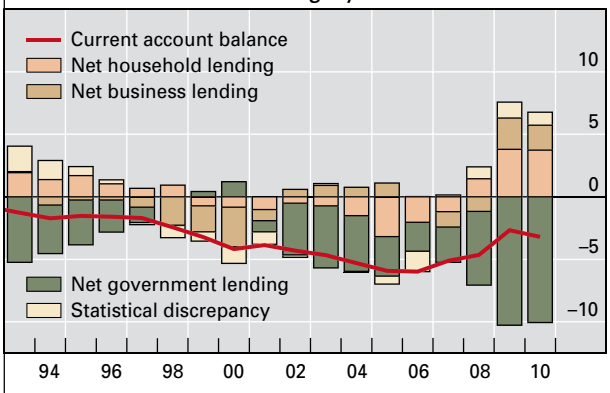
Although current account imbalances have declined somewhat from the levels immediately preceding the crisis (see Box III.A), the current rate of adjustment appears sluggish, and further deliberate adjustment on a significant scale does not seem likely under current conditions. A major surplus or deficit country will probably continue to resist price or nominal exchange rate adjustments if it must take on all the adjustment costs.

In particular, fearing the large costs of monetary instability, deficit countries resist the deflationary pressures generated by their current account

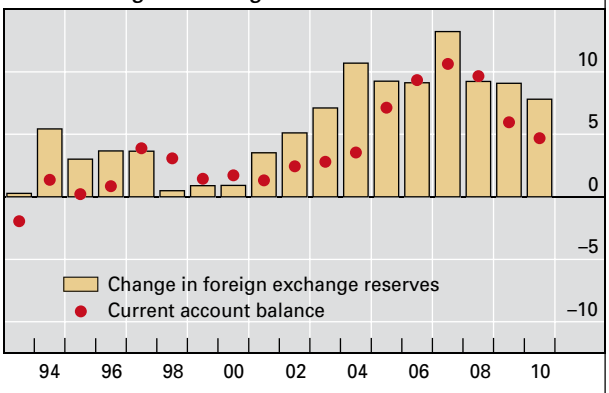
Resisting real exchange rate adjustment

As a percentage of GDP

United States: net lending by sector[1]



China: foreign exchange reserves



[1] Net lending is defined as gross saving less gross investment.

Sources: IMF, *World Economic Outlook*; Bureau of Economic Analysis, NIPA, table 5.1; national data. Graph III.3

Box III.A: Some evidence of adjustment

A correction of global imbalances in the current account requires offsetting adjustments in saving and investment – that is, in quantities – supported by complementary shifts in real exchange rates that adjust relative prices. Some tentative signs of an adjustment in saving and investment have emerged. In the United States, private saving has increased since the peak of the financial crisis. In China, the government plans to increase domestic consumption, and ongoing reforms in the governance structure of major corporations may reduce their currently high level of saving.

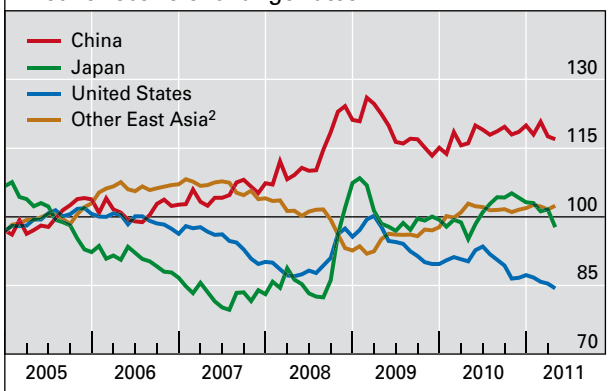
Relative price adjustment, via changes in real exchange rates, is supporting the reduction in current account imbalances. That is, prices in deficit countries, expressed in the currency of surplus countries, are tending to rise more slowly than prices in surplus countries. One measure of international competitiveness is the real effective exchange rate based on unit labour costs. For the US dollar, this rate fell by around 10% between 2004 and 2009, which should assist in reducing the current account deficit. While official unit labour cost data are not available for China, recent rapid wage growth suggests that adjustment is taking place there too. This partly results from a policy of raising minimum wages; but it may also indicate that China is approaching an end to its supply of surplus labour, which in turn would imply even faster wage increases in the future.[1]

The available measures of the real effective exchange rate based on consumer price inflation also point to an ongoing adjustment. The real effective exchange rate of the renminbi has risen by around 15% in the past five years (Graph III.A, left-hand panel). Meanwhile, the US dollar rate, despite strong gains during the financial crisis, has declined by around 15% over the same period. The real appreciation of the renminbi in dollar terms has been due to a combination of inflation in China exceeding that in the United States and nominal dollar appreciation of the renminbi (Graph III.A, right-hand panel). These measures may understate the degree of adjustment in China. Recent wage increases are likely to pass through to higher prices for services, which are systematically underweighted in China's consumer price index, which is used to calculate the inflation-based real exchange rate.

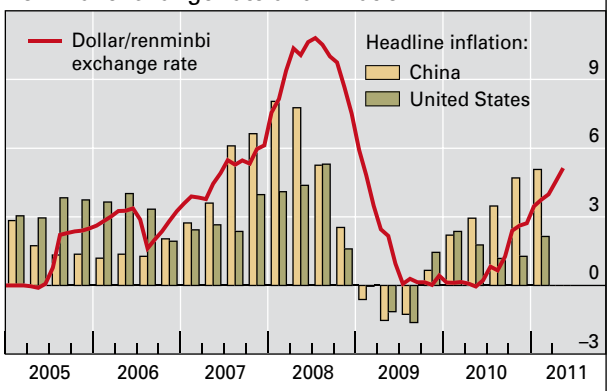
[1] According to the labour supply argument, increases in the demand for labour in China did not previously increase real wages there substantially because the demand was met from a surplus supply of agricultural workers. As the surplus supply becomes depleted, further increases in labour demand will imply real wage gains that are likely to drive faster real appreciation of the renminbi.

Real exchange rate adjustment

Real effective exchange rates[1]



Nominal exchange rate and inflation[3]



[1] In terms of relative consumer prices; increase = appreciation; BIS broad index, 2005 average = 100. [2] Weighted average of Chinese Taipei, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand based on 2005 GDP and PPP exchange rates. [3] Annual changes in bilateral exchange rate and consumer prices, in per cent.

Sources: National data; BIS. Graph III.A

positions, and surplus countries resist the corresponding inflationary pressures. This resistance on both sides of the current account divide is consistent with domestic policy objectives, especially taking the resistance on the other side as given. The result is gridlock.

... due to countries' domestic policy objectives ...

For example, low policy rates and aggressive fiscal stimulus in the United States substituted for sharply declining private household and business demand (Graph III.3, left-hand panel). Net household lending, defined as gross saving less gross investment, increased from about –3.2% of GDP in 2005 to +3.7% in 2010, while net government lending dropped from about –3.2% to –10.1% in the same period. For a time there was a clear danger of deflation, which the stimulus helped to counter.

... and surplus emerging economies resisting exchange rate flexibility

Likewise, many surplus economies work to limit the speed of nominal currency appreciation. Rapid appreciation would mark an end to their successful export-led growth strategy and probably lead to short-run losses in employment and output. The resistance to rapid appreciation in those economies is thus consistent with their domestic policy objectives.

The resistance can be seen in the foreign exchange reserves they have accumulated in the past decade (Table III.1). In China, large current account surpluses are matched by high rates of reserve accumulation (Graph III.3, right-hand panel). In fact, since 1994, China's reserve accumulation of $2.4 trillion has exceeded its accumulated current account surpluses by around 30%. As a result of reserve accumulation, increases in the nominal exchange rate are smaller than they would otherwise have been.

The accumulation of foreign exchange reserves complicates monetary policy. Without additional measures, an increase in reserves would put downward pressure on interest rates. To maintain monetary stability, and resist inflationary pressures from foreign exchange intervention, China sterilises the impact of its large accumulation of reserves. For the same reason, it has steadily increased required reserve ratios and tightened policy rates.

Overall, the policies in the United States, China and elsewhere to maintain monetary stability and limit nominal exchange rate movement have slowed the rate of adjustment in the real exchange rate.

Resistance makes unilateral adjustment more costly for other countries

Furthermore, policies in the countries on one side of the current account divide make unilateral adjustment more difficult for countries on the other side. For example, the large current account surplus of China increases the incentive to implement macroeconomic policies that stimulate demand in the United States. Conversely, macroeconomic stimulus and, more generally, excess demand in the United States increase the size and cost of the exchange rate adjustment necessary in China to reduce its surplus. Countries on each side may wish to adjust, but neither finds unilateral adjustment to be in its interest. The costs of adjusting are borne disproportionately by the adjusting country and appear to outweigh the domestic benefits in the form of increased financial stability and lower inflation (if the adjuster is a surplus emerging economy) or more sustainable external positions (if the adjuster is a deficit advanced economy). However, adjustment provides a positive externality to all other countries as well, because of increased global macroeconomic stability.

Role for policy coordination

Coordination is needed to overcome the current gridlock

Coordination could overcome this gridlock. The large costs of monetary instability mean that adjustment should principally work through more flexible nominal exchange rates. In the case of the United States and China,

Annual changes in official foreign exchange reserves					
	2006	2007	2008	2009	2010
	In billions of US dollars, at current exchange rates				
World	915.9	1,445.2	654.6	1,131.7	1,102.5
Industrial countries	164.7	177.2	71.6	483.9	320.0
United States	0.8	4.7	7.1	53.1	1.7
Euro area	12.3	18.3	3.4	64.1	17.4
Japan	45.4	73.1	56.6	12.9	39.3
Asia[1]	395.2	694.5	412.0	747.4	653.7
China	247.0	461.8	419.0	466.8	450.0
Chinese Taipei	12.9	4.2	21.4	56.5	33.8
Hong Kong SAR	8.9	19.5	29.8	73.3	12.9
India	38.8	96.3	–19.6	17.8	10.1
Indonesia	8.0	13.9	–5.4	14.0	29.3
Korea	28.6	23.3	–61.0	68.8	21.6
Malaysia	12.3	18.9	–9.9	4.3	9.5
Philippines	4.1	10.2	3.0	5.6	16.6
Singapore	20.1	26.7	11.2	13.6	37.9
Thailand	14.6	19.9	23.4	26.8	32.0
Latin America[2]	49.5	126.7	42.9	44.0	81.6
Argentina	3.7	13.8	0.2	1.2	3.6
Brazil	31.9	94.3	13.4	44.5	49.7
Chile	2.5	–2.6	6.2	2.2	2.5
Mexico	2.2	10.8	8.0	4.5	20.7
Venezuela	5.5	–5.2	8.9	–11.4	–8.6
CEE[3]	28.2	42.4	5.7	39.3	15.3
Middle East[4]	27.1	63.9	53.4	7.8	19.7
Russia	119.7	171.2	–55.0	4.9	26.9
Memo:					
Net oil exporters[5]	*285.3*	*330.5*	*145.8*	*–22.2*	*106.4*

[1] Countries detailed. [2] Countries detailed plus Colombia and Peru. [3] Central and eastern Europe: Bulgaria, Croatia, the Czech Republic, Hungary, Latvia, Lithuania, Poland and Romania. [4] Kuwait, Libya, Qatar and Saudi Arabia. For Saudi Arabia, excluding investment in foreign securities. [5] Algeria, Angola, Kazakhstan, Mexico, Nigeria, Norway, Russia, Venezuela and the Middle East.

Sources: IMF; Datastream; national data. Table III.1

the costs of that adjustment would probably fall mostly on China. The United States, however, could share the burden by pursuing tighter fiscal and monetary policies in order to reduce domestic demand. Tighter macroeconomic policies in the deficit country could also allay concerns that the value of foreign exchange reserves accumulated by surplus economies will be inflated away.

Implementing coordination is likely to depend on the arrival of more supportive domestic conditions on each side. The principal need in deficit countries is an economic recovery strong enough to allow for tighter macroeconomic policies. In surplus countries, enhancing the financial market infrastructure by developing a foreign exchange derivatives market, for instance, would reduce the real costs of greater nominal exchange rate flexibility.

Coordination among surplus economies would allow more flexible exchange rates

Coordination could also address the first-mover problem affecting surplus economies. In a surplus country that unilaterally opts to allow nominal currency appreciation, exporters will be at a disadvantage vis-à-vis exporters in surplus

countries that do not simultaneously adjust their exchange rates. Coordination among surplus economies, especially in emerging Asia, may help overcome this hurdle.

Apart from coordination, structural policies in both surplus and deficit countries could also advance the global adjustment of current account imbalances. For example, the existing tax regime in the United States subsidises debt and penalises saving. Removing these distortions could contribute to global rebalancing. Conversely, in China, further developing sustainable social security programmes – including public health care and pension plans – would reduce the need for household saving and encourage consumption.

Nonetheless, the size of the problem suggests that, without coordinated action, gridlock and growing imbalances may last for many years. Surplus economies can resist nominal currency appreciation as long as they are willing to continue accumulating – and bearing the cost of carrying – foreign exchange reserves. Thus, in general, deficit countries are the ones that are eventually forced to adjust. The longer the gridlock lasts, the larger the eventual adjustment will need to be and the greater the risk of a disorderly adjustment.[1]

Gross financial flows and financial imbalances

The financial crisis has demonstrated that the international risks posed by gross financial flows are as important as those of current account balances. Financial flows result in the accumulation of large positions on interconnected balance sheets of financial institutions, firms and households around the world. Differences between the attributes of these inflows and outflows accumulate in the form of mismatches between assets and liabilities on these balance sheets. The mismatches, for instance in currency or maturity, can potentially lead to financial imbalances. Understanding and managing the risks associated with these mismatches is important for sustainable global economic growth and for financial stability.

Gross inflows and outflows are large and not necessarily related to net flows ...

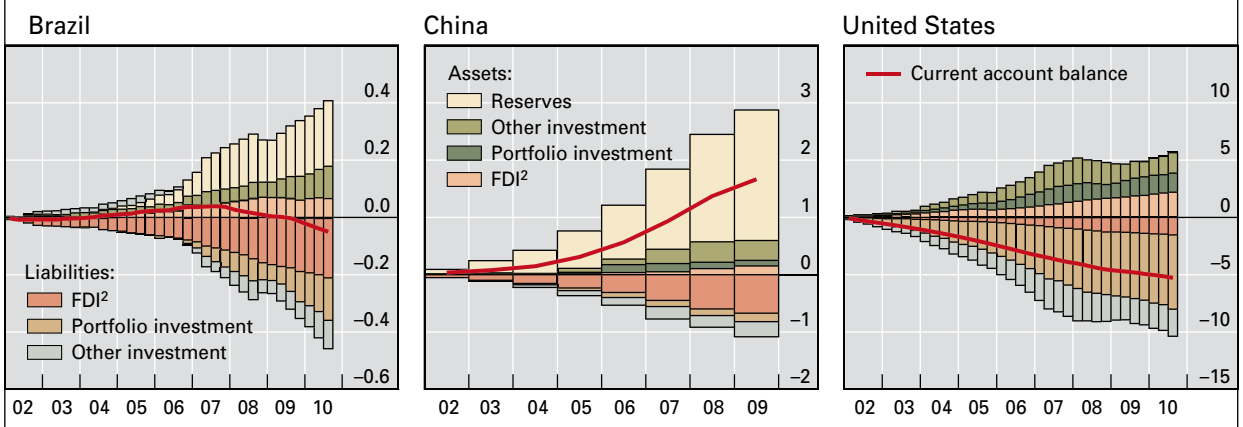
The difference between a country's gross inflows and outflows is equal to its current account balance: gross inflows exceed outflows for countries with a current account deficit, and gross outflows exceed inflows for countries with a surplus.[2] Taken separately, however, the magnitudes of gross inflows and outflows may bear little relationship to the size of the current account. Investors diversify their investment portfolio internationally on the basis of expected returns and risks rather than on the underlying saving and investment balances of national economies. Transactions by pension funds building internationally

[1] For the United States, the pressure to adjust is somewhat weaker than for other deficit countries. Because the dollar is the world's main reserve currency, the United States might sustain a small current account deficit even in the long run because non-residents are likely to wish to hold dollar-denominated assets. Nevertheless, the current size of the US deficit is clearly beyond such a level, implying that its eventual adjustment is inevitable.

[2] Gross flows are themselves consolidated measures. Gross inflows refer to non-residents' purchases minus sales of domestic assets. Similarly, gross outflows measure residents' net purchases of foreign assets. In each case, gross flows will be negative if sales exceed purchases.

Gross flows for selected countries

Cumulative flows since end-2001,[1] in trillions of US dollars



[1] Changes in assets (outflows) and liabilities (inflows) over the period. [2] Foreign direct investment.

Source: IMF, *International Financial Statistics*. Graph III.4

diversified portfolios involve large outflows from both surplus and deficit countries. Similarly, large firms that expand production by investing beyond their domestic boundaries tend to do so without regard to their home country's current account.

... and accumulate on interconnected balance sheets ...

Brazil, for example, has experienced large gross inflows and outflows despite small current account balances (Graph III.4, left-hand panel). Current account surplus countries can have large financial inflows. In China (centre panel), gross inflows exceeded $1 trillion between 2002 and 2009 in spite of cumulative current account surpluses of $1.7 trillion. Conversely, financial outflows from deficit countries can be sizeable, as in the case of the United States (right-hand panel). Although US current account deficits cumulated to about $5 trillion over the past eight years, US gross outflows were even greater, financed by inflows of around $10 trillion.

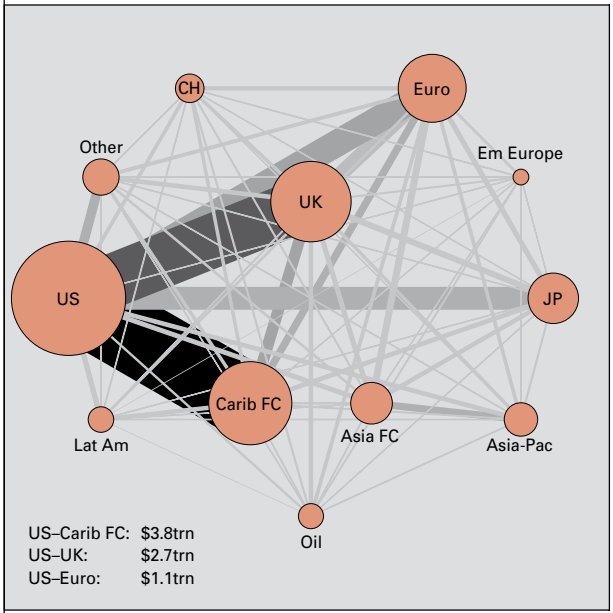
... creating complex patterns of interdependence

Furthermore, the balance sheets resulting from gross financial flows are connected to one another in complex patterns. The BIS banking statistics allow an exploration of the subset of these bilateral linkages in which at least one of the parties to the transaction is a BIS reporting bank. In Graph III.5, the circles, or nodes, depict countries or regions, and the size of each is proportional to the quantity of cross-border bank assets and liabilities booked by banks located in that country or region. The thickness of the lines between nodes is proportional to the size of financial claims or the financial linkages between them. The nodes and the linkages are shown for dollar-denominated stocks (left-hand panel) and euro-denominated stocks (right-hand panel).

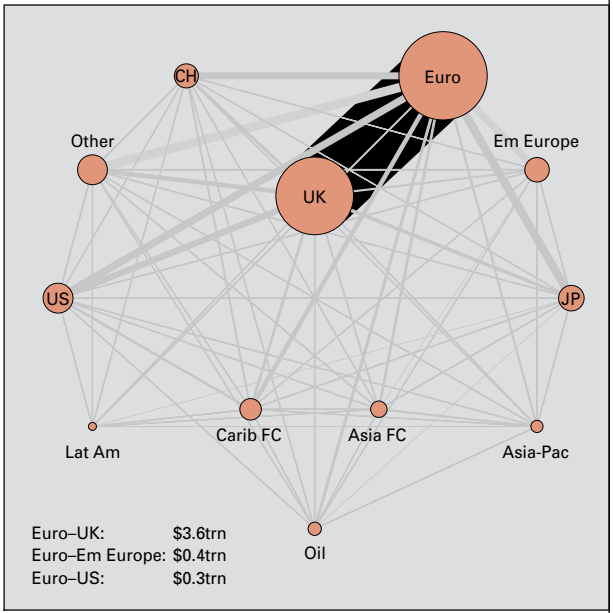
In some cases, financial linkages are closely related to current accounts, as is the case of flows between the euro area and emerging Europe. But the large linkages shown between the United States and the United Kingdom ($2.7 trillion in dollar stocks; Graph III.5, left-hand panel) and between the United Kingdom and the euro area ($3.6 trillion in euro stocks; right-hand panel) bear little relation to underlying current account balances.

Linkages in the international banking system at end-2010[1]

US dollar linkages



Euro stock linkages



Asia FC = Asian financial centres (Hong Kong SAR, Macao SAR and Singapore); Asia-Pac = China, Chinese Taipei, India, Indonesia, Korea, Malaysia, Pakistan, Philippines and Thailand; Carib FC = Caribbean financial centres (Aruba, Bahamas, Bermuda, Cayman Islands, Curaçao and Panama); CH = Switzerland; Em Europe = emerging Europe (Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia, Turkey and Ukraine); Euro = euro area member states excluding Cyprus, Malta, Slovakia and Slovenia; JP = Japan; Lat Am = Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela; Oil = OPEC member states plus Russia; Other = Australia, Canada, Denmark, New Zealand, Norway and Sweden; UK = United Kingdom; US = United States.

See I Fender and P McGuire, "Bank structure, funding risk and the transmission of shocks across countries: concepts and measurement", *BIS Quarterly Review*, September 2010, pp 63–79.

[1] The size of each circle is proportional to the stock of cross-border claims and liabilities of reporting banks located in that geographical region. Some regions include non-reporting countries. The thickness of a line between regions A and B is proportional to the sum of claims of banks in A on all residents of B, liabilities of banks in A to non-banks in B, claims of banks in B on all residents of A, and liabilities of banks in B to non-banks in A.

Sources: BIS locational banking statistics by residence; authors' calculations. Graph III.5

Risks

Some risks of gross flows are similar to net flows: sudden stops and inefficient absorption

Gross financial flows give rise to some risks that are very similar to those posed by net flows. Large gross inflows can stop – or even reverse – quickly, leading to a crisis. They might also overwhelm weak or weakly regulated financial sectors – after all, the financial sector intermediates gross, rather than net, flows.

Large mismatches on international balance sheets also create risks

Most importantly, the large balance sheet positions that emerge as a consequence of gross flows can entail risks because the assets (accumulated outflows) and the liabilities (accumulated inflows) are not interchangeable. Foreign assets held by some residents, for instance pension funds, cannot generally be used to repay the cross-border debts owed by some other residents, such as real estate developers. And the currency, liquidity and credit risks of assets and liabilities are also likely to vary considerably: the risk characteristics of the pension fund's equity portfolio are very different from those of the real estate developer's loans.

Of course, the risks associated with gross flows (transactions between residents and non-residents) cannot be considered in isolation; they must be seen in the broader context of domestic balance sheets (transactions among residents). For example, international flows can facilitate rapid domestic credit growth because they represent an additional source of financing beyond what can be obtained from residents alone. Indeed, during credit booms, the external component often increases faster than the domestic one (see Box III.B).

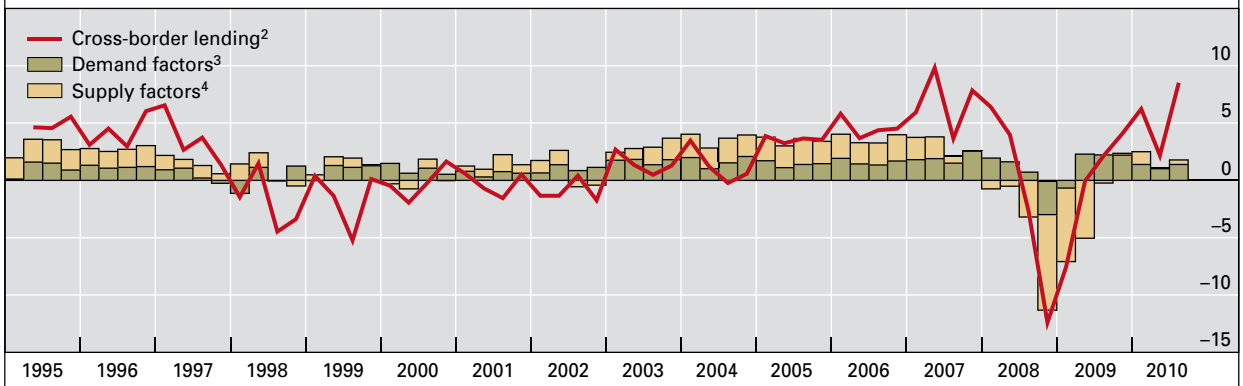
A breakdown of the data on gross flows by major category – reserves, portfolio investment and foreign direct investment (FDI) – reveals the distinctions between assets and liabilities described in the above example. The mismatches on country balance sheets are visibly large even between these highly aggregated major categories (Graph III.4). In Brazil, for example, incoming FDI is far larger than outgoing FDI. Its current account is balanced by the accumulation of reserves plus a smaller amount of other investment. In China, outflows are mostly reserves, and inflows consist mostly of FDI. For the United States, outgoing FDI is slightly larger than incoming FDI. Large portfolio inflows, partly from the reserve accumulation of other countries, finance the current account deficit and also provide low interest funding for the purchase of foreign assets yielding higher returns. The mismatches are even larger at the level of individual economic agents.

Financial linkages can transmit shocks rapidly

Large financial linkages among globally dispersed balance sheets can transmit shocks quickly to hard-to-predict locations in unexpected ways. For example, the severe stress experienced during the financial crisis limited the ability of internationally active banks to supply credit. One result was that cross-border bank lending to various emerging market economies declined

Demand and supply factors in cross-border bank lending to selected emerging markets[1]

Average quarter-on-quarter changes, in per cent



For further details, see E Takáts, "Was it credit supply? Cross-border bank lending to emerging market economies during the financial crisis", *BIS Quarterly Review*, June 2010, pp 49–56.

[1] Estimated across sample countries. Country sample: Argentina, Brazil, Chile, China, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Singapore, South Africa, Thailand and Turkey. [2] Quarter-on-quarter growth rate (logarithmic) in BIS reporting banks' cross-border gross claims vis-à-vis each country; actual data, in per cent. [3] Quarter-on-quarter growth rate (logarithmic) in seasonally adjusted nominal GDP in US dollar terms times its panel coefficient estimate plus a share of constant and country fixed effects. [4] Volatility of the S&P financials index times the panel coefficient plus a share of constant and country fixed effects.

Sources: Datastream; authors' estimates. Graph III.6

much more sharply than could be explained by demand factors alone (Graph III.6). During the same crisis, some continental European banks were unexpectedly found to have large exposures to the US subprime market that threatened their liquidity and solvency. The challenges of those exposures were particularly severe in economies in which balance sheets were also highly leveraged in terms of domestic assets and liabilities, leaving limited scope for absorbing losses on international positions.

Addressing financial risks

The financial crisis has shown that neglecting financial imbalances can be extremely costly. Without proper regulation to provide the right incentives, large balance sheet linkages and mismatches expose the financial sector, and ultimately the wider economy, to substantial risks.

First line of defence: sound macroeconomic policies, including monetary stability

Sound macroeconomic policies – ensuring monetary stability and sustainable fiscal policies – are the first and best line of defence against the risks of financial imbalances (see Chapter IV on the challenges facing monetary policy). If markets perceive that inflation is becoming unanchored or that fiscal authorities are failing to adequately protect against the risk of sovereign default, investors could trigger forced deleveraging. Such deleveraging could translate mismatched balance sheet positions into a severe domestic macroeconomic contraction with international spillovers. Furthermore, monetary policy can play a role beyond the pursuit of price stability by "leaning against the wind" to moderate outsize increases in credit and asset prices.

Second line of defence: improved financial regulation ...

Improved financial sector regulation would complement sound macroeconomic policies by helping prevent crises or limit the fallout from them (see Chapter V). Adjusting capital requirements according to the risk posed by specific balance sheet exposures would strengthen the financial system. Such adjustments would also play a secondary role in reducing the incentives to accumulate large unmatched positions in the first place. Current regulatory reforms under Basel III represent an important step in this regard.

... in particular, the use of macroprudential tools

In particular, macroprudential tools have an important role to play in limiting the build-up of large, mismatched positions on balance sheets. Some emerging market economies have had a good deal of experience recently with macroprudential tools. In central and eastern Europe, loan-to-value or debt servicing ratios were used even before the financial crisis. Some Latin American emerging economies gained experience with the dynamic provisioning pioneered in Spain. And some emerging Asian economies have introduced various macroprudential measures to protect their domestic banking systems from overheated property markets and to limit credit growth. Such tools can safeguard bank balance sheets and reduce the harm that a financial shock can inflict on the wider economy.

Capital controls should be used only in extraordinary circumstances

Capital controls remain the last line of defence against financial imbalances in extraordinary circumstances. They could act as a stopgap measure to slow capital inflows in the short term. Over longer horizons, experience has shown that capital controls mostly change the composition of gross flows rather than their size, but the experience to date is insufficient to show whether the

Box III.B: Global liquidity

Low interest rates for key international currencies have raised concerns about credit conditions globally. This box uses BIS international financial statistics, which track offshore, cross-border credit patterns, to cast light on international aspects of credit growth. Credit conditions are one element of what has come to be known as "global liquidity".

Towards global credit aggregates

Some currencies are used widely outside their issuing jurisdiction. The decisions of the corresponding monetary authorities have a direct influence on monetary and financial conditions in the rest of the world. The external use of the US dollar, for example, is sizeable and has been increasing. In mid-2010, dollar credit to non-US residents (Graph III.B.1, left-hand panel, "Debt securities booked outside the US" and "International loans") reached 17% of dollar credit to the non-financial sector worldwide, from 12% in 2000. Excluding the series "liabilities of US government", the proportion that is the external component is even higher, 23% (up from 15% in 2000).

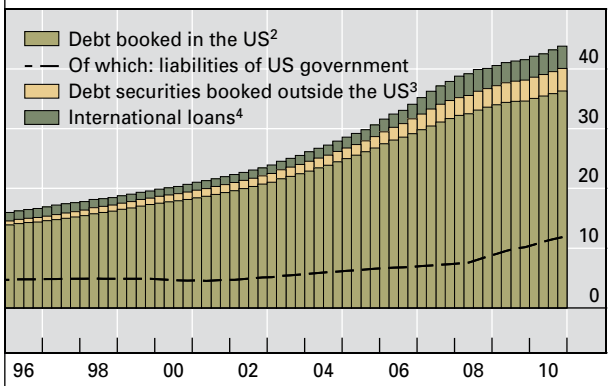
US dollar credit to the rest of the world has tended to grow much faster than credit to US residents, a gap that widened substantially after the crisis (Graph III.B.1, right-hand panel). Dollar credit to households and non-financial businesses in the United States grew at roughly 9% year on year between 2000 and 2007, to reach $23 trillion, or 166% of GDP, on the eve of the crisis. Over the same period, the growth of dollar credit to borrowers outside the United States was faster, peaking at 30% year on year by mid-2007 to reach $5.8 trillion, or 15% of the GDP of the rest of the world. In the aftermath of the crisis, credit to private sector US residents declined by $580 billion between Q3 2008 and Q4 2010. In contrast, after a short-lived dip, credit to non-US borrowers actually rose, by $749 billion. The expansion has been especially rapid in countries experiencing domestic currency credit booms, such as China.

The international element in domestic credit booms

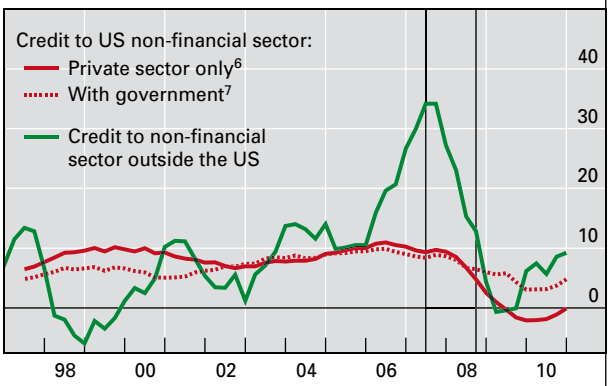
During domestic credit booms, the growth of credit to the private sector tends to outpace monetary growth. Non-bank credit channels tend to be especially active, as the experience with the shadow banking system in the United States shows. Moreover, international sources of finance – direct cross-

Global US dollar liquidity

Credit to the non-financial sector[1]



Growth in credit to the non-financial sector[5]



[1] In trillions of US dollars. [2] Non-financial sector debt of residents of the United States, which consists of debt securities, mortgages, bank loans, commercial paper, consumer credit, government loans, and other loans and advances; it excludes trade debt, loans for the purpose of carrying securities, and funds raised from equity sources. [3] Outstanding US dollar debt securities issued by non-US entities outside the United States. [4] Cross-border and local US dollar loans to non-banks outside the United States. For China, local US dollar loans data are derived from national data on total local lending in foreign currencies and assume that 80% are denominated in US dollars. For other non-BIS reporting countries, local US dollar loans to non-banks are proxied by all BIS reporting banks' cross-border US dollar loans to banks in the country. [5] Year-on-year growth, in per cent. The vertical lines represent end-Q2 2007 and end-Q3 2008. [6] Total credit to the non-financial sector in the United States minus credit to the US government. [7] Total credit to the non-financial sector in the United States.

Sources: People's Bank of China; Board of Governors of the Federal Reserve System; BIS international debt statistics and locational banking statistics by residence. Graph III.B.1

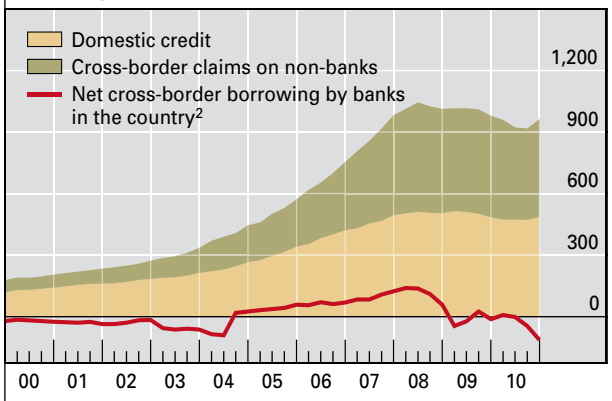
border ("offshore") lending to non-banks and the cross-border component channelled by resident banks – become more important. That is, during booms these two international components tend to grow faster than the credit granted by banks located in the country.

The case of Ireland is but one example of this regularity. Cross-border claims on non-banks in the country grew at roughly 40% year on year in the three years preceding the crisis (2005–07), a full 10 percentage points higher than the rate of growth of domestic credit (Graph III.B.2, right-hand panel). Moreover, since domestic bank credit grew faster than domestic (non-bank) deposits, banks in Ireland drew on cross-border sources of funds to finance credit growth at home (left-hand panel). Combined, cross-border claims on non-banks and net cross-border borrowing by banks accounted for more than half of total bank credit to non-banks in the country in 2008.

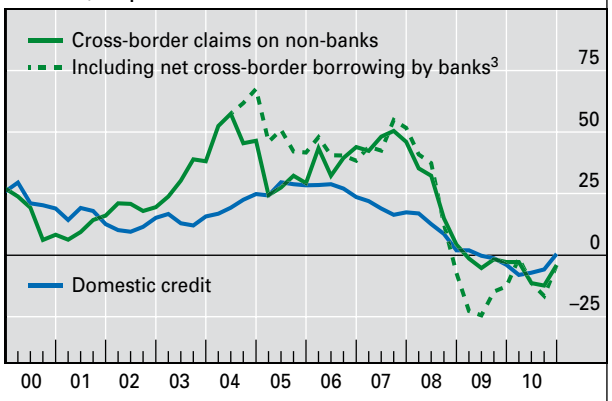
Compared with the external bank financing component, direct cross-border lending to non-banks poses particular challenges to the authorities. First, it can circumvent measures put in place to restrain lending, such as higher reserve requirements, prudential and macroprudential tools (eg tighter loan-to-value ratios) or quantitative credit limits. Indeed, the operation of the countercyclical capital buffer of Basel III envisages an explicit coordinating mechanism between home and host supervisors based on reciprocity agreements in order to prevent circumvention. Second, direct cross-border loans are harder to track than domestic credit. They are excluded from the monetary statistics, which are the typical source of information for credit growth; and the sources of the raw data, such as balance of payments statistics, tend to be comparatively less reliable in this area.

Bank credit to non-banks in Ireland

Levels, in billions of US dollars[1]



Growth, in per cent



[1] Expressed at constant end-2010 exchange rates. [2] Net cross-border borrowing (liabilities minus claims) from all sectors. [3] Includes net cross-border borrowing (if positive) by banks in the country (left-hand panel), under the assumption that this cross-border credit is ultimately passed on to non-banks in the country.

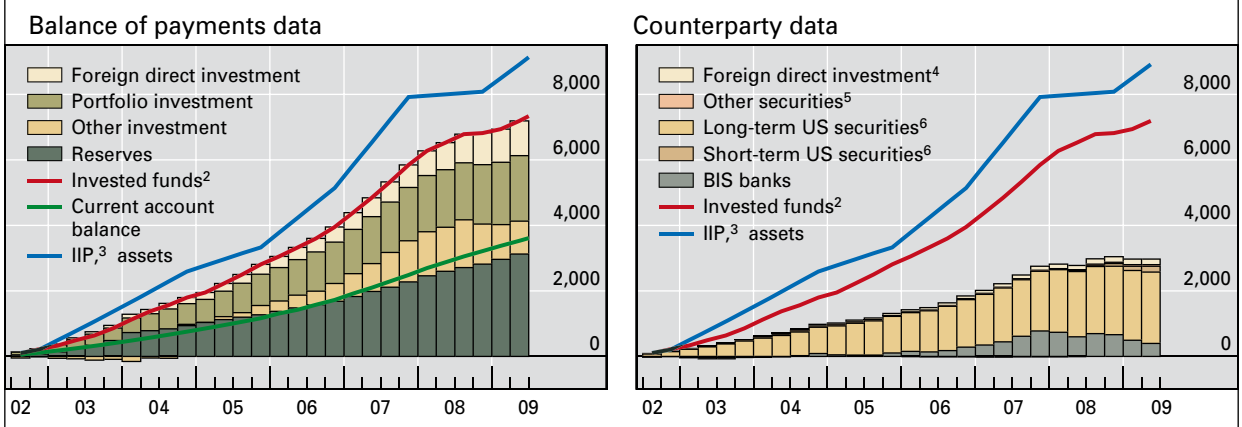
Sources: IMF, *International Financial Statistics*; BIS locational banking statistics by residence. Graph III.B.2

composition effect helps lower the risks of balance sheet mismatches. Furthermore, capital controls affect only cross-border capital flows (transactions between residents and non-residents) and cannot address domestic transactions and monetary conditions, which are often a much larger component of the build-up of financial imbalances.

The most serious difficulty with capital controls is that, over time, they may distort capital allocation and harm long-run growth prospects. And a risk in the short run is that they may lead to a "race to the bottom". That is, capital controls in one country might shift capital inflows to other countries, which would in turn face increased pressure to also adopt capital controls. International coordination may be necessary to avoid the overuse of capital controls due to such externalities.

Gross flows from East Asian economies[1]

Cumulative flows since end-Q2 2002, in billions of US dollars



See "The international banking market", *BIS Quarterly Review*, December 2005, pp 15–30; and June 2006, pp 11–25.

[1] From China, Chinese Taipei, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore and Thailand. [2] Defined as the sum of the changes in reserves, foreign direct investment (FDI) abroad and gross portfolio and other investment outflows. [3] Cumulative change in the international investment position (IIP). [4] Cumulative FDI flows into Germany and the United States. [5] Cumulative portfolio investment in Germany. [6] US Treasury International Capital data.

Sources: IMF, *International Financial Statistics*; IMF, *World Economic Outlook*, October 2010; US Treasury; Datastream; BIS.

Graph III.7

Improved information is also necessary to fully understand the risks

Currently available information about gross flows and balance sheet positions needs to be improved if it is to allow for more than a rudimentary risk analysis (see Chapter VI). Consider the asset accumulations in East Asian economies (Graph III.7). Between 2002 and 2009, these economies together accumulated $3.5 trillion in current account surpluses (left-hand panel). Over the same period, they experienced gross financial outflows of more than $7 trillion while the effect of capital gains and other valuation changes pushed up the value of asset positions even further, by almost $9 trillion (right-hand panel). But currently, only around $3 trillion of this $9 trillion can be tracked using available counterparty data. These and similar data gaps must be filled to better assess the risks that may arise from interconnected international balance sheets.

Summing up

Globalisation has greatly improved living standards in both advanced and emerging economies. The enlarged flow of goods and services across borders has allowed wider choices for consumers and greater specialisation along the lines of comparative advantage for producers. Financial globalisation has contributed to more efficient capital allocation across countries and enabled the international diversification of investment portfolios. These benefits, however, have come with risks.

Managing the risks posed by current account imbalances requires structural adjustment to rebalance demand in the long term. In the near term, international coordination to increase exchange rate flexibility could accelerate the ongoing adjustment.

Effectively managing the risks posed by financial imbalances due to gross financial flows requires sound macroeconomic policies supported by policies that strengthen prudential frameworks and the financial infrastructure. Capital controls are best reserved as a stopgap last resort.

A policy that affects one imbalance tends to work in the same direction on the other. For example, a monetary tightening in deficit countries can reduce both types of imbalance by simultaneously shrinking excess domestic demand and reducing incentives for financial sector risk-taking. Conversely, excessively loose ("too low for too long") monetary policies can exacerbate both imbalances. Furthermore, regulatory and macroprudential measures can limit the size of financial imbalances as well as help the financial system efficiently absorb the inflows associated with current account imbalances. Likewise, fiscal tightening in advanced economies with unsustainable current account deficits will help reduce both their current account deficits and the financial risks stemming from debt sustainability concerns. Finally, increased flexibility of the nominal exchange rate not only assists the adjustment of the real exchange rate that is central to reducing current account imbalances but also reduces inflationary pressures in surplus emerging economies, which is fundamental to managing the risks associated with financial imbalances.

Taking steps such as these to appropriately manage the vulnerabilities created by globalisation is necessary to ensure that it continues to improve economic welfare and living standards across the globe.

IV. Monetary policy challenges ahead

Central banks face considerable challenges after a prolonged period of accommodative monetary policies. Global inflation pressures are rising rapidly as commodity prices soar and as the global recovery runs into capacity constraints. These increased upside risks to inflation call for higher policy rates, but in some countries this still needs to be balanced against the vulnerabilities associated with continuing private and public sector balance sheet adjustments and lingering financial sector fragility.

This monetary policy environment has been further complicated by the unprecedented expansion of central bank balance sheets, especially in recent years. This chapter starts by reviewing the current size and complexity of central bank balance sheets and their implications. It then assesses the threat to price stability and other factors influencing the need to normalise the global stance of monetary policy.

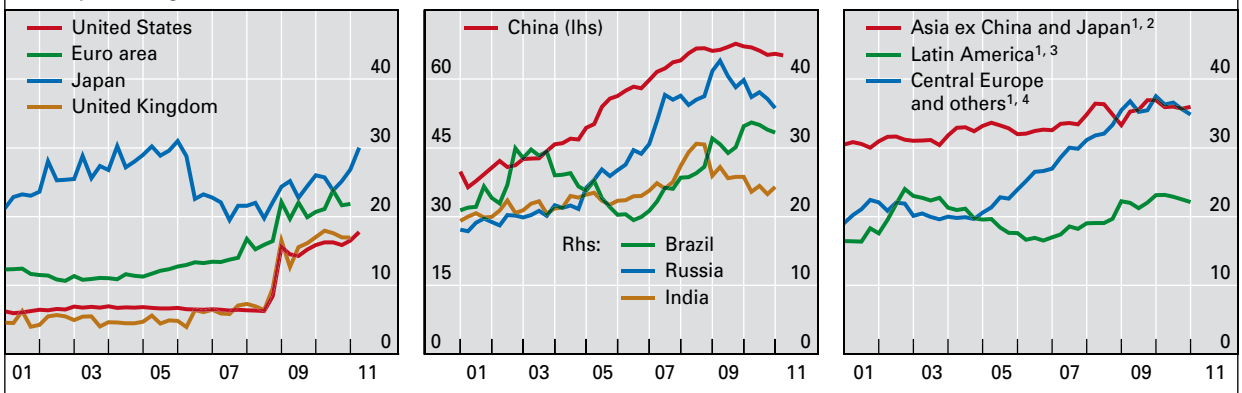
Challenges from the expansion of central bank balance sheets

Central bank balance sheets expanded for different reasons

Over the past decade, many central bank balance sheets have grown to an unprecedented size (Graph IV.1). For example, in responding to the international financial crisis, the Federal Reserve and the Bank of England sharply increased their total assets, in each case from 8% to just below 20% of GDP, while the Eurosystem expanded its assets from 13% to more than 20% of euro area GDP. Most of the growth of the balance sheet of the Bank of Japan, to 30% of GDP, occurred as a consequence of quantitative easing in the early 2000s. The Bank

Central bank total assets in selected economies

As a percentage of GDP

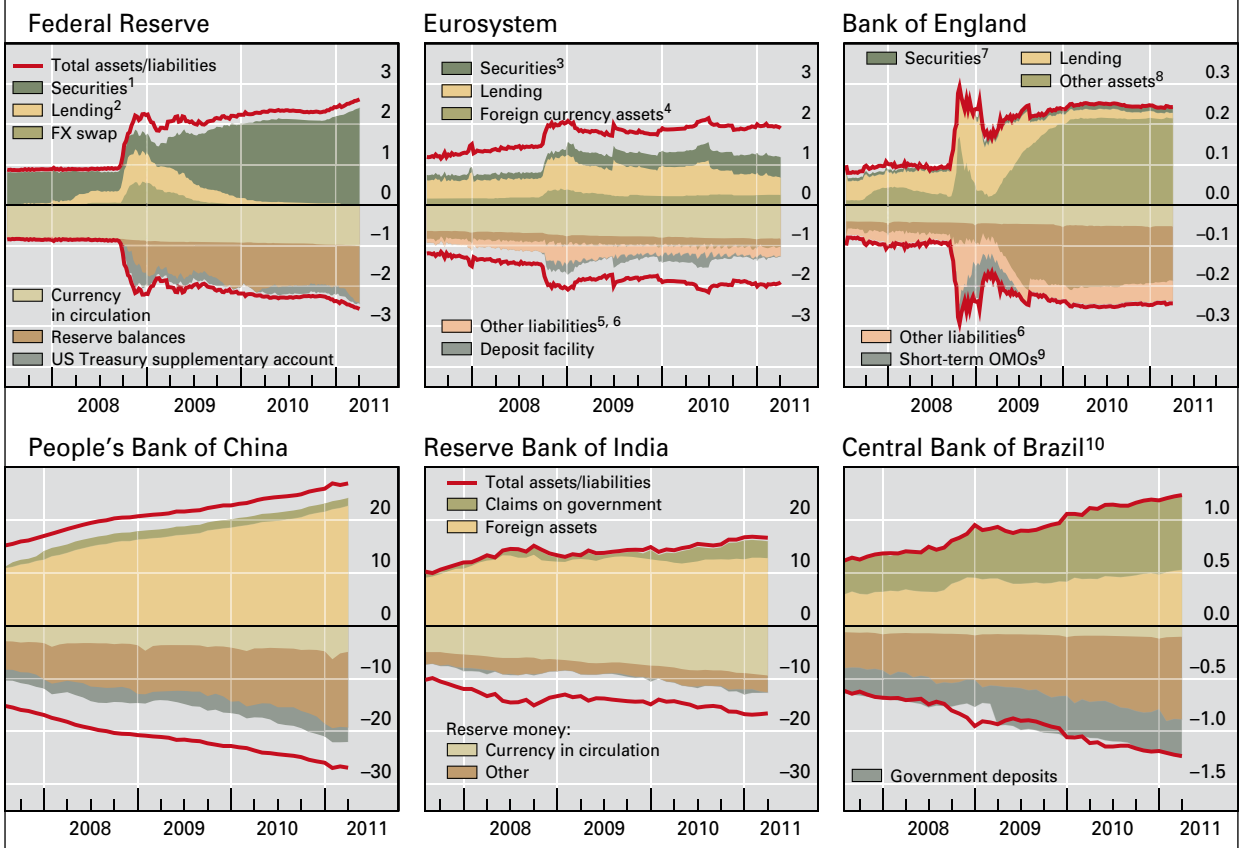


[1] Weighted average of listed economies based on 2005 GDP and PPP exchange rates. [2] Hong Kong SAR, India, Korea, Malaysia, the Philippines, Singapore and Thailand. [3] Argentina, Brazil, Chile, Colombia and Peru. [4] The Czech Republic, Hungary, Poland, Russia, Turkey, Saudi Arabia and South Africa.

Sources: IMF, *International Financial Statistics*; CEIC; Datastream; national data. Graph IV.1

Central bank assets and liabilities

In trillions of respective currency units



[1] Securities held outright. [2] Repurchase agreements, term auction credit, other loans and Commercial Paper Funding Facility. [3] Securities issued by euro area residents and general government debt, in euros. [4] Including US dollar liquidity auctions. [5] Including liabilities to non-euro area residents in euros and liabilities to euro area residents in foreign currency. [6] Including to central banks. [7] Bonds and other securities acquired via market transactions. [8] Including US dollar liquidity auctions and loans to the Bank of England Asset Purchase Facility Fund. [9] Open market operations, including issuance of Bank of England sterling bills. [10] Total liabilities may include items with changing signs.

Sources: CEIC; Datastream; national data. Graph IV.2

of Japan's balance sheet expanded further this March as the central bank injected additional liquidity to combat the adverse economic and financial consequences of the earthquake.

In advanced economies, the expansion was a response to the crisis

Central banks in advanced economies, in particular the Federal Reserve and the Bank of England, eased monetary conditions aggressively during the crisis. They first lowered interest rates and then massively expanded their balance sheets via unconventional monetary policies (Graph IV.2, top panels). The latter included large purchases of both private sector and government securities, new targeted lending facilities and credit extensions associated with the rescue of financial institutions. Many central banks also widened the range of eligible counterparties for their monetary policy operations and lengthened their maturity. Central banks in advanced economies that were less directly hit by the crisis, such as Australia and Canada, also expanded their balance sheets, albeit by much less, as the crisis spilled over to their countries' financial systems.

Central bank balance sheets in emerging market economies grew more gradually over the past decade. Following the Asian crisis in the late 1990s, the growth mainly reflected a steady accumulation of foreign exchange reserve assets, both to build up a war chest against contingencies and as the by-product of policies to resist exchange rate appreciation (Graph IV.2, bottom panels). Foreign currency reserves help to smooth exchange rate volatility, especially in economies whose financial markets cannot accommodate effective hedging of foreign exchange exposures. Foreign currency reserves can also support favourable credit ratings for sovereign bonds and growth in local currency debt markets, thereby lowering borrowing costs and deepening financial markets.

In emerging markets, it reflected the build-up of foreign exchange reserves

Implications of expanded central bank balance sheets

Central bank balance sheet policies have supported the global economy through a very difficult crisis. However, the balance sheets are now exposed to greater risks – namely interest rate risk, exchange rate risk and credit risk – that could lead to financial losses. Rising long-term interest rates may result in actual losses if central banks sell bonds from their portfolios, or in potential losses under mark to market accounting. Central banks with large holdings of foreign currency-denominated assets are especially vulnerable to exchange rate risks: a sharp appreciation of the domestic currency would translate into losses on their foreign exchange reserves. Credit risks have been increasing since the onset of the international financial crisis as central banks have purchased (or lent against) lower-quality assets, such as asset-backed securities.

Bloated balance sheets create financial risks for central banks …

Losses may also arise from the mismatch between funding costs and asset revenues. Central banks that remunerate commercial banks' reserves or that issue central bank bills to drain liquidity from the market may find that the related interest payments exceed the returns on their assets. In emerging market economies, the return on foreign assets often falls short of the cost of short-term sterilisation bonds; this carrying cost can be rather substantial in those economies with low credit ratings.[1]

Sustained balance sheet losses arising from unconventional policy measures adopted during the crisis could expose central banks to political economy pressures.[2] In the case of private sector asset purchase programmes, including in some instances corporate bonds, central banks may risk being criticised for favouring some segments of the economy over others. Similarly, rescue operations by central banks may raise questions about the degree of preferential treatment that one financial institution receives over another, even if the policy actions are designed solely to save the financial system overall from collapse. Finally, large-scale asset purchase programmes may complicate fiscal debt management, putting the actions of the central bank at odds with

[1] 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.

[2] See C Borio and P Disyatat, "Unconventional monetary policies: an appraisal", *BIS Working Papers*, no 292, November 2009; and P Stella, "Minimising monetary policy", *BIS Working Papers*, no 330, November 2010.

Box IV.A: Interactions of sovereign debt management with monetary conditions and financial stability

The global financial crisis dramatically altered the environment in which central banks and managers of sovereign debt operate. During the crisis, debt managers in many cases had to meet sudden and large additional funding needs as central banks undertook extraordinary liquidity support measures and, in some cases, subsequently purchased government debt as part of unconventional monetary policy operations.

Debt managers generally aim to minimise the medium- to long-term expected cost of funding the government's activities, subject to prudent risk management. Experience with sovereign debt management (SDM) choices during and after the crisis is somewhat different across countries. For example, to meet funding needs under difficult market conditions, some highly rated government issuers shortened maturities; but others tended not to, in spite of the market pressures.

Maturity and other SDM choices, such as indexation and issuance techniques, can matter for central banks. For example, shorter maturities of individual debt issues, other things being equal, imply more frequent rollovers and may affect liquidity conditions in the money markets. More generally, SDM is relevant for central banking because both activities influence the money and government bond markets and because government bond yields act as a benchmark for the pricing of other types of debt. This is especially the case under current conditions of heightened segmentation of financial markets, markedly higher government debt issuance and fiscal sustainability concerns.

The potential interactions of SDM and central banking could be mutually reinforcing or conflicting. For example, while some central banks have used large-scale transactions in government bonds as part of unconventional monetary policy operations, there is a risk that those operations could be perceived as intended to fund fiscal policy initiatives, undermining central bank independence. Moreover, SDM strategies that shift the maturity or risk characteristics of outstanding government debt could have implications for financial stability or could affect how monetary policy actions influence monetary conditions. Increased issuance of long-term debt, for example, might blunt the interest rate effects of central bank purchases of such debt if the primary mechanism by which such purchases work on interest rates is through the supply of long-term debt in the market.[1]

A report recently published by the Committee on the Global Financial System (CGFS) examined these issues and their implications for central banks.[2] In most countries, debt management operations do not appear to have constrained central banks' ability to ease monetary conditions via large-scale asset purchases. This partly reflects the credibility of existing independence arrangements, as well as the use of communication to emphasise the respective agencies' different objectives and planning horizons. Mainstream SDM practice generally aims to keep issuance steady and predictable, consistent with reducing volatility for investors, while monetary policy's role is to respond quickly to new information relevant to the inflation and growth outlook.

In countries facing fiscal sustainability concerns and in some emerging market economies, legacy SDM choices (about maturity and foreign participation, for example) have affected crisis dynamics and thus financial stability. The lessons from this experience are that sound SDM can reduce financial system volatility by spreading maturity, avoiding concentrated placement and developing stable and diversified investor bases, which help in the recovery from crisis.

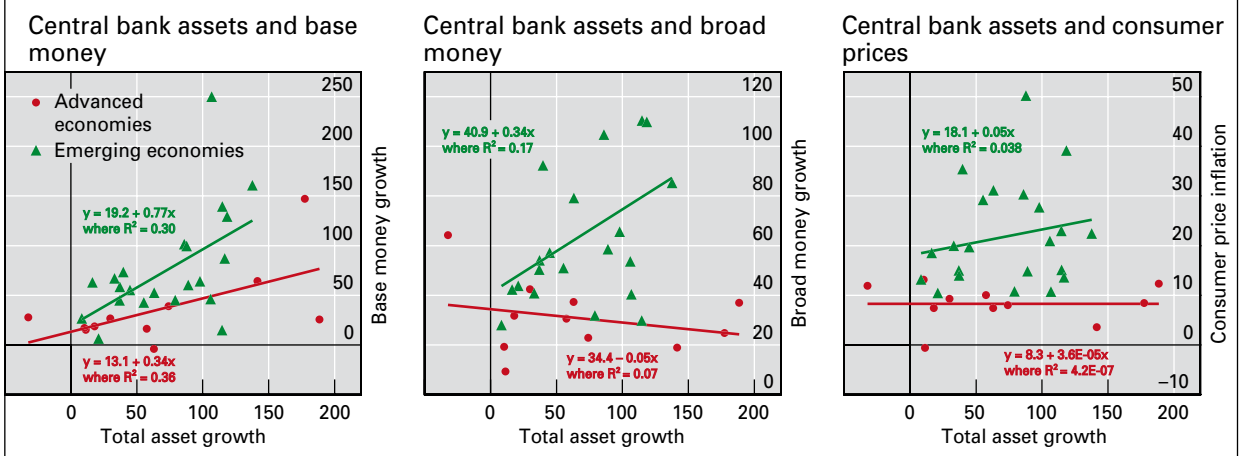
In the current circumstances, or where financial systems are still developing, debt managers will benefit from taking a broad view of cost and risk, and central bankers will benefit from keeping abreast of SDM activities. Recent experience confirms that medium-term strategic outcomes for the maturity structure and risk characteristics of outstanding debt do matter, especially for financial stability. For the relevant agencies, this underscores the importance of closely coordinating their activities while maintaining their independence and accountability on the basis of clear and distinct mandates.

[1] See P Turner, "Fiscal dominance and the long-term interest rate", *LSE Financial Markets Group Special Paper*, no 199, May 2011; and BIS, *79th Annual Report*, June 2009, Chapter VI. [2] CGFS, "Interactions of sovereign debt management with monetary conditions and financial stability: lessons and implications for central banks", *CGFS Papers*, no 42, May 2011.

the plans of debt managers if not coordinated appropriately. Indeed, sovereign debt management activities, monetary policy and financial stability policies have become much more interdependent in recent years (see Box IV.A).

Central bank assets, monetary aggregates and consumer prices

Growth over 2007–10, in per cent



Sources: IMF, *International Financial Statistics*; Datastream; national data; BIS calculations. Graph IV.3

All these risks argue for an eventual reduction in the size of central bank balance sheets. But it would be dangerous to cut balance sheets too rapidly or too indiscriminately. In the major advanced economies, a near-term reduction faces obstacles because of both the lingering economic and financial fragility and the inherent uncertainties surrounding the withdrawal from the unprecedented measures. In emerging market economies, there is the concern that achieving a substantial reduction in central bank balance sheets by selling foreign exchange assets would put upward pressures on exchange rates and could trigger destabilising capital flows. These concerns notwithstanding, central banks will want to avoid the longer-term costs associated with persistently expanded balance sheets.

... calling for their eventual normalisation

On a more positive note, the traditional monetarist concern that the expansion of central bank balance sheets might cause inflation receives little empirical support. The relationship between increases in central bank balance sheets and base money has been rather weak for both advanced and emerging market economies since 2007 (Graph IV.3, left-hand panel). The correlation between central bank asset expansion and broad money growth has been even weaker; in advanced economies, it is even slightly negative (centre panel). This reflects instability in the money multiplier (broad money over monetary base) over this period. Similarly, the correlation between the change in central bank assets and consumer price inflation has been virtually zero (right-hand panel). In sum, bloated central bank balance sheets do not seem to pose a direct inflation risk.

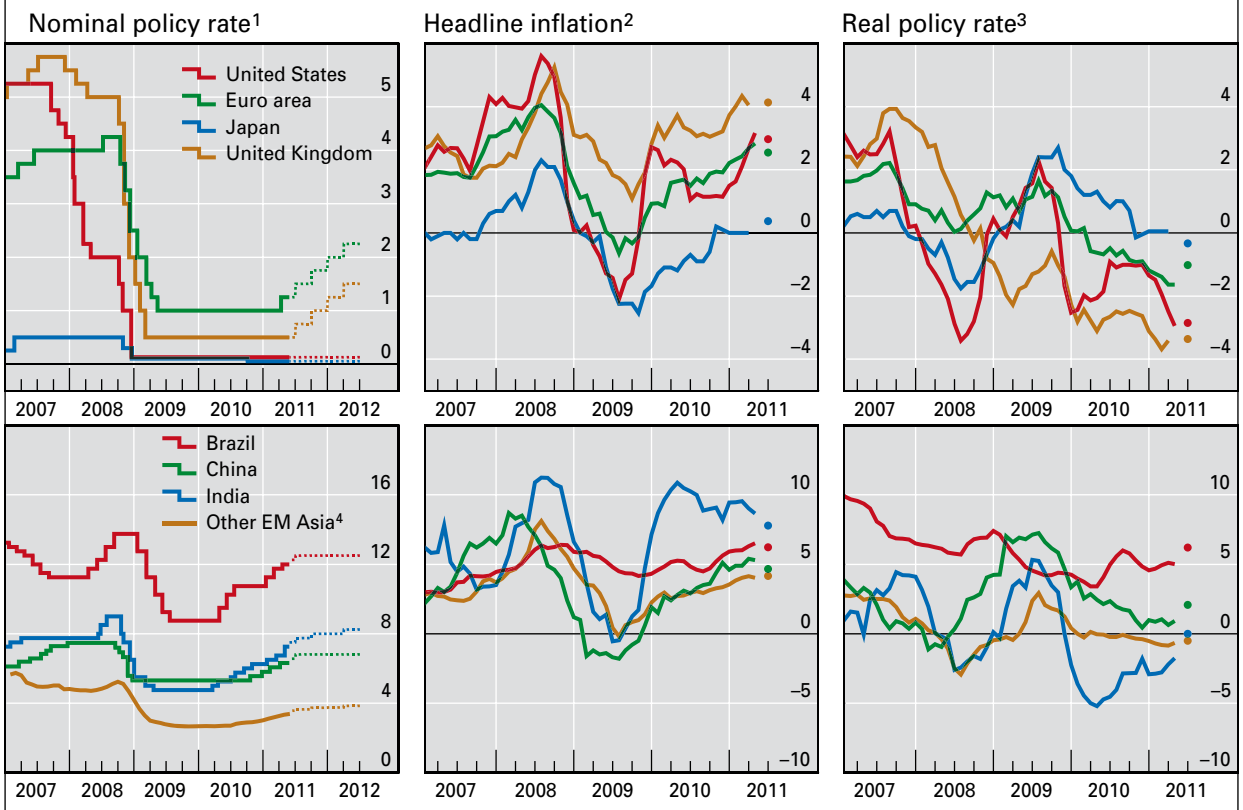
Normalising policy rates

Central banks in many advanced and emerging market economies have already begun modestly raising policy rates (Graph IV.4, left-hand panels). Even in some of the countries hardest hit by the crisis, markets are pricing in policy rate increases both in the near term and in the coming years (Graph IV.5). That

Policy rates have started to rise

Policy rates and inflation

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; as of October 2009, midpoint of the target range (0–0.1%); for the United Kingdom, Bank rate; for Brazil, target SELIC overnight rate; for China, benchmark one-year loan rate; for India, repo rate. The dotted lines show the JPMorgan Chase forecast as of 21 May 2011 for the policy rate in June 2011, September 2011, December 2011, March 2012 and June 2012. [2] Year-on-year changes in the consumer price index. Inflation projections (dots) are based on inflation expectations from Consensus Economics. [3] Nominal policy rate minus annual headline inflation. Projections (dots) are based on forecasts from JPMorgan Chase and Consensus Economics. [4] Weighted average of Chinese Taipei, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines and Thailand based on 2005 GDP and PPP exchange rates.

Sources: Bloomberg; © Consensus Economics; JPMorgan Chase; national data; BIS calculations. Graph IV.4

said, the expected pace of tightening is rather modest. Policy rates in real terms have remained exceptionally low over the past year and in many countries continue to be negative (Graph IV.4, right-hand panels).

Two interrelated factors are likely to be important in determining the future trajectory of inflation: (i) commodity prices and (ii) the degree of global economic slack.

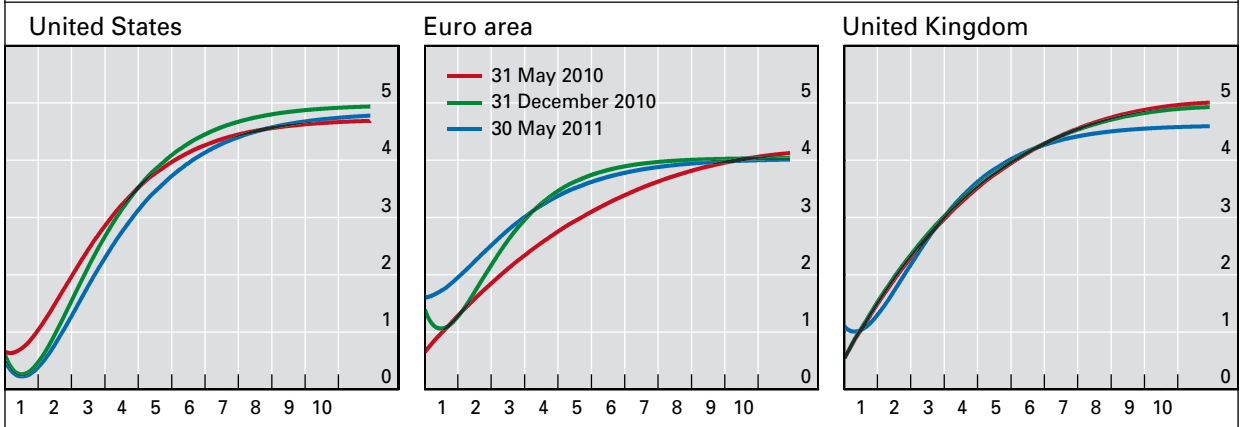
Inflation risk from higher commodity prices

Inflation is rising ...

One key factor influencing the pace of tightening is the upside risk to inflation arising from higher commodity prices, especially food and energy prices. Headline inflation has already risen significantly in many countries. The impact has been particularly strong in emerging market economies, where food constitutes a large part of the consumption basket (around 25%, compared with less than 15% for advanced economies).

Forward curves[1]

In per cent



[1] Instantaneous forward rates derived from the Libor/swap curve. The horizontal axis indicates the horizon in years.

Sources: Datastream; BIS calculations. Graph IV.5

... driven by commodity prices

The buoyancy of food and commodity prices is closely linked to the strength of the global economic recovery, particularly in emerging market economies. Supply side disruptions are also contributing to upward price pressures. Recent poor weather conditions, including floods in Pakistan and Australia and droughts in China and Russia, helped drive up food prices. And geopolitical concerns and supply disruptions in North Africa and the Middle East are putting additional upward pressure on energy prices. Although these adverse supply side effects should subside when weather conditions normalise and the political landscape in energy-producing countries becomes more stable, conditions in particular markets may continue to have an effect. For example, coal and natural gas prices could receive a substantial boost from efforts to substitute away from nuclear energy and, in the short term, financial factors seem to have played a role in influencing commodity prices (see Box IV.B). More generally, as long as the demand for food and commodities is supported by robust global growth, their prices may stay elevated or even rise further.

Inflation volatility has increased ...

Since 2005, inflation in most advanced and emerging market economies has been much more volatile than it was in the period 2000–04, owing for the most part to the volatility of the energy and food components of consumer price indices (Graph IV.6, left-hand panel).

... and the risks of second-round inflation effects are mounting

Soaring commodity prices have in addition raised concerns about a significant increase in underlying inflation via second-round effects. There are clear signs of mounting wage pressures in some major emerging market economies (Graph IV.6, right-hand panel). Dwindling economic slack and persistent inflation in these countries have been pushing up wage demands. Moreover, given the globalised nature of many supply chains, underlying inflation pressures in the advanced economies are affected indirectly by a pickup in unit labour costs in the emerging market economies. Indeed, profit margins may have become tighter and a further squeezing of price margins due to higher costs may eventually force firms to pass on a greater share of the

Box IV.B: Commodity prices and financialisation

What role have financial investors played in the rise in the level and volatility of commodity prices (Graph IV.B, left-hand panel)? Commodity-related financial instruments such as index funds and exchange-traded commodity funds have expanded rapidly in recent years (Graph IV.B, right-hand panel). One major reason for this growth seems to be that institutional and retail investors are seeking to diversify their portfolios. Some investors may view investments in commodity derivatives as a vehicle for benefiting from rapid growth in the aggregate demand coming from emerging market economies without having to invest in the often narrow local financial markets. A search for yield in an environment of low interest rates has also been part of this trend.

A greater presence of financial investors can affect commodity prices in various ways.[①] On the one hand, markets could become deeper and more liquid, which in turn should facilitate hedging and reduce price volatility. On the other hand, index-linked investments in particular could raise the correlation between commodities and other assets, especially equities, and add to price volatility to the extent that hedging makes the demand for commodities less price-sensitive.

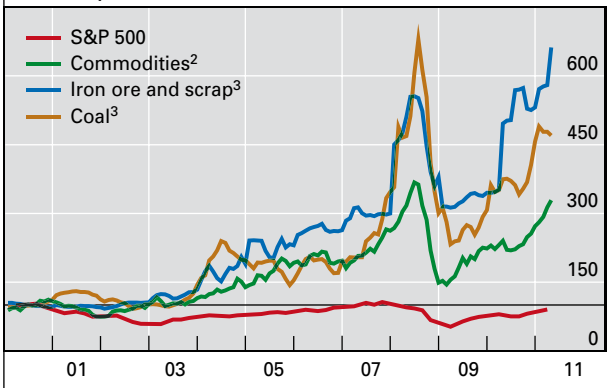
Recent research supports the view that financialisation is affecting short-term price dynamics in commodity markets.[②] This seems to reflect both financial investors' sensitivity to news and the large sums they employ in commodity trading. The run-up in oil prices until mid-2008 has provided the strongest empirical evidence that financial investments resulted in significant deviations of prices away from those implied by fundamental demand and supply conditions. For non-oil commodities, there is little evidence that financial investments have had a material impact on prices. The fact that the prices of coal and iron ore – commodities that are not included in the standard commodity indices – have also risen supports the view that physical demand and supply have remained the key driver of commodity prices.

In sum, while traditional demand and supply factors continue to matter for commodity prices, there is growing evidence that price formation and dynamics in commodity futures markets increasingly display patterns familiar from traditional markets for financial assets – including swings in investor risk aversion and episodes of herding behaviour. More research is needed to better understand the impact of financial investments on commodity prices.

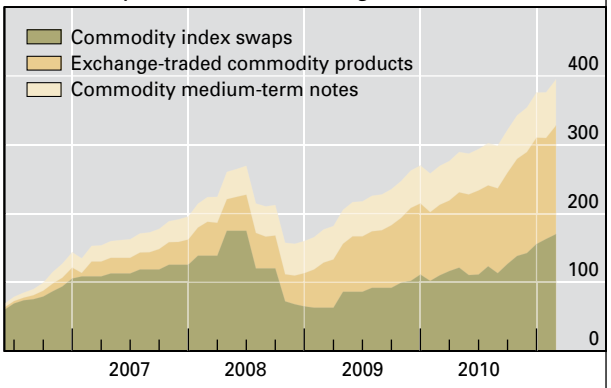
① See S Irwin and D Sanders, "Index funds, financialization and commodity futures markets", *Applied Economic Perspectives and Policy*, 2011, pp 1–31; and K Tang and W Xiong, "Index investment and financialization of commodities", *NBER Working Papers*, no 16385, September 2010. ② For an overview, see K Singleton, "Investor flows and the 2008 boom/bust in oil prices", *Stanford University Working Paper*, March 2011.

Financialisation of commodities

Asset prices[1]



Commodity assets under management[4]



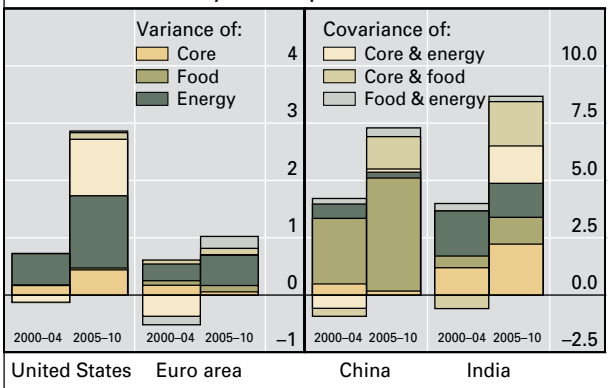
[1] 2000 average = 100. [2] Goldman Sachs general commodity index. [3] HWWI index. [4] Barclays Capital data, in billions of US dollars.

Sources: Barclays Capital; Bloomberg; Datastream; national data. Graph IV.B

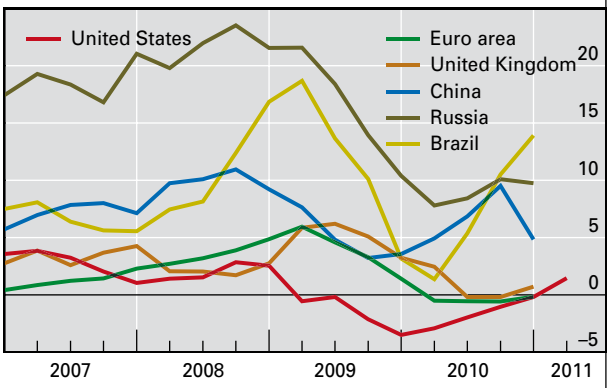
increase in input prices to consumers. As a consequence, advanced economies may see core inflation pick up through the back door of global supply chains despite moderate wage pressures in their domestic labour markets.

Inflation volatility and wage pressure

Inflation volatility decomposition[1]



Measures of unit labour costs[2]



[1] Variance decomposition of monthly year-on-year changes of headline CPI (wholesale price index for India). The calculation is based on constant weights of the CPI components. The covariance is multiplied by two. [2] Year-on-year changes, in per cent; definitions may differ across countries. For China, Russia and Brazil, the change in the ratio of total wages or earnings of employees over real GDP was used as a proxy measure because no official measure of unit labour costs is available.

Sources: National data; BIS calculations. Graph IV.6

State of the recovery and risks of overheating

The global recovery continues, but risks are still present

The second key factor influencing the pace of monetary tightening is the extent of economic slack. The recovery has broadened over the past year, with the advanced economies gaining momentum and the emerging market economies continuing to perform strongly. For 2011, according to Consensus Economics, the global economy is forecast to expand by 3.7%, with the advanced economies expected to grow at 2.0% and emerging market economies at 6.1%. The improved macroeconomic conditions reflect in no small part the effectiveness of the extraordinary fiscal and monetary policy measures taken in response to the financial crisis but, since last year, evidence has been accumulating that self-sustaining cyclical forces in the private sector have begun to play a bigger role in the recovery.

The persistently high unemployment rates in some countries are often interpreted as indicating that there is significant slack in labour markets. For the economy as a whole, some measures of the output gap (actual output minus potential output) also point to ample unused capacity. In particular, structural estimates of the output gap which rely on production functions and other structural macroeconomic relationships (see the OECD's estimate represented by the dots in the top right-hand panel of Graph IV.7) currently indicate a large negative output gap (that is, actual output much smaller than potential). Projections of structural estimates suggest that the gap will shrink only slowly and, as a consequence, hold down price pressures for some time.[3]

Other measures of the output gap suggest, however, that there may be much less unused economic capacity in many economies and, on average,

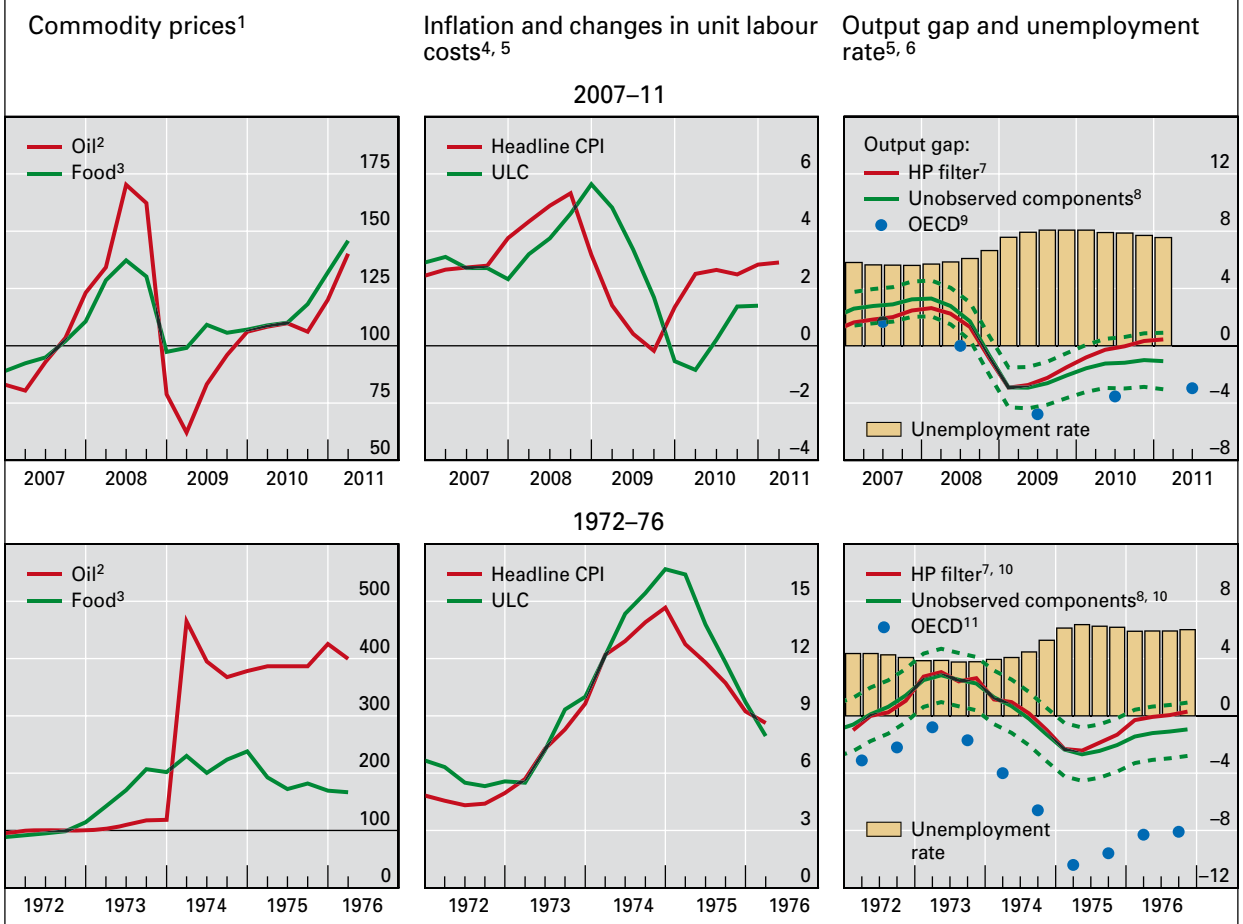
[3] For a comparison of different output gap measures for the United States, see J Weidner and J Williams, "How big is the output gap?", *FRBSF Economic Letter*, no 2009-19, 12 June 2009, and 28 January 2011 update, www.frbsf.org/publications/economics/letter/2009/el2009-19.html.

globally. For example, some statistical measures of global output gaps indicate that a substantial narrowing, if not outright closure, is in train (Graph IV.7, top right-hand panel). Survey measures of capacity utilisation, which are available at high frequency, also indicate a low degree of output slack.

Monetary policymakers face uncertainty about economic slack …

The less benign inflation perspective is also supported by soaring commodity prices and evidence of increasingly tight labour market conditions in emerging market economies. It also reflects the possibility that potential output in the advanced economies was more adversely affected by the international financial crisis than is commonly thought. In particular, potential output trends may be suffering from high private and public debt, which can have negative effects on consumption and investment prospects. Moreover,

Comparisons between the current juncture and the 1970s at the global level



Aggregations at the global level are based on 2005 GDP and PPP weights.

[1] In US dollar terms; 2007 average = 100 (top panel) and 1972 average = 100 (bottom panel). [2] Spot price for crude oil; average of Brent, Dubai and WTI. [3] IMF world food price index. [4] Year-on-year changes, in per cent. [5] Top panel: major advanced and emerging economies; bottom panel: major advanced economies; for unit labour costs (ULC) and unemployment rate, G7 countries. [6] In per cent. [7] Trend calculated using a Hodrick-Prescott (HP) filter with standard specification. [8] Estimation of unobserved components; the upper and lower band (dashed lines) represent the 95% confidence interval; for details, see P Gerlach, "The global output gap: measurement issues and regional disparities", *BIS Quarterly Review*, June 2011. [9] Aggregation of national output gaps as calculated by OECD, *Economic Outlook*, December 2010; the coverage of emerging market economies is smaller than for the other indicators shown. [10] Based on data up to Q4 1976. [11] Real-time estimation in 1977, based on GNP; aggregation of national output gaps.

Sources: IMF, *International Financial Statistics*, *World Economic Outlook*; P McCracken et al, *Towards full employment and price stability*, OECD, June 1977; national data; BIS estimates. Graph IV.7

large investments that took place prior to the crisis, eg in the construction sector, may prove to be much less productive than was originally expected (see Chapter II). In general, identifying and quantifying changes in the structure of the economy takes time. Thus, while statistical measures may overestimate the speed of closure of the output gap, structural models may underestimate it.[4]

... suggesting parallels to the policy challenges in the 1970s ...

Inflationary pressures from soaring commodity prices and the possibility of overestimated economic slack evoke memories of the 1970s. Then, food prices – which are set in global auction markets and therefore respond quickly to global demand pressures – were the first to move up, well before the surge in oil prices (Graph IV.7, bottom left-hand panel). What followed was a mutually reinforcing spiral of increases in headline inflation and unit labour costs (bottom centre panel). At the same time, unemployment rates were reaching new highs and the apparent opening-up of a large negative output gap during the decade, as then measured by the OECD, indicated considerable slack in the economy (bottom right-hand panel).

Today, with hindsight, it is clear that conventional measures of economic slack at that time were grossly overestimated. The rise in the unemployment rate was due in large part to structural changes in labour markets. The slowdown in economic activity was mistakenly attributed mainly to insufficient demand rather than to a substantial slowing of potential output growth. In other words, the estimated output gap was thought to be quite large and persistent, whereas in reality it was not. This is evident if one looks at the difference between the OECD real-time estimate based on structural measures (Graph IV.7, bottom right-hand panel) and revised estimates based on current data.[5] This misperception helps to explain why monetary policy at the time ended up being too accommodative for too long.

... even if the economic environment today appears different

The economic environment today appears to be very different from that in the 1970s. In particular, wage developments in advanced economies today are much less closely tied to domestic output gaps and domestic consumer price developments. Globalisation, greater flexibility in labour markets and the achievement of price stability have played key roles. However, the increase in unit labour costs in some major emerging market economies represents a risk to price stability globally because of the importance of these economies in supply chains. The current situation, while different in many respects from that in the 1970s, may therefore still confront monetary policymakers with challenges that are more similar to that period than they might appear at first sight.

Against this backdrop, central banks must remain highly alert to a build-up of inflationary pressures. They should do so even if the evidence may seem at odds with conventional estimates of domestic economic slack and domestic wage developments. Vigilance and a timely tightening of monetary

[4] See P Gerlach, "The global output gap: measurement issues and regional disparities", *BIS Quarterly Review*, June 2011, pp 29–37.

[5] For a real-time assessment of 1970s stagflation, see P McCracken et al, *Towards full employment and price stability*, OECD, June 1977. Additional details on the overestimation of output gaps in the 1970s are presented in BIS, *75th Annual Report*, June 2005, and in A Orphanides, "The quest for prosperity without inflation", *Journal of Monetary Economics*, vol 50, no 3, April 2003, pp 633–63.

policy in both emerging market and advanced economies will be needed to maintain well anchored inflation expectations, preserve a low-inflation environment globally and reinforce central banks' inflation fighting credibility.

Assessing the current monetary policy stance

Policy rates are too low from a historical perspective ...

How much tighter does monetary policy need to be to keep inflation in check? Estimated Taylor rules, which link the level of policy rates to inflation and the output gap, indicate that policy rates are too low. This is true for a large number of individual countries, where the implied policy rates from the Taylor rule are well above the actual policy rates (observations above the 45° line in the left-hand panel of Graph IV.8), as well as on average for the global economy (right-hand panel).

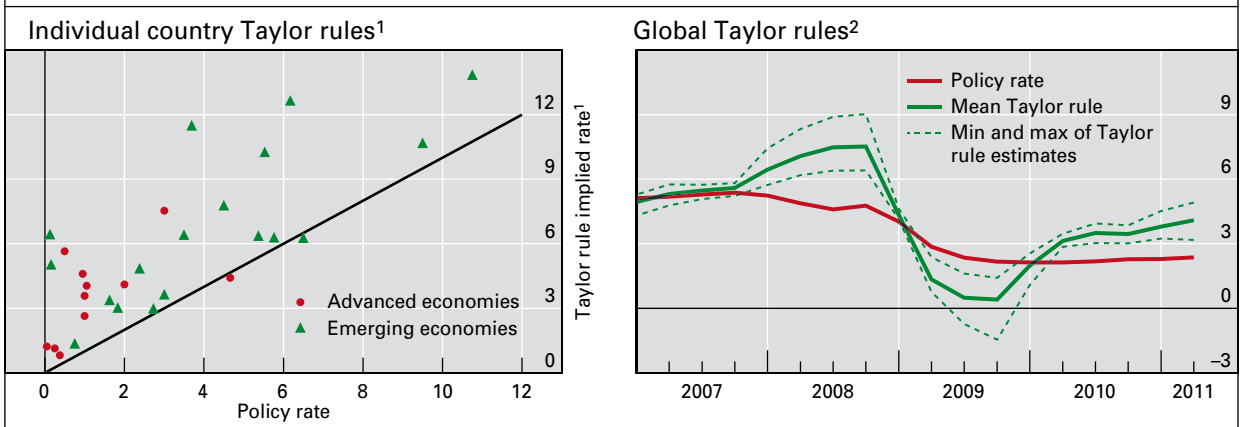
Of course, conventional Taylor rules may not be able to completely characterise the range of trade-offs facing a central bank in setting its policy rate. Those rules ignore a number of factors relevant in the current policy environment, such as lingering financial headwinds from the crisis and the effects of the unconventional monetary policies recently adopted. The latter policies make monetary conditions much more accommodative than is indicated by the difference between the actual policy rate and the implied rate from estimated Taylor rules.

... contributing to risks to price and financial stability

The current loose stance of monetary policy therefore reinforces concerns about risks to price stability. At the same time, it may foster a renewed build-up of risks to financial stability. In particular, emerging market economies risk the accumulation of financial imbalances similar to those seen in advanced economies in the years immediately preceding the global crisis. Credit relative

Monetary policy stance

In per cent

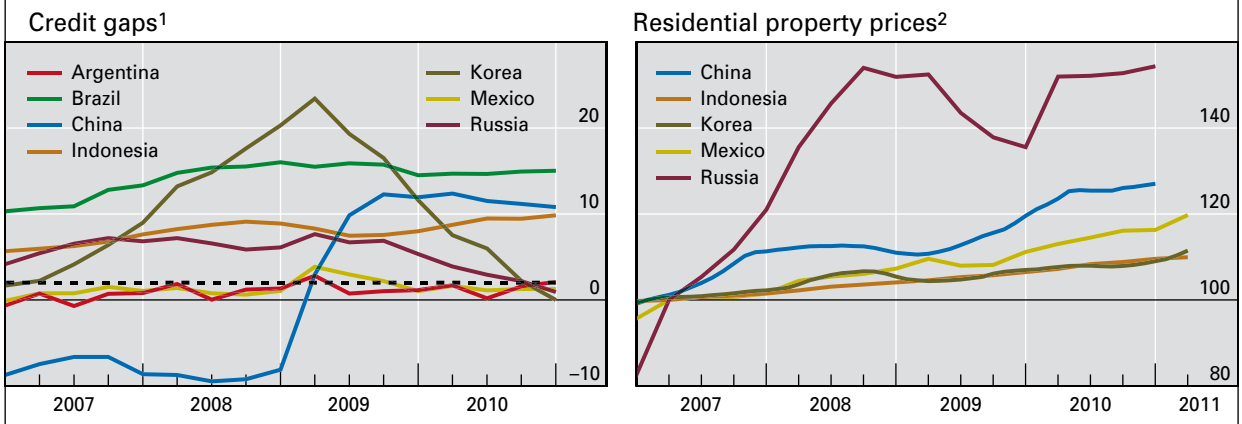


The Taylor rules are calculated as $i = r^* + \pi^* + 1.5(\pi - \pi^*) + 0.5y$, where π is a measure of inflation and y is a measure of the output gap. r^* and π^* are computed as the average level of the ex post real interest rate and the inflation rate, respectively, since Q1 2000.

[1] Taylor rule implied rates for Q4 2010 based on CPI inflation and the output gap calculated using an HP filter. [2] Taylor rules calculated for world aggregates constructed from weighted averages of national policy rates, inflation and GDP using 2005 GDP and PPP exchange rates. Taylor rules were computed for all combinations of three measures of inflation (headline, core and consensus headline forecasts) and measures of the output gap obtained from three different ways to compute potential output (HP filter, quadratic trend and unobserved components). The graph shows the mean, maximum and minimum Taylor rate of all nine combinations.

Sources: © Consensus Economics; national data; BIS calculations. Graph IV.8

Credit gaps and residential property prices in emerging market economies



[1] Deviation of the credit-to-GDP ratio from its long-term trend, in percentage points. The threshold of attention (dashed line) is set at 2%, the lower bound in determining the beginning of the build-up of the common reference guide for the countercyclical capital buffer. See Basel Committee on Banking Supervision, "Guidance for national authorities operating the countercyclical capital buffer", December 2010. [2] Q1 2007 = 100; definitions may differ across countries.

Sources: IMF, *International Financial Statistics*; CEIC; Datastream; national data; BIS calculations. Graph IV.9

to GDP and prices for residential property and equities have grown fast in many emerging market economies over the past year (Graph IV.9; see also Graph I.2, right-hand panel). These developments have also been fuelled by large capital inflows (Graph I.2, centre panel).

Monetary policy tightening in emerging market economies has been limited by concerns about reinforcing capital inflows and exchange rate appreciation. But alternative policy measures have been adopted to rein in the build-up of financial imbalances. These include macroprudential measures (such as caps on loan-to-value and debt service-to-income ratios), higher reserve requirements and in some cases capital controls (such as taxes on short-term capital inflows).[6] These measures, however, cannot substitute for a tightening of monetary policy and greater exchange rate flexibility.[7]

For the advanced countries that were most affected by the crisis, undue delay in the normalisation of the monetary policy stance entails the risk of creating serious financial market distortions, the postponement of deleveraging and the misallocation of resources.[8] Moreover, the unusually accommodative monetary conditions in advanced economies have probably been an important factor behind the recent large capital flows to emerging market economies.

Central banks need to take better account …

Indeed, one lesson from the crisis is that monetary policy actions taken in one economy can have powerful consequences for other economies. A purely domestic focus fails to take into account the global implications of central banks' collective behaviour. In the run-up to the crisis, for instance, unusually

[6] For an overview of macroprudential tools and their usage, see CGFS, "Macroprudential instruments and frameworks: a stocktaking of issues and experiences", *CGFS Papers*, no 38, May 2010.

[7] See J Caruana, "Capital flows to the emerging market economies: a perspective on policy challenges", speech delivered at the Forty-sixth SEACEN Governors' Conference, Colombo, Sri Lanka, 24–26 February 2011.

[8] For a detailed discussion of this issue, see BIS, *80th Annual Report*, June 2010, Chapter III.

... of the global implications of their collective actions

low policy rates in the core advanced economies were transmitted to the rest of the world through resistance to exchange rate appreciation. The result was unusually loose global monetary policy conditions at a time of strong global growth. Another example is the role of commodity prices in the formulation of monetary policy. Central banks commonly treat commodity prices as exogenous, often excluding them from the price index representing the main guidepost for monetary policy. But commodity prices, which are determined in global auction markets, may be driven by global monetary conditions and may thus be endogenous with respect to central banks' collective actions. As argued in Box IV.B, the recent increase in commodity prices may also be related to a search for yield caused by the extraordinarily loose global monetary policy. These considerations call for central banks to take better account of the global side effects of their own monetary policies (see Chapter III). This also puts a premium on reaching an international consensus on how to achieve balanced, non-inflationary growth.

Summing up

In the current monetary environment, policymakers face several daunting challenges. The increase in the size and complexity of central bank balance sheets resulting from unconventional monetary policies and foreign reserve accumulation creates risks that, if left unchecked, could eventually impact monetary policy credibility. At the same time, soaring commodity prices have pushed headline inflation rates up to uncomfortable levels in many economies, while tighter capacity constraints have heightened the risks of second-round inflation effects. These increased upside risks to inflation call for higher policy rates, but in some advanced economies this still needs to be balanced against the vulnerabilities associated with continuing private and public sector balance sheet adjustments and lingering financial sector fragility. However, the prolonged period of very low interest rates entails the risk of creating serious financial distortions, misallocations of resources and delay in the necessary deleveraging in those advanced countries most affected by the crisis. Moreover, some emerging market economies show signs of a renewed build-up of financial imbalances.

Tighter global monetary policy is needed in order to contain inflation pressures and ward off financial stability risks. It is also crucial if central banks are to preserve their hard-won inflation fighting credibility, which is particularly important now, when high public and private sector debt may be perceived as constraining the ability of central banks to maintain price stability. Central banks may have to be prepared to raise policy rates at a faster pace than in previous tightening episodes.

V. Financial regulatory reform: accomplishments, pitfalls, prospects

As the source of credit intermediation between lenders and borrowers, banks provide essential domestic and international financial services to consumers, businesses and government. A strong and resilient banking system is thus the foundation for sustainable economic growth. Throughout history, however, financial crises have occurred at one time or another in every region of the world and for a wide range of reasons. The most recent crisis, in 2007–09, revealed fundamental shortcomings in the operation and regulation of the banking system in many countries.

The crisis had its roots in the United States and spread primarily to other advanced economies, having originated in the imprudent use and inadequate regulation of complex securitisations by large banks. However, in a broader sense, the causes and evolution of the crisis reflect deficiencies that are typical of financial crises in general: investors chasing yield, too much credit, weak underwriting standards, an underpricing of risk, excessive leverage, and contagion.

All banks and jurisdictions must further strengthen resilience to crises

Given the speed at which crises can arise and be transmitted around the globe, and given ever more rapid financial innovation, banks in all countries need to hold higher capital and liquidity buffers to protect the global banking system and economy from unforeseen risks. Unfortunately, memories tend to be short, and significant risks to the banking sector generally emerge after a period of complacency bred of apparent calm. Thus, the work to strengthen banking systems must be carried through now, when the crisis is still fresh in people's minds and policymakers and the wider public understand the urgency of an effective response.

With its release of the Basel III rules on 16 December 2010, the Basel Committee on Banking Supervision set out new global regulatory standards on bank capital adequacy and liquidity to correct the deficiencies revealed by the crisis.[1] Some of the new rules represent a significant overhaul of existing global standards, others introduce rules where none previously existed. Taken together, they strengthen capital and liquidity regulation to promote more resilience in global banking. Thus fortified by Basel III, the international regulatory framework will better shield the financial sector from the next crisis, whatever its origin, and reduce the risk of spillover from the financial sector to the real economy. As risk-taking in the financial sector resumes, banks have started to accumulate capital and to adapt their funding strategies and broader business models to the new regulatory framework, which will call on them to target lower, more stable returns on equity.

[1] See the review of the Basel Committee's activities on pp 110–15.

How the financial crisis is shaping regulatory reform

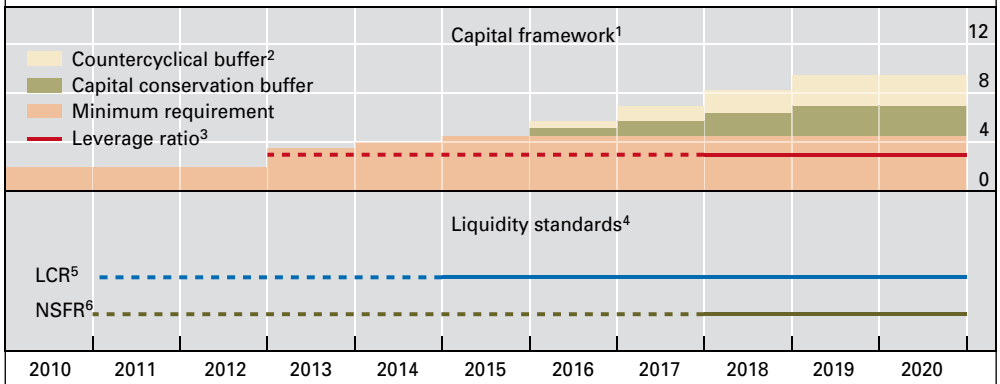
The severity of the crisis owed much to the fact that the banking sector in many countries had taken on too much risk without a commensurate increase in capital. Furthermore, this inadequate *level* of capital was of insufficient *quality*, as the latter had gradually eroded. Basel III tightens capital requirements, encompasses a broader array of risks, and explicitly addresses macroprudential aspects of banking system stability.

Bank capital

Basel III substantially raises the quality as well as the quantity of capital, with a much greater emphasis on common equity (Graph V.1; Box V.A). During the crisis, losses reduced banks' common equity. However, some banks maintained deceptively high ratios of Tier 1 capital to risk-weighted assets through the inclusion of other forms of financial instruments in the capital base. Moreover, non-common Tier 1 capital instruments often did not share in banks' losses through reduced coupon or principal payments and so did not contribute to maintaining the institutions as going concerns in any meaningful way. The artificially high Tier 1 risk-based ratios also meant that banks were building up high levels of leverage. Basel III therefore also introduces a simple leverage ratio that provides a backstop to the risk-based regime. The supplementary ratio, which is a measure of a bank's Tier 1 capital as a percentage of its assets plus off-balance sheet exposures and derivatives, will serve as an additional safeguard against attempts to "game" the risk-based requirements, and will mitigate model risk. By helping contain the build-up of excessive leverage, the leverage ratio will also complement other macroprudential measures, discussed below, to reduce systemic risk.

The leverage ratio will provide a backstop to the risk-based measures and help curb the build-up of excessive leverage

Phase-in schedule for higher minimum requirements for bank capital and liquidity



The dashed lines indicate observation periods and the solid lines indicate the maximum standard.

[1] Common equity capital requirements as a percentage of risk-weighted assets. [2] Maximum of the countercyclical buffers to be met with common equity or other fully loss-absorbing capital, implemented according to national circumstances. [3] Based on the results of the parallel run period, adjustments to be carried out in the first half of 2017 with a view to migrating to a Pillar 1 treatment on 1 January 2018 based on appropriate review and calibration. [4] Liquidity ratios to be monitored during the transition period. [5] Liquidity coverage ratio. [6] Net stable funding ratio.

Sources: Basel Committee on Banking Supervision; BIS calculations. Graph V.1

Box V.A: Capital instruments

The global banking system entered the crisis with an insufficient level of high-quality capital. The crisis revealed an inconsistency in how regulatory capital is defined across jurisdictions and the lack of disclosure that would have enabled the market to fully assess and compare the quality of banks' capital. In response, Basel III introduces a harmonised definition of capital that comprises the following components:

- **Common Equity Tier 1** – consists of the bank's common shares and retained earnings less regulatory adjustments (eg the deduction of goodwill). This component of capital fully absorbs losses while the bank remains a going concern. It is therefore the highest-quality component of a bank's capital. A key element of the new definition of capital is the greater focus on Common Equity Tier 1.
- **Additional Tier 1 capital** – consists of preferred shares and other capital instruments that comply with a set of criteria to ensure they can absorb losses while the issuing bank remains a going concern. These criteria include requirements that the instruments be subordinated, have fully discretionary non-cumulative dividends or coupons and have neither a maturity date nor an incentive to redeem.
- **Tier 2 capital** – consists of debt instruments that comply with a set of criteria to ensure they are able to absorb losses when a bank fails (ie when it has become a "gone concern"). These criteria include requirements that the instruments be subordinated, have a minimum original maturity of at least five years and contain no step-ups or other incentives to redeem. Regulatory recognition of these instruments is amortised over the five years before maturity.

During the crisis, a number of distressed banks were rescued by the injection of public sector funds in the form of common equity and other forms of Tier 1 capital. While this had the effect of supporting depositors, it also meant that certain capital instruments did not absorb losses. Therefore, in addition to the characteristics noted above, instruments in Additional Tier 1 and in Tier 2 must have a feature ensuring that they can be written off or converted to common equity when the issuing bank reaches the point of non-viability (ie the point at which the bank is unable to support itself in the private market) as determined by the relevant authority.

The Basel III definition of capital phases out innovative hybrid capital instruments, which provided an incentive to redeem through features such as step-up clauses. It also eliminates Tier 3 capital, which was short-term subordinated debt that was previously permitted to cover market risk.

In addition to the Basel III elements of capital, certain other instruments are being considered in the context of systemically important banks:

- **Contingent capital** (also called cocos) – debt instruments that convert to Common Equity Tier 1 capital through a write-off or conversion to common shares before a bank reaches the point of non-viability.
- **Bail-in-able debt** – debt instruments that convert to Common Equity Tier 1 capital through a write-off or conversion to common shares when a bank reaches the point of non-viability.

Risk coverage

Wider risk coverage and higher capital requirements for trading activities ...

The Basel Committee has also improved the risk coverage of the regulatory capital framework for capital market activities – a salient feature of the recent crisis, where trading exposures accounted for much of the build-up of leverage and were an important source of losses.[2] Weak capital, excessive leverage and inadequate risk coverage prevented the banking system from fully absorbing systemic trading and credit losses. Nor could it cope with the reintermediation of large off-balance sheet exposures that had built up in the shadow banking system. Under Basel III, banks will have to hold more capital against their less liquid, credit-sensitive assets whose holding periods are much longer than traditional trading positions. Trading activities will also be

[2] Trading exposures include positions in financial instruments and commodities held either with the intent to trade them or to hedge other trading activities. For purposes of calculating regulatory capital, such positions are subject to the Basel Committee's market risk rules and are said to be held in the "trading book".

subject to a stressed value-at-risk requirement. In addition, securitisation exposures in the trading book will be subject to capital charges more consistent with those for the banking book. Basel III also imposes higher capital requirements for counterparty credit risk, that is, for the amount that would be lost in the event of default by a counterparty to a financial contract. Moreover, Basel III creates incentives for banks to increase the use of central counterparties (CCPs) – financial institutions that act as intermediaries between market participants (see Box V.B) – while ensuring that the risk arising from banks' exposures to CCPs is adequately capitalised.

... and for counterparty credit risk

Liquidity

Liquidity risk management and profiles must improve

During the build-up to the crisis, many banks had operated with increasingly thin liquidity margins, placing undue reliance on easy access to market liquidity. At the height of the crisis, counterparties lost confidence in the liquidity of many banking institutions, severely straining their access to

Box V.B: The role of financial market infrastructures

Transactions in financial markets are conducted either on organised exchanges or over the counter (OTC). After the transaction is concluded, it is passed on to what is commonly known as the post-trade infrastructure. This process starts with the matching of the transaction and ends with its settlement. Settlement typically involves the transfer of money against the delivery of an asset or a financial instrument such as a derivative. In modern financial systems, settlement takes place in financial market infrastructures like large-value payment systems, securities settlement systems and central counterparties (CCPs).

The way these post-trade infrastructures are designed and how they function has important implications for financial stability because they can act as a channel through which disruptions can spread among financial market participants. Put differently, these infrastructures can serve as an important means to mitigate the risks arising from the "interconnectedness" of market participants and can reduce the risk of contagion.

The financial crisis revealed a striking weakness in the way important OTC derivatives, in particular credit default swaps, were processed in the post-trade phase. Many of these transactions were inadequately reported, and the bilateral exposures between counterparties were insufficiently collateralised.

Against this background, authorities from around the world are pushing for two significant changes in the post-trade infrastructure for OTC derivatives. Both should be implemented by the end of 2012.[1] First, OTC derivatives will need to be reported to a trade repository (TR). A TR is an electronic registry that keeps a record of all relevant details of an OTC derivative transaction over its lifetime. This information can be used in various ways by the reporting institutions, authorities and the public. If all trades are reported to a TR, and the information is made available to the relevant supervisory authorities, then these authorities will be able to attain an overall view of the OTC derivatives markets, including the most important (gross and net) positions taken by the major dealers in these markets. If TRs had existed before the crisis, the build-up of huge derivative positions, such as those at American International Group (AIG), would have been observed much earlier.

Second, clearing OTC derivatives through a CCP instead of bilaterally can bring about several benefits from a financial stability perspective. A CCP interposes itself between the two original counterparties of a financial transaction, becoming the buyer to the seller and the seller to the buyer. In other words, the CCP isolates the original counterparties from each other should one of them default. Thus, it makes financial institutions less interconnected. However, since risks become concentrated in the CCP, the CCP itself needs to be highly robust: it must protect itself against the default of one or more of its members. To that end, the CCP requires its members to adjust their collateral at the CCP at least daily in accordance with the price movements of their positions.

[1] See, for instance, G20, "Leaders' statement", Pittsburgh Summit, 24–25 September 2009.

funding. Basel III addresses the liquidity deficiencies that the crisis laid bare. The internationally harmonised liquidity framework consists of two minimum regulatory standards: the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR). They have complementary objectives.

The two new liquidity standards will help improve resilience

The LCR is designed to bolster the short-term resilience of a bank's liquidity risk profile by ensuring that it has high-quality liquid assets in sufficient quantity to survive a plausibly severe stress scenario lasting for 30 calendar days. The stress scenario, designed by the Basel Committee, incorporates many of the shocks experienced during the crisis. It includes a partial run-off of retail deposits, a partial or complete drying-up of wholesale funding sources, a need to post additional collateral due to a credit rating downgrade, and unscheduled draws on unused credit and liquidity facilities.

The NSFR is designed to promote resilience over a longer time horizon by creating additional incentives for banks to use more stable sources of funding on an ongoing basis. These standards complement the Committee's 2008 *Principles for sound liquidity risk management and supervision*, the implementation of which will be assessed in the near term.

Macroprudential aspects

Macroprudential elements of Basel III address systemic risk

Basel III was designed to enhance both bank-specific soundness and wider banking sector stability. Thus, besides its firm-specific approaches, it incorporates macroprudential measures to explicitly address systemic risk.

During the crisis, mounting losses and the resulting strain on capital impaired banks' ability to lend – precisely at the time when economies were most in need of credit. This tendency for the financial system to amplify cyclical effects in the real economy, or procyclicality, combined with the interconnectedness of financial institutions that were considered too big to fail, exacerbated the crisis.

Capital buffers will help mitigate procyclicality

To help mitigate procyclicality in banking and the broader financial system, the new regulatory capital framework provides for building up capital in good times to levels above the minimum requirement. The resulting *capital conservation buffer* will help banks absorb losses during periods of financial and economic stress. As a bank's capital level moves closer to the minimum requirement, the conservation buffer imposes a progressively tightened constraint on the bank's discretionary distributions, such as dividends. Retaining a bigger proportion of earnings during a downturn will help ensure that capital remains available to support banks' ongoing business operations during the period of stress.

Basel III also introduces a *countercyclical buffer*. It is based on the observation that private sector credit growth that is out of line with historical experience often ultimately imposes losses on the lenders. The ratio of aggregate credit to GDP will serve as the reference for the build-up of the buffer, which will be implemented through restrictions on capital distributions identical to those that apply to the conservation buffer. Within countries, the authorities will impose this buffer only when they judge that credit growth is resulting in an unacceptable build-up of system-wide risk. Conversely, the buffer will be released when, in the judgment of the authorities, the capital

Box V.C: National and international progress on implementing macroprudential policy frameworks

One of the key lessons of the recent financial crisis is that regulatory policy must have an enhanced macroprudential orientation to comprehensively address systemic financial risks. The national and international work to develop such a macroprudential policy has intensified and continues to grow, building on conceptual efforts by the BIS since the apparent coining of the term "macroprudential" by the Cooke Committee, the forerunner of the Basel Committee, in 1979.[1]

Recent initiatives in a number of international forums[2] have aided the formation of a clear consensus regarding the key features of an effective macroprudential framework. These include:

- effective integration of supervisory information, market intelligence and aggregate indicator data;
- recognition of the importance of domestic and cross-border interlinkages across financial institutions and markets;
- macroprudential instruments matched to the particular risks or imbalances diagnosed;
- macroprudential policy responsibility assigned to an independent central agency or formal committee, either within the central bank or involving the central bank in a key role;
- clarity of mandate, adequacy of powers and strong accountability; and
- clear macroprudential policy communications that link financial stability assessments to policy decisions and that manage public expectations about the capabilities of macroprudential policy.

Formal macroprudential policy arrangements that will enable these principles to be realised have been established or are well in train in many jurisdictions, including the United States, the United Kingdom and the European Union. In many cases, operations under new arrangements have begun. The emerging frameworks feature advancements in the structured, regular diagnosis of systemic risk. For example, these diagnoses are conducted at the international level by the Committee on the Global Financial System (CGFS), the Financial Stability Board (FSB) Standing Committee on the Assessment of Vulnerabilities, and the IMF-FSB Early Warning Exercise; and national financial stability reports are progressively strengthening their support of macroprudential policy. Basel III incorporates macroprudential capital elements, and many jurisdictions continue to accumulate practical experience with macroprudential instruments such as loan-to-value ratio caps and reserve requirements.

The powers, tools and accountability requirements for macroprudential policy are either well defined or in an advanced stage of development. The imperative now is to get actual policy operations up and running. To do so, key operational issues must be resolved, including the selection, design and calibration of instruments, the translation of risk indicators to instrument settings, and arranging for efficient decision-making by committees encompassing diverse policy interests and knowledge. In short, the development of macroprudential policy is moving from conceptual issues of design to practical questions of implementation.

The more technical phase of macroprudential policy development is being facilitated by increasingly useful data generated by the growing number of actual macroprudential interventions and improvements to statistical coverage. Nonetheless, a substantial amount of trial and error is likely to be needed for the time being, given the still-limited history of macroprudential policy usage. Sharing of practical experiences among macroprudential policymakers, including through the BIS and FSB processes, will promote the development of the international dimension of macroprudential policy and the refinement of national frameworks.

[1] See P Clement, "The term 'macroprudential': origins and evolution", *BIS Quarterly Review*, March 2010, pp 59–67. [2] See, for example, CGFS, "Macroprudential instruments and frameworks: a stocktaking of issues and experiences", *CGFS Papers*, no 38, May 2010; and BIS-FSB-IMF, "Macroprudential policy tools and frameworks: update to G20 Finance Ministers and central bank Governors", 14 February 2011.

can help absorb banking system losses that pose a risk to financial stability. The ability to run down the buffer without penalties will help reduce the risk of constraining the availability of credit.

The macroprudential elements of Basel III contribute significantly to the development of the broader macroprudential policy framework. The BIS has

advocated such a framework for some time and is encouraged to see the growth of national and international efforts to develop and implement it (see Box V.C). However, while much has been accomplished, more needs to be done, especially on practical implementation of the broad consensus now evident around the framework's core concepts.

Impact of the new requirements

A stronger, safer banking system allocates credit more efficiently, reduces the risk of a costly financial crisis and stabilises the environment for long-term business decisions. These benefits will begin to be reaped when the reforms are implemented. But the process of implementing the new framework will also impose some costs on banks and their customers as banks adjust their balance sheets and business models.

Some banks will need to build up their capital and liquidity ...

How much adjustment will be needed? The answer varies substantially across institutions and jurisdictions. In some economies, particularly those affected by the financial crisis, banks are still rebuilding capital and running off certain assets. In others, capital and liquidity levels already meet the new requirements. Regardless of their starting point, all economies will see some adjustment, given the significant qualitative and quantitative changes in supervisory definitions and approaches in Basel III.

... but the increases, in aggregate, are likely to be modest ...

To ascertain the impact of the new requirements and the corresponding adjustment, members of the Basel Committee conducted a comprehensive quantitative impact study (QIS).[3] They found that, for a set of 74 large, internationally active banks (Group 1), the new capital requirements (including new deductions of capital from common equity) would have nearly halved the 31 December 2009 ratios of Common Equity Tier 1 (CET1) capital to risk-weighted assets, from a weighted average gross CET1 ratio of 11.1% (gross of current deductions, based on current risk-weighted assets) to an average net CET1 ratio of 5.7% (after application of regulatory deductions and based on new risk-weighted assets) (Table V.1). Because data pertained to most of the banks that met the specified Group 1 criteria, these figures are likely to be

Average capital ratios reported to the quantitative impact study

	Number of banks	CET1		Tier 1		Total	
		Gross	Net	Current	New	Current	New
Group 1	74	11.1	5.7	10.5	6.3	14.0	8.4
Group 2	133	10.7	7.8	9.8	8.1	12.8	10.3

Ratios in per cent. CET1 = Common Equity Tier 1. Gross = CET1 (without deductions) relative to current risk-weighted assets. Net = CET1 (with deductions) relative to new risk-weighted assets. Current = capital and risk-weighted asset definitions currently in place. New = capital and risk-weighted asset definitions to be implemented under Basel III.

Source: Basel Committee on Banking Supervision, *Results of the comprehensive quantitative impact study*, December 2010.

Table V.1

[3] Basel Committee on Banking Supervision, *Results of the comprehensive quantitative impact study*, December 2010.

close to the actual weighted average capital ratio for the world's large, global banks. For a sample of 133 smaller banks (Group 2), measured capital ratios would also fall, but to a lesser extent, with the net CET1 ratio declining from 10.7% to 7.8%.

These results suggest that some adjustment within the global banking system is to be expected as banks work to meet the new requirements. However, the improvements in capital positions since the end of 2009 should mitigate this to some extent. The adjustment will also be eased by improvements in bank profitability and behavioural shifts over the transition period.

... and banks have already started to adjust

Banks have already begun to accumulate the additional capital that they will need (Graph I.7, left-hand panel). Banks' capital-raising in 2008–09 largely made up for their losses on writedowns related to the crisis (Graph V.2). More recently, some have started to raise private capital, both to repay official capital injections and to achieve stronger capital positions overall. For the most part, however, banks have accumulated capital through higher retained earnings, with increased profitability largely reflecting a fall in loan loss provisions (Table V.2).

In contrast to previous international regulatory initiatives, the formulation of the Basel III proposals was guided by top-down analysis of the potential macroeconomic impact. Thus, alongside their bottom-up efforts to cumulate the impact of higher requirements on individual banks, regulators looked closely at the growth impact during the transition to stronger capital and liquidity requirements as well as the costs and benefits to the economy over the long term.

To examine potential transitional impacts on lending and investment, the Financial Stability Board (FSB) and the Basel Committee assembled the

Profitability of major banks[1]

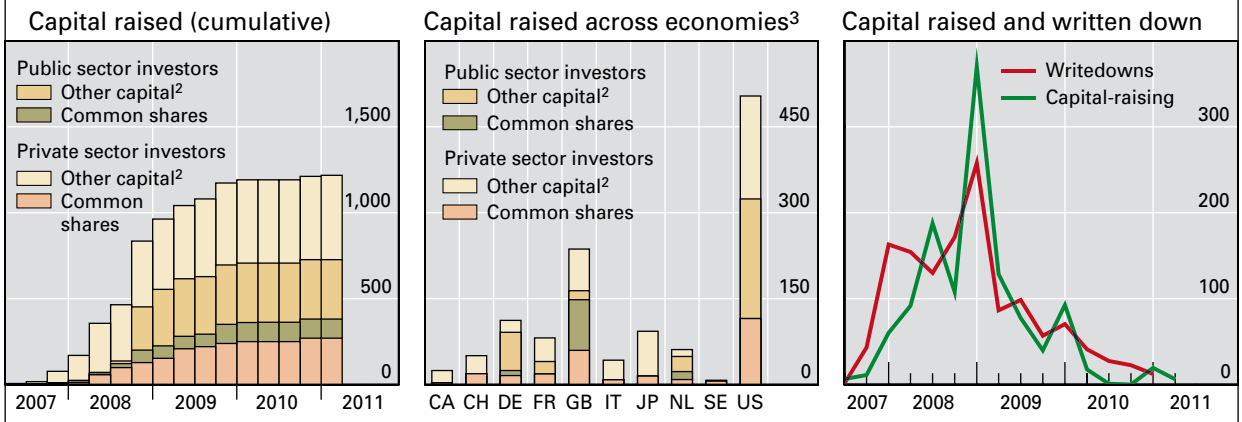
As a percentage of total assets

	Pre-tax profits			Net interest margin			Loan loss provisions			Operating costs[2]		
	2010	2009	2008	2010	2009	2008	2010	2009	2008	2010	2009	2008
Australia (4)	1.14	0.93	1.01	1.89	1.88	1.66	0.31	0.54	0.26	1.24	1.20	1.21
Austria (2)	0.67	0.63	0.46	2.50	2.46	2.44	0.97	1.20	0.56	1.94	2.00	2.00
Canada (5)	1.01	0.72	0.47	1.65	1.73	1.39	0.26	0.45	0.21	1.87	2.04	1.69
France (3)	0.45	0.18	0.04	1.11	1.02	0.68	0.26	0.36	0.18	0.63	1.10	0.97
Germany (4)	0.17	–0.11	–0.46	0.85	0.80	0.62	0.14	0.41	0.20	1.19	1.00	0.73
Italy (3)	0.37	0.36	0.27	1.74	1.92	2.02	0.60	0.76	0.42	1.70	1.79	1.86
Japan (10)[3]	0.30	0.29	–0.16	0.51	0.96	0.93	0.10	0.32	0.42	0.49[4]	0.86[4]	0.83[4]
Netherlands (2)	–0.04	–0.15	–0.61	0.82	0.98	0.80	0.28	0.33	0.21	1.39	1.01	0.90
Spain (4)	0.95	0.88	1.07	2.26	2.27	1.85	0.83	0.94	0.53	1.56	1.49	1.40
Sweden (4)	0.61	0.34	0.67	0.89	1.02	0.99	0.11	0.46	0.11	0.88	0.95	0.90
Switzerland (4)	0.66	0.21	–1.75	0.54	0.56	0.61	0.01	0.10	0.12	2.13	2.10	2.57
United Kingdom (7)	0.25	–0.04	–0.05	1.03	0.95	0.86	0.61	0.90	0.39	0.90	1.18	0.99
United States (7)	1.02	0.42	0.28	2.62	2.71	2.30	0.87	1.72	1.21	2.94	2.79	2.45

[1] Largest banks in each country by total asset size. The number of banks in the 2010 data is indicated in parentheses. [2] Sum of personnel and other operating costs. [3] Q2 2010 data. [4] Does not include personnel costs.

Source: Bankscope. Table V.2

Capital-raising and writedowns[1]



CA = Canada; CH = Switzerland; DE = Germany; FR = France; GB = United Kingdom; IT = Italy; JP = Japan; NL = Netherlands; SE = Sweden; US = United States.

[1] In billions of US dollars. [2] Instruments not explicitly classified as common shares, eg preferred shares (convertible or perpetual), subordinated bonds, capital notes, convertible bonds, profits from asset sales and other uncategorised instruments. [3] Cumulated over the period shown in the left-hand panel.

Sources: Central banks; Bankscope; Bloomberg; BIS calculations. Graph V.2

Macroeconomic Assessment Group (MAG), consisting of macroeconomic modellers from a number of central banks, national regulators and international organisations. The MAG concluded that the transitional effects were likely to be modest.[4] Using median results from the suite of models and relatively conservative assumptions, the group estimated that bringing the global common equity capital ratio to a level that would meet agreed targets over eight years would result in a maximum decline in GDP, relative to baseline forecasts, of 0.22% over 35 quarters (Graph V.3, right-hand panel). This is equivalent to a shortfall from baseline in average annual growth of GDP of 0.03 percentage points (3 basis points) during these 35 quarters, after which the growth rate would accelerate back towards the baseline. The 97 models used in the study produced a wide range of estimated impacts. The 20th percentile estimate produced a maximum GDP decline of 0.1% and the 80th percentile estimate a decline of almost 0.5%. However, most of the results clustered around the median, with the estimated paths between the 40th and 60th percentile tending to be very close to the median forecast. The macroeconomic impact of liquidity requirements was more difficult to estimate but also seemed to be small.

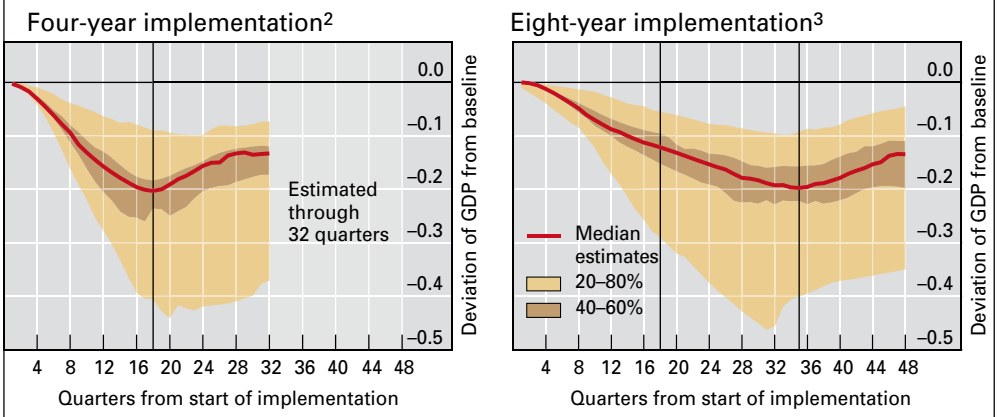
The macroeconomic impact of the transition is unlikely to be significant

The MAG noted that banks may choose to implement the reforms on a faster schedule than the one set out by supervisors. The group found that implementing the reforms over four years rather than eight (Graph V.3, left-hand panel) would lead to a slightly greater decline in the average annual growth rate of GDP over a shorter period, specifically a reduction of 5 basis points from baseline over 18 quarters, followed by a return towards baseline.

[4] See Macroeconomic Assessment Group, *Final Report*, December 2010.

Aggregate impact of a 1.3 percentage point increase in the target capital ratio[1]

In per cent



Results from a set of macroeconomic forecast models estimating the impact on GDP, relative to baseline forecasts, if the Common Equity Tier 1 capital (CET1) ratio of banks is increased 1.3 percentage points over four years (left-hand panel) and eight years. The increase would raise Common Equity Tier 1 capital from 5.7% of risk-weighted assets, the level estimated by the QIS that large (Group 1) banks would have had at end-2009 under Basel III capital requirements, to 7%, which under Basel III is equal to the sum of the minimum CET1 ratio and the capital conservation buffer. The shaded areas show the range of estimated GDP paths between the 20th and 80th percentiles (light brown) and the 40th and 60th percentiles (dark brown) across the estimated models.

[1] The vertical lines indicate the 18th and (for the eight-year case) 35th quarters. [2] Distributions are computed across all 89 cases used in the MAG Interim Report, excluding those designed to measure the impact of international spillovers. [3] Distributions are computed across all 97 cases contributed to the MAG, excluding those designed to measure the impact of international spillovers.

Sources: Macroeconomic Assessment Group (MAG), *Interim Report*, August 2010; MAG, *Final Report*, December 2010. Graph V.3

While the MAG analysis focused on the transitional costs of the new regulatory framework, a Basel Committee subgroup examined the long-term economic impact (LEI) of the reforms, comparing costs with benefits. The costs mainly related to higher lending rates linked to a higher cost of bank funding.[5] The group noted that this was actually a conservative assumption, since it ignored the fact that safer bank balance sheets should reduce the costs of banks' equity and debt funding to an extent that would at least partly compensate for the cost of holding more equity relative to debt. Another conservative assumption was that any increase in bank funding costs would be passed entirely into lending rates. These costs were set against a number of benefits, including a likely reduction in the frequency and severity of banking crises. The group found that, historically, banking crises occur in any given country on average once every 20–25 years. Estimated cumulative discounted output losses from banking crises vary widely but have a median of 60% of pre-crisis GDP. Thus, for example, a 1 percentage point reduction in the likelihood of a crisis should yield a benefit of around 0.6% of GDP.

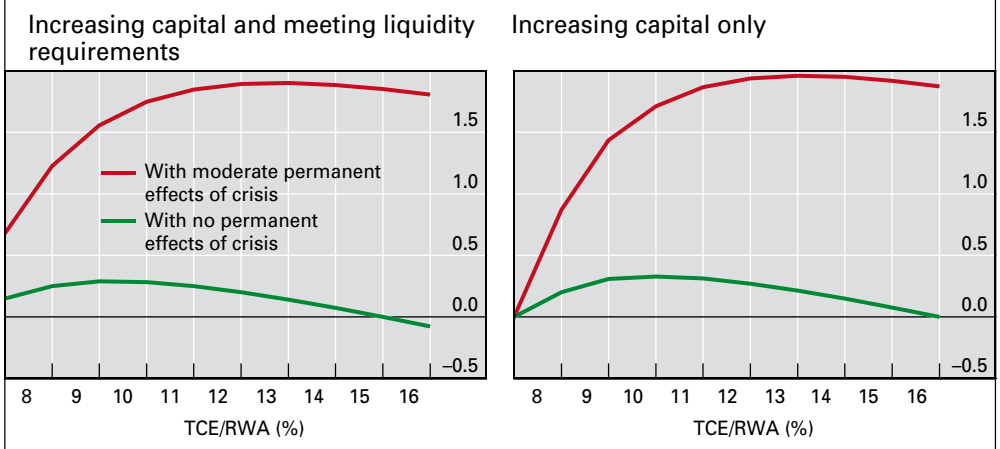
[5] See Basel Committee on Banking Supervision, *An assessment of the long-term economic impact of stronger capital and liquidity requirements*, August 2010.

Over the longer term, the benefits are expected to outweigh the costs

The LEI group concluded that the long-term benefits of stronger capital and liquidity requirements substantially exceed the costs for a broad range of minimum capital requirements[6] (Graph V.4). The magnitude of the benefits depends critically on whether output after a financial crisis eventually returns to where it would have been had no crisis taken place (the benefits portrayed by the green lines in Graph V.4) or permanently moves to a lower path (that is, a permanent relative reduction, in which case the benefits are as portrayed by the red lines). If, as concluded by most studies, a crisis leads to a permanent relative reduction in output, then the net benefit from reducing the risk of a crisis should be correspondingly greater.

Along with other analyses, the MAG and LEI studies played an important role in informing the decisions ultimately taken by policymakers, namely to mandate relatively high minimum buffers for high-quality capital and liquidity while allowing banks a lengthy transition period. With the outlines of the international framework now essentially settled, banks have started to adjust their balance sheets and business models to the new requirements, while the regulatory agenda has moved on to a number of other, complementary issues.

Estimated long-run annual net economic benefits of increases in capital and liquidity



The net economic benefits portrayed by the red line are derived from the assumption that the effects of crises on output are permanent but moderate, which also corresponds to the median estimate across all comparable studies. For the benefits portrayed by the green line, the assumption is that the output effects of crises are only transitory. The capital ratio (horizontal axis) is defined as tangible common equity (TCE) over risk-weighted assets (RWA). The origin corresponds to the pre-reform steady state, approximated by historical averages for total capital ratios (7%) and the average probability of banking crises. Net benefits (vertical axis) are measured by the difference between expected benefits and expected costs and are measured by the percentage impact on the level of output. Expected benefits equal the reduction in the probability of crises times the corresponding output losses.

Source: Basel Committee on Banking Supervision. Graph V.4

[6] The LEI exercise used capital ratios calculated under the older, pre-Basel III definitions for capital and risk-weighted assets. The findings of the QIS suggest that banks' current ratios of tangible common equity (TCE) to risk-weighted assets (RWA) under the Basel III definitions tend to be roughly two thirds of those calculated using previous concepts. The figures on the horizontal axis in Graph V.4 should be adjusted accordingly.

Outstanding issues and future work

The reform agenda now encompasses implementation of regulations complemented by more intensive and intrusive supervision; more extensive regulation and supervision of systemically important financial institutions (SIFIs) and development of effective cross-border resolution regimes; and broader consideration of non-bank financial firms and the shadow banking system. The Basel Committee is also reviewing the distinction between the regulatory banking book and the trading book.

Implementation

The Basel III rules need to be implemented in a timely and globally consistent manner. All member countries of the Basel Committee must now translate the Basel III texts into national regulations and legislation in time to meet the 2013 deadline.

Basel III will be phased in so as not to impede the economic recovery

The Committee and its oversight body of Governors and Heads of Supervision have consistently stated that the new standards will be introduced in a manner that does not impede the economic recovery. Thus, they have chosen a staggered timeline for implementation (Graph V.1). For example, the July 2009 enhancements that strengthen regulatory capital and disclosure requirements are due to take effect no later than the end of 2011. The Basel III requirements themselves begin to take effect from the beginning of 2013 and will be phased in by 2019. This time frame includes an observation period to review the implications of the liquidity standards for individual banks, the banking sector and financial markets, with a view to addressing any unintended consequences. Similarly, the Committee will assess the impact of the leverage ratio on business models during the transition period in order to ensure that it achieves its objectives.

The impact of the new standards will be monitored and unintended consequences addressed

Like all Basel Committee standards, Basel III sets out *minimum* requirements, and the transitional arrangements are the deadlines for adopting the new standards. Countries should move faster if their banks are profitable and are able to apply the standards without having to restrict credit. Banks should not be permitted to increase their capital distributions simply because the deadline for achieving the minimum standards is still some way off, particularly if there are signs of growing macroeconomic risks and imbalances. Therefore, banks, for their part, must also begin to plan and to prepare.

Jurisdictions and banks must begin Basel III planning

Basel III is the core regulatory response to problems revealed by the financial crisis. Delay or weakening of the agreements would jeopardise financial stability and the robustness of the recovery over the long term. The full, timely and consistent implementation of *all* relevant standards by banks, along with rigorous enforcement by supervisors, is critical. Ultimately, both the official and the private sector will reap the benefits of a more stable financial system.

Full, timely and consistent implementation is needed

More intensive and more intrusive supervision

Implementation efforts need to be supplemented by strong and enhanced supervision of individual banks. Strong supervision is needed to ensure that banks operate with capital levels, liquidity buffers and risk management

practices that are commensurate with the risks taken. It must also address the consequences of financial innovation or risks of regulatory arbitrage that regulation cannot fully capture and, more generally, address the firm-level consequences of emerging risks and economic developments. National authorities must supervise in a more intensive and more intrusive fashion, especially for the largest and most complex banks. It will also be important to reinforce both the firm-specific and macroprudential dimensions of supervision and the way they interact.

Supervisors need both a firm-specific and a macroprudential focus

In particular, as it carries forward its work on the implementation of the supervisory review process under Basel II (ie Pillar 2), the Basel Committee will foster the adoption of better supervisory practices.

Systemically important financial institutions

Reducing the risks posed by financial institutions that are systemic in a global context (global systemically important financial institutions, or G-SIFIs) is a high priority for the international regulatory community. Basel III will enhance the quality and quantity of capital for all banks, but it does not fully address the externalities or spillover effects that G-SIFIs generate. Additional policy tools are necessary.

Additional policy tools are needed to address SIFIs ...

In November 2010, the FSB introduced a policy framework for these institutions. It recommends that G-SIFIs have higher loss-absorbing capacity to reflect the greater risks that they pose to the global financial system and that these institutions be subject to more intensive and coordinated resolution planning to reduce the probability and impact of their failure. This will help ensure that G-SIFIs can be closed or wound up quickly without destabilising the financial system or exposing the taxpayer to the risk of loss. In addition, the FSB calls for enhanced supervision of SIFIs that will be more intensive and effective than in the past.

... including capital surcharges ...

The Basel Committee has developed quantitative indicators and qualitative elements to identify G-SIFIs. Work is also continuing on calibrating the additional loss absorbency that G-SIFIs should have, which could be met through some combination of common equity and contingent capital. The Committee will pursue this work in close cooperation with the FSB in the coming months.

More effective cross-border bank resolution

Higher loss-absorbing capacity for G-SIFIs and their effective resolution complement each other, but neither by itself is sufficient. The financial crisis also illustrated the importance of effective cross-border crisis management. The scope, scale and complexity of international financial transactions expanded at an unprecedented pace in the years preceding the crisis, while the tools and techniques for handling cross-border bank resolution have hardly evolved. Some of the events during the crisis revealed gaps in intervention techniques and, in many countries, a lack of appropriate resolution tools. Actions taken to resolve cross-border institutions during the crisis tended to be ad hoc, severely constrained by time, and dependent on a significant amount of official support.

... and better and more coordinated resolution regimes

In March 2010, the Basel Committee issued recommendations to strengthen national resolution powers and their cross-border implementation. The recommendations also covered firm-specific contingency planning for banks and home and host country authorities. Contagion can be reduced through risk mitigation mechanisms such as netting arrangements, collateralisation practices and the use of regulated central counterparties. These and other measures would help limit the market impact of a bank failure. The recommendations should lead to practical and credible plans to promote resilience in periods of severe financial distress and to facilitate a rapid resolution if necessary.

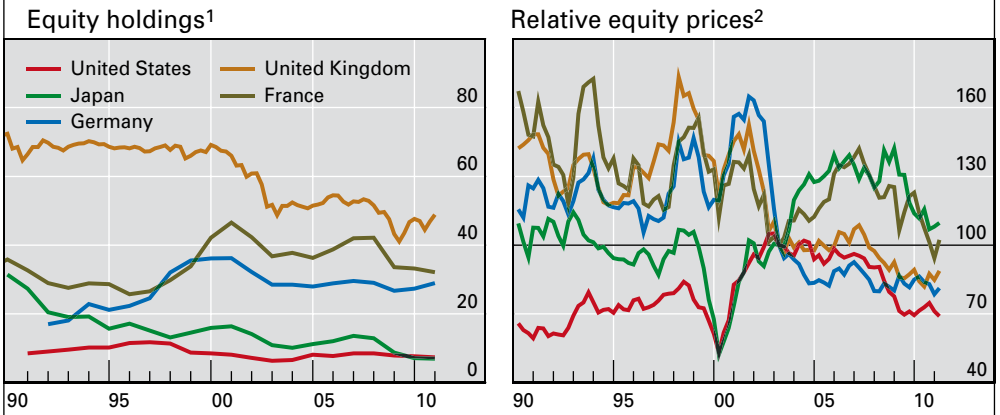
Building on the recommendations, the Basel Committee and the FSB are assessing progress in national and multinational efforts to enhance authorities' ability to manage and resolve distressed banking institutions in a manner that minimises disruptions to the financial system. The two bodies are evaluating legal and policy changes that would assist authorities in addressing future needs for crisis management and bank resolution.

Other financial sectors and firms

Review of insurance companies' systemic importance

Work to strengthen the regulation of SIFIs also needs to take account of differences across financial sectors. The FSB will review how the different regulatory measures fit together and whether there are inconsistencies or contradictions among the standards. For instance, deeper consideration is needed to assess the systemic importance of insurance companies and their role in financial stability. Insurance companies tend to have very different risk characteristics from those of banks, particularly regarding liquidity. Insurance company balance sheets also differ considerably across countries, for example in terms of the exposure to equity markets (Graph V.5, left-hand panel). Except for unusual cases such as American International Group (AIG) and the monoline insurers, these institutions proved broadly resilient during the financial crisis (Graph V.5, right-hand panel).

Insurance companies: equity holdings and performance



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

Sources: Datastream; National Association of Insurance Commissioners; national data. Graph V.5

Hedge funds are another set of firms for which regulatory instruments and objectives differ sharply from those appropriate to banks. Despite major investment losses and outflows during the crisis, assets and leverage in the hedge fund sector have been broadly stable in the post-crisis period (Graph V.6).

Shadow banking

Shadow banking refers to credit intermediation that takes place outside the traditional banking system and involves maturity or liquidity transformation. Examples include the activities of money market funds, lending by unregulated finance companies, the issuance by specialised conduits and investment vehicles of commercial paper backed by longer-term assets, and the funding of securitisation activities through repo markets. The shadow banking system is, however, closely intertwined with the regulated system. Large banks typically draw substantial income from shadow banking activities and retain both direct and indirect credit and operational exposures to them through business lines such as loan origination, credit enhancements, backup liquidity lines, brokerage services, warehousing and credit insurance.

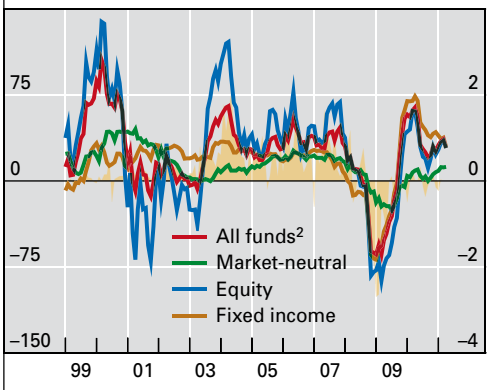
Shadow banking also raises systemic risk issues ...

Shadow banking can perform valuable functions, including facilitating credit extension to certain sectors and providing banks and investors with a range of vehicles for managing credit, liquidity and maturity risks. However, the financial crisis demonstrated that shadow banking can also give rise to a number of risks in the broader financial sector. Some of these risks (such as those related to bank exposures through contingent credit lines) are being addressed through the improvements in bank regulation as well as through initiatives such as stronger regulation of credit rating agencies and money

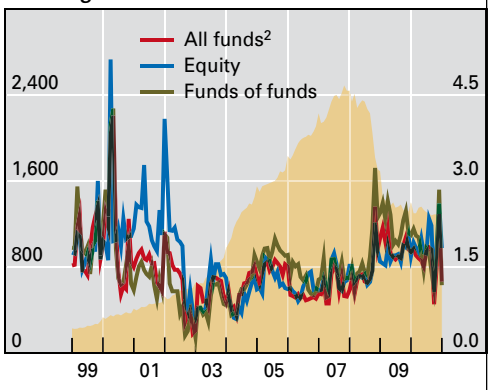
... which can be mitigated through addressing gaps in data and regulatory frameworks ...

Hedge funds: size, performance and leverage

Returns[1] and inflows



Leverage measures[3] and assets



The shaded areas represent hedge fund flows (left-hand panel) and stocks (right-hand panel); left-hand scale, in billions of US dollars.

[1] HFRI monthly performance of fund-weighted indices; 12-month moving averages, in per cent. [2] All single-manager HFRI index constituents. [3] Leverage estimates are based on the regression methodology described in P McGuire, E Remolona and K Tsatsaronis, "Time-varying exposures and leverage in hedge funds", *BIS Quarterly Review*, March 2005, pp 59–72. A value of 1 indicates no leverage.

Sources: Hedge Fund Research, Inc (HFRI); BIS calculations. Graph V.6

market funds. Other aspects are more difficult to deal with, especially those that call for a high degree of coordination across regulatory agencies, both within and across national boundaries. For example, judging the extent of liquidity mismatch in a bank-sponsored investment vehicle may require input from banking and market regulators in several jurisdictions.

... as well as strengthened monitoring

Another lesson of the crisis was that activities in the shadow banking system need to be monitored in order to improve the ability of authorities and market participants to understand and anticipate the build-up of systemic risks. For example, in the years leading up to the crisis, US money market funds were important providers of funding to European banks. As a result, the disruption to the US money market fund sector in the aftermath of the Lehman Brothers bankruptcy in September 2008 had knock-on implications for European bank funding as well as for foreign exchange swap markets because the banks had used these instruments to swap their funding from dollars into local currencies. Existing statistical frameworks do not provide adequate information for assessing these risks (see Chapter VI).

International coordination will be essential

Shadow banking's potential threats to financial stability must be reduced. First, firm-level disclosure and system-wide statistical frameworks need to be improved to ensure that the build-up of risks can be monitored properly. Improved data need to be accompanied by regular monitoring of those indicators that can be informative about the nature and locus of potential systemic risks. Second, gaps in regulation need to be identified and addressed, with the goal of reducing risky build-ups of leverage and maturity and liquidity mismatches, wherever these occur in the financial system. Rules that mitigate these risks in a consistent way across different entities and activities would reduce the scope for regulatory arbitrage. Given the global nature of many shadow banking activities, these efforts need to be coordinated at the international level. At the request of the G20, the FSB plans to submit recommendations on these issues in the course of 2011.

Other regulatory and supervisory initiatives

The financial crisis exposed significant flaws in the existing regulatory capital approach to market risk and trading activities. The most immediate shortcomings were remedied in the July 2009 enhancements to the regulatory capital framework. The Basel Committee is now also carrying out a fundamental review of the trading book framework and expects to conduct a public consultation on its findings around end-2011.

Fundamental review of the trading book framework

There are a number of key questions: how to remove opportunities for arbitrage across the banking book and trading book, how to define trading activities, and how to capture risks in trading books (and possibly market risk more generally). Under the current regime, banking book exposures are subject to capital charges against credit risk (through the Basel II credit risk framework) and also against foreign exchange risk and commodities risk (through the market risk framework). Positions in the trading book are subject to capital charges against interest rate risk, foreign exchange risk, equity position risk and commodities risk (through the market risk framework).

Banks have resumed risk-taking ...

The new regulatory framework is being implemented at a time when other factors are also influencing the shape of the financial system in the aftermath of the crisis. Market participants have resumed taking on risk. This can be seen in the strength of credit and equity markets (Graph I.1), increased capital flows to emerging economies (Graph I.2), and the revival of high-yield bond issuance (Graph V.7, left-hand panel). There has also been a revival of financial innovation, as can be seen in the growth in financial instruments such as synthetic exchange-traded funds (ETF) (Graph V.7, centre panel) and commodity-linked investment vehicles (Graph IV.B). In the near term, the recovery of risk-taking and innovation across various dimensions will pose an important challenge for authorities as they consider whether and how to deploy the tools at their disposal to address potential threats to financial stability.

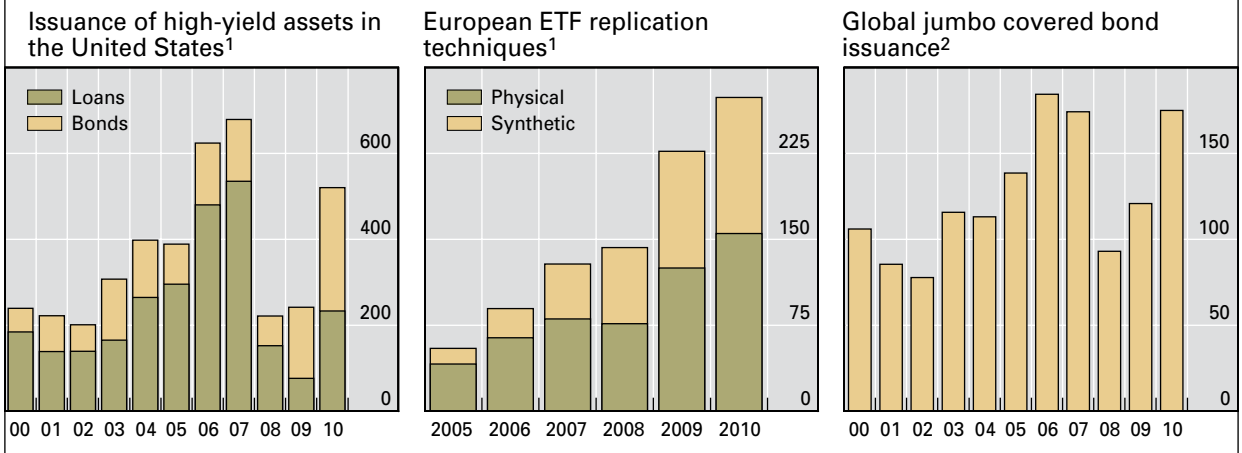
... and have begun to modify their business models ...

Over a longer horizon, banks and other financial institutions have begun to modify their business models. As already noted, capital levels have increased, mostly through the accumulation of retained earnings. Many banks have started to put in place more stable and resilient funding structures, improve their risk disclosures and exercise greater control over their costs. These changes come in response not only to strengthened prudential frameworks but also to a greater awareness of, and sensitivity to, institution-level risks on the part of banks' managers, shareholders and counterparties.

... but will need to target lower returns on equity ...

This evolution in bank business models will necessarily be reflected in lower, more stable returns on equity (ROEs), since bank balance sheets will be less risky. However, it is not yet clear that bank managers and shareholders have revised their targeted ROEs accordingly. In the years leading up to the crisis, many banks targeted ROEs of 20% or more, although the global banking sector as a whole achieved a median ROE of 15–16% (Graph V.8). ROEs fell sharply for both banks and non-bank financial firms during the crisis, suggesting that the earlier high levels were in fact a result of higher leverage

Growth of selected financial instruments

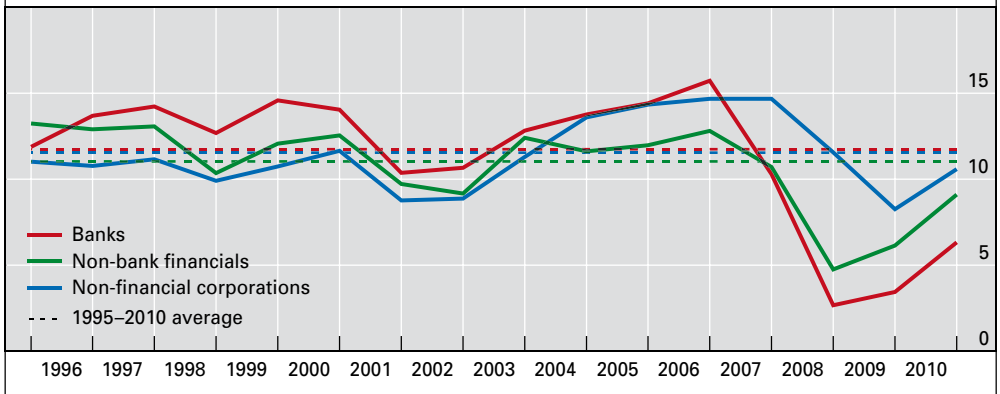


[1] In billions of US dollars. [2] In billions of euros.

Sources: Bank of Canada; Barclays Capital; Blackrock; Bloomberg; Dealogic; European Covered Bond Council; ETP issuer data; MTN-I; S&P LCD Data. Graph V.7

Return on equity[1]

Medians across institutions



[1] Net income over total shareholder funds, in per cent.

Sources: Bloomberg; BIS calculations. Graph V.8

and risk-taking, some of which was hidden from view at the time (see BIS, *80th Annual Report*, Chapter VI). Over a longer time horizon, financial firms have tended to achieve ROEs of 11–12%, which is close to the average for non-financial corporations. Unusually high financial ROEs are a likely indicator of a build-up of risk-taking, especially if ROEs are seen to rise across many institutions at the same time.

... and address short- and long-term funding needs

Bank business models have also evolved with respect to funding structures and strategies. In the near term, central banks are likely to withdraw the extraordinary funding they provided to wholesale markets during the crisis, while banks' funding maturities remain short, leaving many banks exposed to substantial near-term refinancing needs (Graph V.9). Banks in many of the advanced economies have funded themselves at very low interest rates for several years, potentially leaving them exposed to any increase in rates and exposing the system as a whole to interest rate risk.

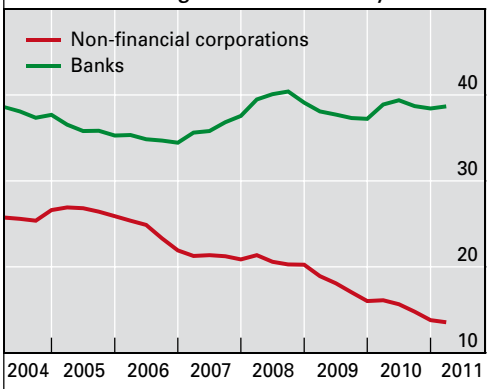
Looking at longer-term trends, heightened awareness of banks' funding liquidity risks on the part of fixed income investors has resulted in increased covered bond issuance (Graph V.7, right-hand panel). The growth in covered bonds also reflects uncertainty about the status of unsecured creditors under possible revisions to resolution frameworks. Legislative frameworks for covered bonds have been enacted or are under consideration in a number of jurisdictions where these structures had not previously been in use.

Regulatory frameworks will be more effective to the extent that they support and reinforce the aspects of these trends that are beneficial for financial stability while addressing any potentially destabilising side effects. For example, the increased emphasis on common equity capital in Basel III both reflects and reinforces a heightened focus on higher-quality capital on the part of bank investors and counterparties. Covered bonds offer a second example: increased covered bond issuance will need to be accompanied by improved disclosure of the overall encumbrance of bank assets, in order to allow secured and unsecured creditors to make an accurate assessment of balance sheet risks.

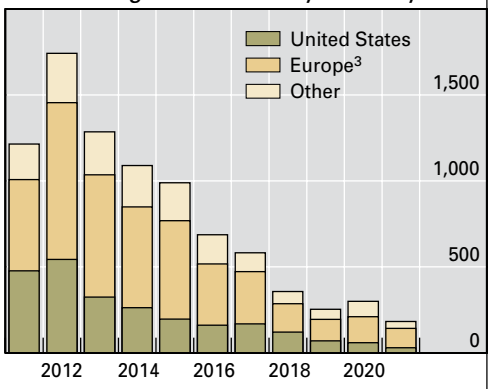
Maturity profile of bank bonds

By remaining maturity

Bonds coming due within two years[1]



Outstanding bank bonds by maturity[2]



[1] International bond issues maturing within two years as a percentage of all outstanding bonds issued in the international market. [2] As of April 2011; volume outstanding by nationality of issuer; in billions of US dollars; comprising 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. [3] The euro area, Switzerland and the United Kingdom.

Sources: Dealogic; BIS international financial statistics. Graph V.9

Summing up

The financial crisis severely tested banking systems, and the deficiencies it revealed warranted a swift and comprehensive official response. The Basel Committee and the FSB introduced a series of strong international measures, capped by the Basel III framework issued in December 2010. The crisis revealed that risk can be transmitted through unexpected channels. Thus, while Basel III responded to the lessons learned from the recent financial crisis, it is primarily designed to improve the resilience of all banks regardless of complexity and size and in all jurisdictions. Moreover, while the global regulatory reform programme will impose some transitional costs, rigorous analyses conducted by the Basel Committee, the FSB and the BIS have concluded that the medium- and long-term investment in improving banking system resilience will yield benefits that far outweigh the costs. Banks have already begun to adjust to the new requirements, although they have also resumed taking on higher levels of risk.

Achieving international agreement on stronger policy frameworks was the first step in global regulatory reform. The next step is full and timely implementation of the new global standards and all other prudential standards. More intensive and intrusive supervision will be needed to help ensure that banks implement these standards and that all jurisdictions enforce them in a coordinated, consistent manner.

The policy response to the weaknesses revealed by the crisis continues. Outstanding issues include dealing with systemically important institutions, designing more effective cross-border bank resolution regimes, and addressing the risks relating to shadow banking activities. Meeting these challenges will be the focus of the next phase of global regulatory reform.

VI. Closing data gaps to enhance systemic risk measurement

The recent financial crisis highlighted shortcomings in policymakers' ability to measure systemic risk. Gaps are evident in both the analytical framework and the available firm-level and aggregate data that policymakers and market participants use in making decisions. These gaps hinder market participants in pricing and managing risk and policymakers in monitoring and responding to vulnerabilities. This experience should prompt improvements in macro surveillance and data collection.

Systemic financial risk can be defined as the risk of disruption to financial services that results from an impairment of the financial system, with the potential to harm the real economy. It can arise anywhere in the financial system and may be amplified as market participants overreact to incomplete or incorrect information. How this risk is distributed across entities and sectors depends on the structure of balance sheet linkages, which can be complex.

Policymakers who monitor systemic risk therefore need an analytical framework to capture this complexity. This requires multiple indicators, based on a range of data, that provide a broad view of the financial system, ideally from several vantage points. Market participants too need better information about market structure and aggregate positions so that they can manage their risks appropriately.

Initiatives in two areas deserve high priority. First, an international data-sharing framework should be established to give supervisory authorities a common view of the balance sheet positions of the largest global financial institutions. For crisis prevention, regulators must be able to *jointly* analyse the balance sheets of *many banks* in order to detect, for example, common exposures to particular asset classes or concentrations in funding markets. As crises unfold, regulators shift their focus to *crisis management*. Here, their critical task is to assess counterparty credit risk in the interbank market in real time to gauge what effect the failure of a particular institution might have. This requires detailed and high-frequency information on *bilateral* linkages, that is, firm-level balance sheet positions including data on individual counterparties. To varying degrees, these types of data are already accessible to individual bank supervisors. But without their wider dissemination, nationally and internationally, a richer analysis of systemic risk is impossible.

The second area that deserves attention is the updating of standard *aggregate statistics* to reflect changes in the financial landscape over the past 25 years. Aggregate statistics for flow of funds and international investment positions,[1] for example, are essential tools for capturing balance sheets at the

[1] Other sets of aggregate data include balance of payments statistics; cross-border securities holdings captured in the IMF's Coordinated Portfolio Investment Survey; and cross-border banking positions captured in the BIS international banking statistics.

sectoral and country level. Yet these statistics were never designed to consistently capture sector-level balance sheet linkages in a globalised world, where financial institutions and corporations have operations in many countries. Improvements to these statistics would greatly enhance the ability to monitor system-level vulnerabilities in the non-bank sectors that lie *beyond the reach of regulators*. The enhanced aggregate statistics necessary to reveal sector-level stresses would then inform targeted analysis of firm-level data.

The first part of this chapter highlights some core elements of systemic risk – *common exposures, leverage* and *maturity transformation* – all of which involve measurement challenges and data gaps. The second part discusses the further issues that arise when we seek to measure these systemic vulnerabilities in a world of multinational financial institutions and corporations. The final part examines in more detail the areas in which more or better data are needed.

Systemic risk: where should we look?

Financial fragilities develop during tranquil periods …

Heightened systemic risk often results from unsustainable expansions in private sector balance sheets during periods of benign economic conditions, making these balance sheets more fragile when conditions change. This process may start with an increase in asset prices, triggered initially by some piece of good news or by financial innovation. Rising asset prices allow investors to take on more debt, thanks to the growing value of their collateral. Some of the increased borrowing may flow into the booming asset class, further raising asset and collateral values.

… and weaken the defences of financial institutions

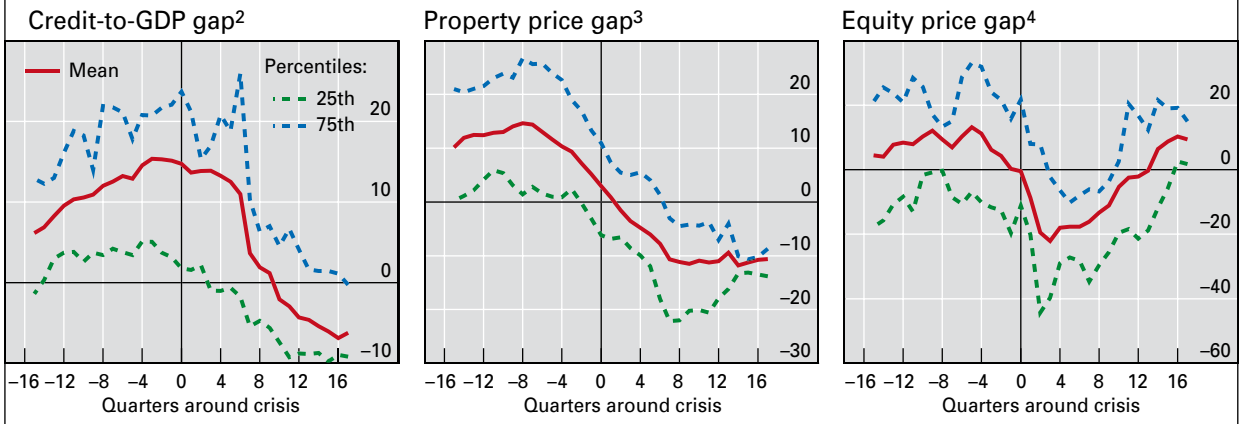
The boom can conceal growing risks: as market participants finance an increasing share of their assets with debt, *leverage* increases. This often entails an ever greater reliance on *short-term* debt, thereby heightening their maturity mismatch and thus their *funding liquidity risk*. Seemingly attractive investment opportunities and herding incentives mean that financial firms build up *common exposures* on both the assets side and the liabilities side of their balance sheets. Negative shocks will then affect many institutions simultaneously.

In short, common exposures, leverage and funding liquidity risk all feed into systemic risk. When the underlying market and balance sheet conditions are fragile – and systemic risk is high – a seemingly trivial shock can escalate into an outright crisis. At this stage, the reactions of market participants are virtually impossible to predict.

In an ideal world, policymakers would have a unified theoretical framework for identifying and quantifying systemic risk. Such a framework would capture all key drivers of systemic risk, such as market structure, institutional incentives, risk (mis)measurement and market participants' reactions to events. But no such framework exists. What is required, therefore, is a multipronged approach to systemic risk assessment that relies on a number of different indicators, each crafted from a different perspective.

Broad-level indicators derived from aggregate data can help reveal emerging vulnerabilities. Graph VI.1 clearly reveals boom-bust cycles of the

Credit and asset price behaviour around banking crises[1]



[1] The historical dispersion of the relevant variable is taken at the specific quarter across all crisis countries. Gaps are estimated using a one-sided rolling Hodrick-Prescott filter with lambda set to 400,000. [2] Deviations from trend, in percentage points. [3] Weighted average of real residential and commercial property prices with weights corresponding to estimates of their share in overall property wealth; the gap is in per cent relative to trend. [4] Equity prices are measured in real terms; the gap is in per cent relative to trend.

Sources: National data; BIS calculations. Graph VI.1

type discussed above: credit, property and equity prices all tend to rise above their long-run trends in the run-up to crises. These measures provide helpful leading indicators of financial stress, as they capture the most systematic and general signs of the build-up of vulnerabilities across sectors, countries and policy regimes.[2] But their lack of specificity means that such indicators can serve only as a starting point for a fuller analysis based on more detailed data.

Price data often act as *real-time* measures of stress

Often, though, market data on prices act more as *contemporaneous* indicators of financial stress than as *leading* indicators. As Graph VI.2 illustrates, spreads and volatilities were unusually low in the run-up to the recent crisis. As real-time measures of market stress, they rose only after the scale of the underlying balance sheet problems, which had been building for years, became clear.

It is thus essential to supplement market data on prices with data on *quantities* – specifically, data on balance sheet positions and balance sheet health – at both the firm and aggregate (sectoral) level. Such balance sheet data are critical to identifying any build-up of vulnerabilities in the financial system. The remainder of this section examines three key aspects of systemic risk – common exposures, leverage and maturity transformation – and highlights some of the critical data gaps that hindered risk assessment and crisis management in the recent episode.

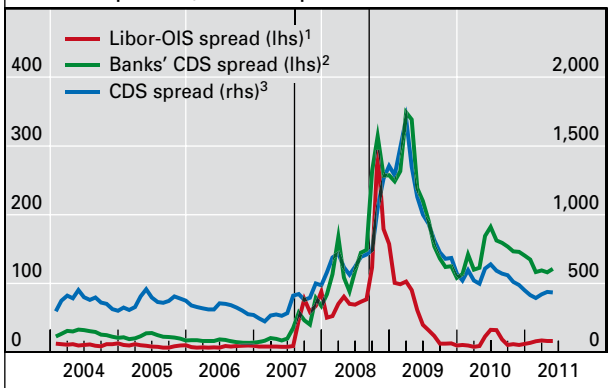
Common exposures

Common exposures increase systemic risk as they lead to a less diversified system. On the assets side, they arise when several financial institutions are exposed to the same institution or asset class. On the liabilities side, common

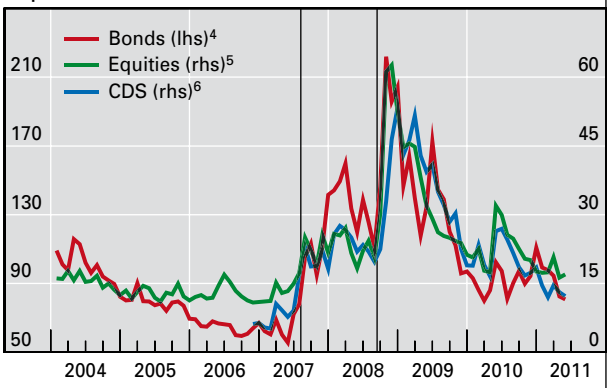
[2] For a detailed discussion of these aggregate indicators, see C Borio and M Drehmann, "Assessing the risk of banking crises – revisited", *BIS Quarterly Review*, March 2009, pp 29–46.

Market prices as contemporaneous measures of financial distress: the US example

Credit spreads, in basis points



Implied volatilities



The vertical lines mark 9 August 2007, the date when tensions in the money market first arose, and 15 September 2008, the date on which Lehman Brothers filed for Chapter 11 bankruptcy protection.

[1] Three-month Libor minus corresponding overnight index swap (OIS) rate. [2] Average credit default swap spread for Bank of America, Citibank, Goldman Sachs, JPMorgan Chase and Morgan Stanley. [3] Five-year on-the-run CDX.NA.HY 100 spread. [4] Merrill Lynch Option Volatility Estimate (MOVE) index for US Treasury bonds. [5] VIX (implied volatility on the S&P 500 Index), in per cent. [6] Implied volatility on the five-year on-the-run CDX.NA.HY 100 spread, in basis points.

Sources: Bloomberg; Datastream; JPMorgan Chase; Markit; BIS calculations. Graph VI.2

exposures result from concentrated funding dependencies – ie when many financial institutions borrow from the same source, for example from money market funds.

Importantly, simply encouraging institutions to diversify their portfolios is not enough to ensure sufficient diversification at the system level. If all institutions have diversified in the same way, each may be individually less likely to fail, but they are all equally vulnerable to the same shocks. As the crisis showed, the financial system was anything but well diversified. Many institutions had crippling exposures to the same toxic assets, and the resulting illiquidity in funding markets affected virtually the entire system.

Analysis of multiple failures requires ...

In principle, the likelihood of multiple failures arising from common exposures could be empirically assessed and the drivers appropriately monitored. Regulators would have full information about the level and riskiness of exposures and the capacity of institutions to absorb risk (in terms of both capital and liquidity), and they would know in detail how shocks are transmitted (through direct interlinkages as well as market reactions). This would amount to a unified framework to measure systemic risk.

... detailed firm-level information ...

A first step in this direction is to obtain data that identify common exposures, especially for banks. While banks are not the only institutions policymakers are concerned about, they are the core of the credit intermediation process and thus a high priority. A key data gap during the crisis was the lack of information on banks' asset and liability positions broken down by currency, counterparty sector, counterparty country and instrument type. For example, no public information was available on large banks' exposures to structured products. As late as February 2008 (when financial statements for end-2007 had already come out), the publicly available data were still patchy and lacking in comparability (Table VI.1). The resulting market uncertainty about the

Large banks' disclosure of exposures to structured instruments

Information released up to February 2008

	Banks disclosing exposure[1]	
	Number	Percentage
Consolidated		
Residential mortgage loans	15	60
Subprime loan component	9	36
ABS[2]/RMBS[3] holdings	8	32
Breakdown by instrument	3	12
Collateralised debt obligations	15	60
Breakdown by instrument	8	32
Assets of consolidated entities[4]	13	52
Breakdown by asset class	9	36
Unconsolidated		
Assets of unconsolidated entities[4]	9	36
Breakdown by asset class	8	32

[1] Twenty commercial banks and five investment banks. [2] Asset-backed securities. [3] Residential mortgage-backed securities. [4] Includes structured investment vehicles, asset-backed commercial paper conduits and special purpose entities.

Sources: Securities and Exchange Commission filings; quarterly financial reports; bank press releases.

Table VI.1

location of risks in the financial system prompted some institutions to hoard or withhold liquidity, contributing to funding problems even at institutions which had no direct exposures.

... that takes account of risk mitigants

The starting point for any analysis of common exposures is consistent information about key aspects of financial institutions' balance sheets that can affect their capital or funding. That information must include all on- and off-balance sheet exposures such as committed credit lines. Data are also required on both gross exposures and exposures *net of risk mitigants* such as collateral, third-party guarantees or hedges. For example, a bank that owns $10 billion in structured products backed by subprime debt may have a much smaller ultimate exposure if the credit risk is hedged by other instruments.

Risk is more difficult to assess at the system level than at the institutional level, where measures of net and gross exposures are fairly straightforward. The systemic impact of a shock to a particular asset class may be much larger than the sum of the firm-level direct net exposures to this asset class if, for example, hedges are concentrated among particular counterparties and thus do not work as expected. American International Group (AIG), which was ultimately rescued by the US authorities, was the counterparty to more than $440 billion in notional positions in credit default swap contracts; its failure would have ramified throughout the financial system.

Crisis management requires timely information on firm-to-firm exposures

Such problems show that data on banks' exposures to other large individual counterparties (that is, bilateral data) are critical for crisis management purposes. These data requirements go beyond the above-mentioned high-level breakdowns that are used to assess common exposures to specific asset classes. During a crisis, authorities must make quick decisions

that take into account how the failure of one institution will affect others. To that end, financial institutions must be able to produce updates of their bilateral exposures at short notice, something which was lacking in many countries during the recent crisis.

Leverage

Multiple bank failures are more likely if the system's capacity to absorb losses is low. This is the case when financial firms are highly leveraged. Usually defined as the ratio of total assets to equity, leverage is a useful indicator of institutional fragility.[3] In essence, it is a multiplier tracking the magnitude of the change in capital arising from a change in asset values. For instance, a financial institution with $100 billion in assets and $5 billion in capital has a leverage ratio of 20. Thus, a 1% drop in the value of the institution's assets would lead to a 20% drop in the value of its equity.

The leverage ratio is a crude measure of fragility. First, it does not take account of how risky banks' assets may be. Second, it excludes off-balance sheet exposures such as credit and liquidity lines. Economically, this leverage is present, but it is beyond the scope of conventional balance sheet analysis. Regulators are now working on reforms aimed at eliminating hidden leverage by ensuring that banks clearly consolidate all their exposures on their balance sheets (see Chapter V).

Standard measures of leverage can mislead because of inconsistent data

Even though leverage ratios require only two inputs (total assets and equity), they epitomise the broader problems associated with the cross-country comparability of data. Differences in regulatory regimes and listing requirements mean that data released to the public are not comparable across institutions. Nor are the confidential data accessed by supervisors necessarily comparable, since data needs differ across jurisdictions. Finally, accounting differences can have a first-order impact. For example, netting of derivative positions with counterparties, which is allowed under US generally accepted accounting principles (GAAP) but not under International Financial Reporting Standards (IFRS), greatly reduces the amounts outstanding. While the top five US banks reported almost $5.4 trillion in gross derivative positions at the end of 2010, their net derivative position was less than 6% of this amount. In turn, including gross rather than net derivative positions in these banks' total assets yields an average leverage measure that is 80% higher than otherwise.

Tracking system-wide as opposed to firm-specific leverage poses further challenges. Consider a simple system-level analogue: the ratio of aggregate assets to aggregate capital for a particular group of banks. One problem with this measure is that it may not truly reflect the multiplier effect that a change in aggregate asset values has on aggregate capital. On the one hand, double-counting occurs when assets and equity are aggregated by simply summing positions across banks. Balance sheet interlinkages in the form of lending, off-balance sheet positions or cross-shareholdings by construction mean that one institution's asset is another's liability, which should be netted out in the

[3] Basel III defines the leverage ratio inversely as equity over total assets, in line with other regulatory capital ratios that reflect the ratio of capital to risk-weighted assets.

aggregate. On the other hand, system-wide losses are not simply the sum of initial losses at individual institutions. The same balance sheet interlinkages can amplify shocks in a non-linear fashion, as the chain of bilateral exposures can lead, for example, to cascading defaults. Quantifying these effects ex ante is difficult as they are inherently driven by market reactions and the particular structure of balance sheets at the moment when stress materialises.

That said, the ability to monitor leverage ratios – even simple weighted sums of firm-level leverage – consistently across different parts of the financial system would represent a big step forward in tracking systemic risk. It would require, at a minimum, internationally comparable measures of total assets and equity for individual financial institutions. Importantly, the measure of total assets would have to include all off-balance sheet positions that could affect a bank's capital.

Maturity transformation and funding risk

Many parts of the financial sector – banks, in particular – use short-term funding to finance long-term investments. While maturity transformation performs an important economic function, it exposes financial institutions to funding liquidity risk, ie the risk that they will not be able to meet cash commitments as they come due.

Tracking funding risk presents its own set of difficulties. In principle, it is straightforward to measure *contractual maturity mismatches* (that is, differences in the remaining maturities of assets and liabilities) on an institution's balance sheet. And it is also possible, at least in principle, to track off-balance sheet positions that are tied to funding (eg contingent commitments or foreign exchange swaps and options). But key determinants of liquidity risk, such as rollover risk (the inability to roll over short-term funding) on the liabilities side or market liquidity risk (the inability to sell at a moment's notice and with little loss) on the assets side, are difficult to measure since they depend on rapidly changing market perceptions at times of stress.

The introduction of minimum liquidity requirements under Basel III will improve the measurement of risks concerning funding liquidity at the firm level and will enhance liquidity risk management more generally (see Chapter V). The new liquidity rules should make internationally comparable data on individual banks' funding liabilities available for the first time, thereby enabling supervisors to monitor funding pressures across key institutions.

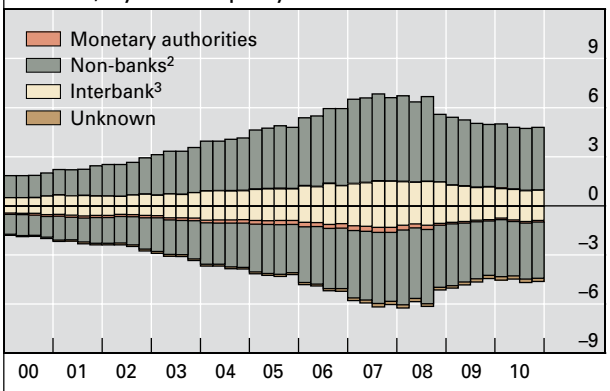
Funding vulnerabilities went undetected before the crisis …

However, the measurement of maturity transformation at the system level requires an even broader perspective. Throughout much of the crisis, but particularly following the collapse of Lehman Brothers in September 2008, the scale of the global demand among European and Japanese banks for US dollar funding took both policymakers and markets by surprise. In the end, banks' dollar liquidity needs could be met only through the establishment of central bank swap lines. The lines were re-established in May 2010 as concerns over European banks' exposures to sovereign risk intensified. These experiences have given central banks a keen interest in monitoring the extraterritorial use of their currency. To that end, they will need comprehensive information – for a much larger universe of financial institutions than just banks – covering

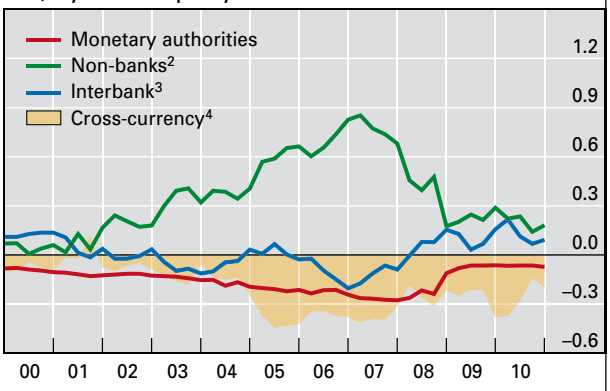
On-balance sheet USD positions at long-USD European banks[1]

In trillions of US dollars

Gross, by counterparty sector



Net, by counterparty sector



[1] Estimates are constructed by aggregating the worldwide on-balance sheet cross-border and local positions reported by internationally active banks headquartered in Germany, the Netherlands, Switzerland and the United Kingdom. [2] International positions vis-à-vis non-banks plus local positions vis-à-vis US residents (all sectors) booked by banks' offices in the United States. No sectoral breakdown is available for these positions. [3] Estimated net interbank lending to other (unaffiliated) banks. [4] Implied cross-currency funding (ie FX swaps), which equates US dollar assets and liabilities.

Sources: Bloomberg; JPMorgan Chase; BIS consolidated banking statistics (immediate borrower basis); BIS locational statistics by nationality. Graph VI.3

aggregate international balance sheet positions by currency, including gross and net currency derivatives.

... because of analytical gaps ...

It is now clear that data available before 2008 could have helped to identify, albeit imprecisely, the growth in non-US banks' dollar funding needs in the run-up to the crisis. Graph VI.3 (right-hand panel) shows the net US dollar asset and liability positions of the major European banks since 2000. Information on the counterparty type (monetary authority, non-bank, interbank) is used to proxy for the (unavailable) remaining maturity of positions, where interbank positions and net foreign exchange swap ("Cross-currency") positions are assumed to have a shorter average maturity than positions vis-à-vis non-banks. The graph is highly suggestive of a growing funding risk prior to the crisis, as the longer-term investments in non-banks became increasingly dependent on short-term foreign currency funding. But only broad tendencies can be identified: there are no actual data on remaining maturities or on the use of foreign exchange swap markets (see box).

... and lack of data

Data needs in a globalised world

The frameworks for data collection must take into account the global scale of many financial institutions and their complex organisational structures. According to their annual reports, the 10 largest global banks on average have 3,500 subsidiaries located in about 80 countries. Some bank operations outside the home country are more systemically relevant than domestic operations; a significant part of European banks' US dollar portfolios, which deteriorated so significantly during the crisis, rested on the balance sheets of their branches and subsidiaries in the United Kingdom and the United States.

The BIS international banking statistics: uses and enhancements

The BIS international banking statistics (IBS) are a long-established dataset for monitoring internationally active banks' foreign positions. The IBS actually combine several datasets, each collected with a different objective in mind. Collectively, they are a key source of information for analysing financial stability issues including banks' country risk, funding risks in different currencies and role in the transmission of shocks across countries. This box describes the characteristics of the IBS data that make them useful in these analyses, and outlines some initiatives designed to improve their usefulness.

Country risk

The BIS consolidated banking statistics (CBS) track banks' worldwide consolidated gross claims and other exposures to individual countries and sectors.[1] They thus provide internationally comparable measures of national banking systems' exposures to *country risk*. The statistics were expanded in the early 1980s after debt crises in emerging markets highlighted the need for information on banks' *transfer risk*, ie the risk associated with policy measures that have a territorial jurisdiction, such as capital controls and payments moratoriums. By the time of the Asian financial crisis, attention had shifted from transfer risk to the broader concept of *country risk*, or the risk associated with the economic, business, political and social elements of the environment in which the debtor operates. In the late 1990s, the statistics were expanded again to capture guarantees and other credit enhancements that result in the reallocation of reporting banks' risk exposures from the immediate borrower to another (ultimate) obligor. These *ultimate risk* data have recently proved useful in tracking banks' exposures to troubled European sovereigns.

The global financial crisis revealed some shortcomings in these data. First, the counterparty breakdown (bank, non-bank private sector and public sector) is too coarse to permit analysis of banks' exposures to particular parts of the non-bank private sector, in particular non-bank financials and households. Mortgage lending by foreign banks in many countries has been rising significantly over the past decade. Similarly over this period, banks' exposures to special purpose vehicles, securities brokers, hedge funds and other non-bank financials have built up significantly. A second shortcoming in the data is that banks do not report exposures vis-à-vis residents of their home country. These are generally large and thus should be included in any assessment of banks' overall country risk.

Funding risk

The IBS are also a key source of information on the currency composition of banks' balance sheets. Indeed, the BIS locational banking statistics (LBS) were originally established to track the growth in US dollar deposits outside the United States in the late 1960s. The LBS follow balance of payments accounting and are collected on a *residence basis*, meaning that the reporting unit is a bank located in a given country. Because reporting countries also provide information on the nationality (ie the home country) of the reporting banks in their jurisdiction, the statistics can also be aggregated along the lines of consolidated national banking systems, as in the CBS described above. These data provide a broad picture of the currency breakdown of banks' consolidated foreign positions. When combined with the CBS data, they help to track, at the bank nationality level, banks' cross-currency funding and investment patterns (Graph VI.3), which proved fragile during the crisis.

Again, however, the crisis has highlighted some limitations in the data. Estimates of banks' US dollar funding needs are approximate at best since there is no actual information on the maturity of banks' assets and liabilities in specific currencies, nor on banks' use of foreign exchange swaps or other currency options. And the counterparty sector split that is used to proxy for residual maturity is very coarse. Moreover, the IBS only cover banks' international activities, not their domestic currency positions against residents of their home country. This incomplete picture of banks' balance sheets makes it difficult to monitor system-level funding risks in other currencies, particularly the euro.

Country-to-country linkages

Both the CBS and LBS have a *bilateral* component, that is, information on the financial linkages between banking systems and countries. Thus, it is possible to partially assess the impact that shocks in one

[1] See "What the BIS banking statistics say (and what they do not) about banking systems' exposures to particular countries and sectors", *BIS Quarterly Review*, March 2011, pp 16–17; and P McGuire and P Wooldridge, "The BIS consolidated banking statistics: structure, uses and recent enhancements", *BIS Quarterly Review*, September 2005, pp 73–86.

market or region might have on borrowers elsewhere. For example, in the LBS, shifts in the investment patterns of residents of surplus countries show up as changes in the amount, the location and the currency of deposits placed in BIS reporting banks. Similarly, in the CBS, banks distinguish between their cross-border claims on particular countries, on the one hand, and their *local operations*, on the other. This information is valuable because, for example, the problems of banks in advanced economies might have less severe consequences for borrowers in emerging market economies if most of the claims are booked in the local operations and funded with local liabilities. By the same token, this structure could also help limit the extent to which an economic shock in a given country affects internationally active banks.

Enhancements

Forthcoming enhancements to the IBS will help to address some of the above shortcomings. In broad terms, these enhancements will (i) provide more information on banks' counterparties, specifically on their location and sector; and (ii) extend the coverage of the statistics to banks' entire balance sheets, not just their foreign positions.

One key enhancement is to include an additional dimension in the LBS. Currently, it is not possible to simultaneously see a bank's location, its nationality and its counterparty's location (eg liabilities to Middle East oil exporters booked in the UK offices of Swiss-headquartered banks). To use the example of Graph VI.4, the data provide a picture of the balance sheet for TRUST Ltd's operations in each oval but no information on the arrows. Starting in late 2012, information on the *country location* of banks' counterparties should be available for the main bank nationalities in each reporting jurisdiction. This will facilitate a more detailed analysis of how shocks in one part of the world might affect borrowers elsewhere.

Second, the coverage of the LBS will be broadened so as to capture banks' financial assets and liabilities in their entirety. That is, banks will start to report their local currency positions vis-à-vis residents of the host country. This will make it easier to assess system-level funding risks across a much wider range of currencies. It will also allow the scale of banks' international activities to be compared with their total balance sheets. Similar enhancements to the CBS are being considered for the longer term. The possible inclusion of banks' claims against residents of their home country would give a more complete picture of the overall size of their balance sheets and their exposures to home country risk.

The BIS has been working to improve its dissemination of the IBS to central banks and the public. Besides providing regular commentary on the full set of statistics in the *BIS Quarterly Review* and other publications, the BIS makes available the data behind the graphs that appear in these publications. It has also simplified access by launching a new online database for the IBS. Finally, the level of detail on banks' credit exposures to particular countries and sectors has been significantly increased.[2]

[2] See "Table 9E: Consolidated foreign claims and other potential exposures – ultimate risk basis" on the BIS statistics website, www.bis.org/statistics/consstats.htm.

The geographical location of financial institutions' operations ...

The nature of the data needed to reveal the risk profiles of institutions which operate globally is determined by the question asked. Many analyses need a group-level view, where all of an institution's operations are consolidated into a single global entity. For instance, leverage ratios should be based on banks' consolidated balance sheets, since only these consistently relate exposures to the capital base ultimately supporting them. Similarly, any effort to identify common exposures across banks to particular sectors or counterparties will require a complete picture of all their exposures, including those of subsidiaries. In short, many of the analytical questions that concern policymakers can be answered with *institution-level* data collected on a *globally consolidated basis*.

... is lost in consolidated balance sheet data ...

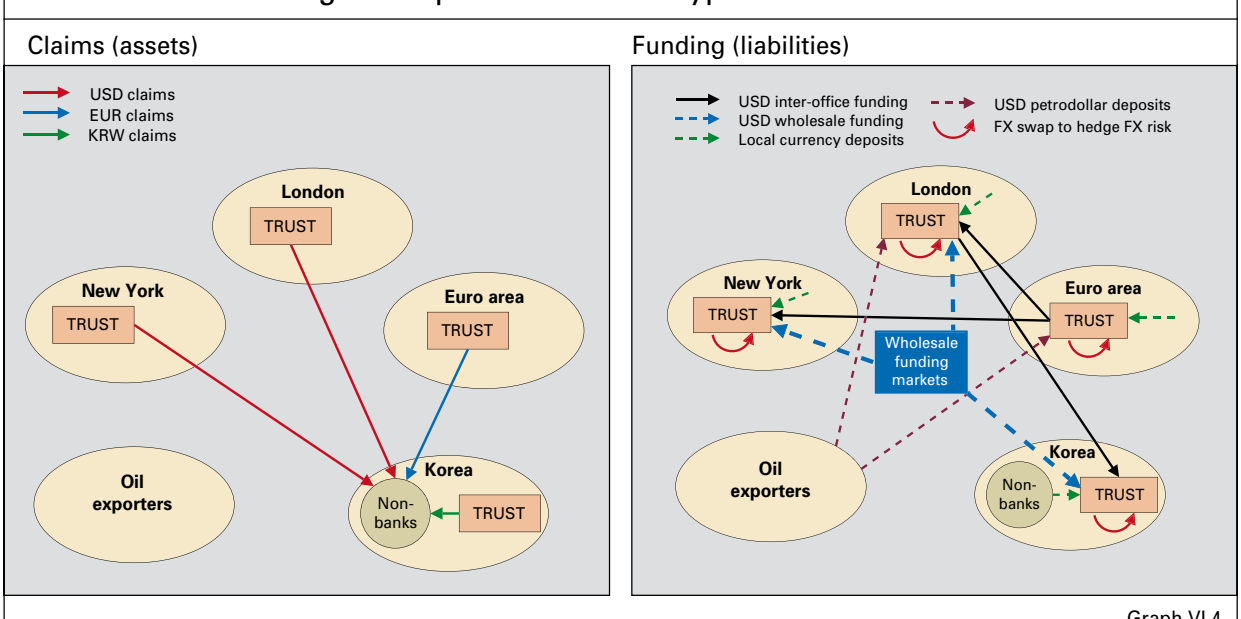
But consolidated data are not enough. Some analyses require information about the geographical structure of banks' global operations. Funding risks can arise in particular subsidiaries or countries but, as explained below, they

can easily go undetected in consolidated data. Similarly, analysing how stress may propagate across sectors and national borders depends on being able to see balance sheet linkages across locations. Complementary information about the location of activities is necessary for a complete analysis.

To see what is lost when data are consolidated, it helps to visualise the operational structure of a hypothetical institution. TRUST Ltd, shown in Graph VI.4, represents any multinational financial or non-financial institution with a large balance sheet and offices in different jurisdictions connected via inter-office funding. In this example, four different TRUST Ltd offices have claims in three different currencies on non-banks in Korea. In turn, TRUST Ltd's liabilities are a combination of euro deposits, wholesale dollar borrowing, commercial paper issuance, petrodollar deposits and euro inter-office funds swapped for dollars. That is, across the four locations, four different liability structures support the four components on the assets side.

Consolidated data can provide only a limited picture of the funding risks embedded in TRUST Ltd's global balance sheet. In such data, offices that are dollar providers to the foreign exchange swap or wholesale interbank markets are netted against those that are dollar borrowers, yielding an overall net borrowing figure for the consolidated entity. This netting implicitly assumes that resources in one location can immediately be used elsewhere – in other words, that the institution's "internal capital market" is frictionless. However, this is unlikely to be the case, given that assets would have to be liquidated and hedges unwound to free up funds – a potentially costly process during a crisis. Moreover, a host country's capital and liquidity regulations might prevent a local office from making large balance sheet adjustments to support affiliates elsewhere. For instance, in the recent case of Icelandic banks, foreign authorities restricted the transfer of their assets across jurisdictions.

The structure of the global operations of the hypothetical firm TRUST Ltd



Graph VI.4

... hindering cross-border analysis

More broadly, consolidated data are of limited use in anticipating how shocks might propagate across sectors and national borders. Given a world with many multinational banks like TRUST Ltd, consider what might happen if one of the funding sources – wholesale funding or petrodollar deposits, say – were suddenly to dry up. Which banks would be hit hardest and which borrowers in which countries would bear the brunt of the impact? Determining this with any precision is impossible without making a host of assumptions about how banks and borrowers would react to the shock. But data on the geographical structure of banks' operations are useful, as they can help to gauge the likely scale and propagation path of the impact. Such analysis is especially useful for countries where the non-bank sector relies heavily on cross-border credit.

It is difficult if not impossible to fully trace the linkages depicted in Graph VI.4 at the micro level. An attempt to do so would require data from all the individual entities which make up TRUST Ltd, complete with information on the location and sector of each entity's full set of counterparties. In practice, any such attempt would be ruled out by the amount of data required, the cost of collection, and the confidentiality issues it would raise.

The task is to find a data mix that will give policy analysts a detailed enough picture of key institutions and their activities. Consolidated balance sheets are the only suitable tool for policymakers who need detailed breakdowns by sector, country, currency and instrument. By contrast, unconsolidated information must be less detailed if it is to be tractable. As described in the following section, an unconsolidated view of the financial sector (and other sectors) could for example be derived, with improvements, from existing *aggregate statistics*.

Filling the data gaps

The recent financial crisis highlighted the need to supplement microprudential supervision with a macroprudential analytical framework based on a broader view of the system. A comprehensive approach to identifying and responding to systemic risks requires a broad range of measures and indicators to be generated and monitored.

Data collection is, however, costly for both reporting institutions and compilers. Further, significant confidentiality and legal issues arise in sharing data. Firms are naturally sensitive about revealing private information that could reduce their profit opportunities – which is why firm-level data are protected by strict confidentiality rules even within national governments. Yet the extent to which the recent crisis spread across markets, different types of institution and national borders strongly suggests that effective systemic stability assessment will require information about individual firms' balance sheets to be shared more widely than before. Given the challenges involved, existing reporting frameworks should be used as much as possible.

Wider sharing of existing supervisory data can enhance risk assessment ...

A top priority is to obtain better and more consistent firm-level data on balance sheet positions for the financial sector. Existing supervisory data might be used to assemble a global picture of the financial sector if a formal

international framework could be devised to address the legal and confidentiality concerns that restrict information-sharing. To that end, the BIS strongly supports the ongoing G20 data gaps exercise, which aims to develop an institution-level data template for global systemically important financial institutions and a framework for data access and usage.[4]

Given the confidentiality issues, much of this detailed information will have to remain in the hands of supervisory teams charged with systemic risk analysis. However, a critical output would be the aggregation and dissemination of key indicators so as to strengthen market discipline by allowing market participants to better price and manage systemic risk.

... as can improved aggregate statistics

At the same time, if updated to reflect the modern global financial landscape, existing sets of aggregate statistics (eg flow of funds or balance of payments data) can help to identify pressure points in many non-bank sectors over which regulators have a limited reach.[5] A further advantage is that confidentiality issues generally do not arise in the sharing of such data. Many sets of aggregate statistics need updating because they were designed for a less internationally integrated world and therefore often lack the information on currencies and instruments needed to track the types of vulnerabilities discussed in previous sections. Most critically, however, they lack the nationality data essential to the construction of *consistent sectoral balance sheets*.[6] That is, because existing aggregate statistics are collected on a residence basis, the balance sheet positions of all entities *located* in a particular country are aggregated regardless of the reporting entity's nationality (ie country of incorporation). While such a perspective may be valid for the household and government sectors, which operate almost entirely domestically, problems arise for the financial and non-financial corporate sectors, which have operations in many countries.

Constructing consistent balance sheets at the sectoral level ...

The limitations of strictly residence-based reporting are illustrated by the case of the US automotive industry when it encountered financial difficulties in 2009. Market participants and policymakers worldwide struggled to identify the sectors and countries that would be affected by any credit event at a US carmaker. The potential implications for the European insurance sector at the aggregate level, for example, could not be discerned because European insurance companies operate globally, and investments are made by their offices outside Europe. Similarly, some of the bonds purchased by these insurance companies are issued by US carmakers' operations outside the United States. Thus, it was not possible to capture European insurers' worldwide consolidated exposures given that the aggregate data were collected on only a residence basis.

[4] See recommendations 8 and 9 in IMF-FSB, *The financial crisis and information gaps: report to the G20 Finance Ministers and central bank Governors*, 29 October 2009.

[5] Several of the recommendations (eg nos 10, 12, 14 and 15) in IMF-FSB, op cit, call for enhancements to the Coordinated Portfolio Investment Survey, the international investment position and flow of funds statistics, and other aggregate statistics more generally.

[6] For further discussion, see S Cecchetti, I Fender and P McGuire, "Toward a global risk map", *BIS Working Papers*, no 309, May 2010.

... requires data on the location and nationality of both reporters and counterparties

To provide a view of sector or country exposures on a consolidated basis, residence-based aggregate data would have to convey four pieces of information: the reporter's location and nationality (eg German insurance companies in Germany, German insurance companies in the United States); and the borrower's location and nationality (eg US automobile companies in the United States, US automobile companies in Brazil). If aggregate data collected in all countries reflected all four components – location and nationality for both the reporting company and the borrower – it would be possible to construct a worldwide consolidated balance sheet for a particular national sector (here, the German insurance sector) as well as for its counterparty (here, US automobile companies worldwide). Such a reporting system could provide a picture of the exposure of (consolidated) sectors or countries to *each other*.

Existing sets of aggregate statistics capture one or more of the four pieces of information specified above, but none captures all of them simultaneously. That said, several current initiatives are moving in the right direction. For example, improvements to the BIS banking statistics, which cover only internationally active banks, are currently being worked on. These include the expansion of coverage to three of the four fields, which would deliver a sector-level view of national banking systems akin to that for TRUST Ltd in Graph VI.4 (see also box). Similar improvements to the other sets of aggregate statistics are also desirable since they are the primary source of information on the balance sheet positions of non-banks, which are generally beyond the reach of regulators.

Summing up

Better data will not prevent the next crisis, but they can help policymakers to measure and monitor systemic risk, identify pressure points and see where targeted investigations are needed. Arrangements which facilitate the broader sharing of firm-level data among policymakers will support financial stability policy decisions. A complementary element would be the regular analysis of aggregate data that track risk factors in both regulated and unregulated sectors of the economy, thus providing a broad picture of where vulnerabilities are building. And the provision of timely data on aggregate market positioning will improve market participants' ability to price and manage their risks.

To stay current and relevant, improved data frameworks require enhanced review mechanisms so that they will continue to reflect new developments in the global economy. Finance will continue to evolve, and new financial instruments will emerge. Over time, moreover, institutions will find ways of concealing risks in the data they report. Here, transaction-level data from data warehouses and trading platforms can provide helpful additional information, including early indications of changes in market structure or business lines. These, in turn, could guide ad hoc data collection efforts and inform adjustments to established data templates.

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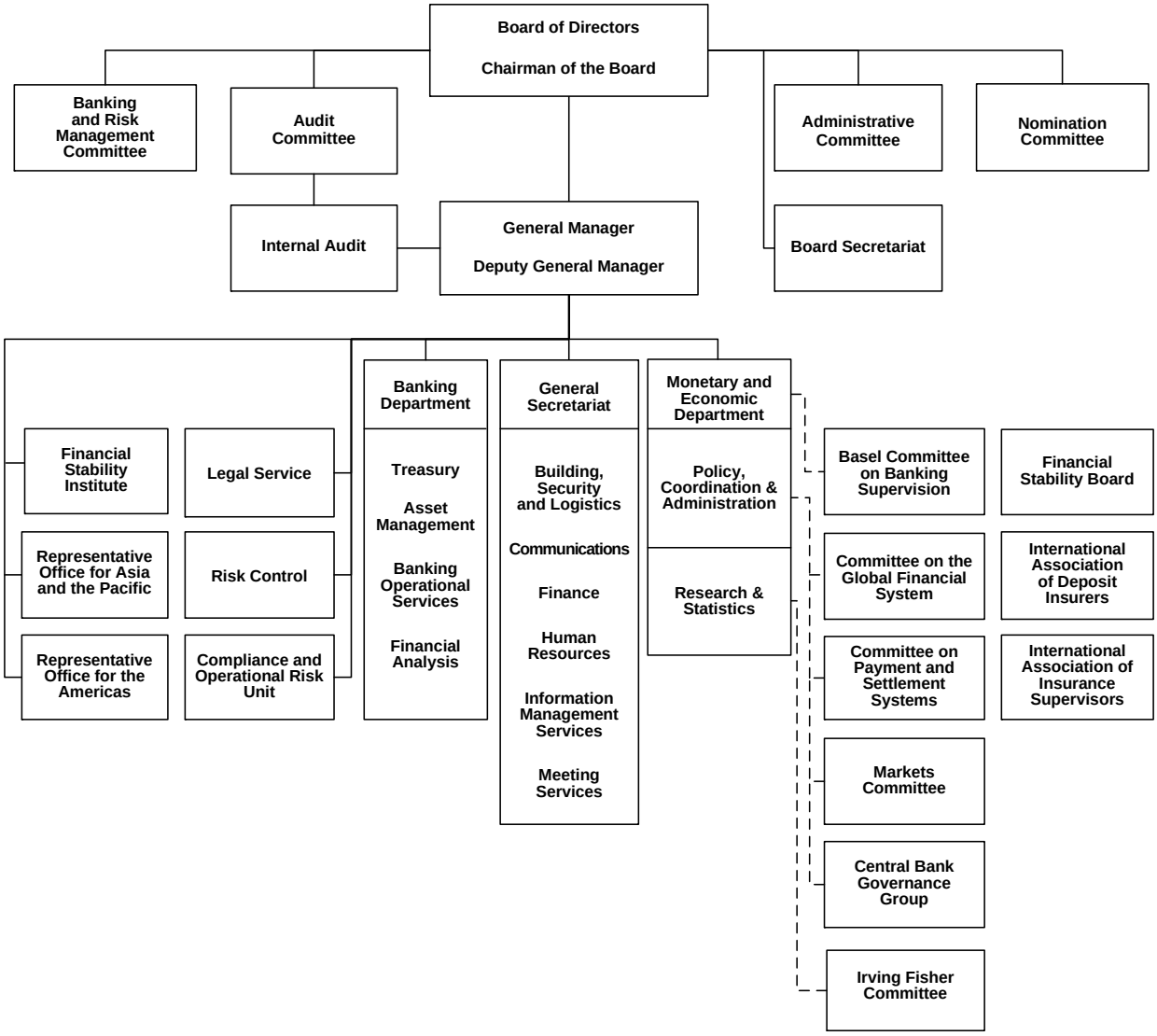


Organisation of the BIS as at 31 March 2011

The BIS: mission, activities, governance and financial results

The mission of the Bank for International Settlements (BIS) is to serve central banks 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 2010/11; 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 are responsible for promoting financial stability;
- conducting research on policy issues confronting central banks and financial 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 cooperation on monetary and financial policy 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 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 officials of BIS member central banks 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 two principal bimonthly meetings are the Global Economy Meeting and the All Governors' Meeting.

Global Economy Meeting

The Global Economy Meeting (GEM) comprises the Governors from 30 BIS member central banks in major advanced and emerging market economies that account for about four fifths of global GDP. Governors from another 15 central banks attend the GEM as observers.[1] The GEM has two main roles: (i) monitoring and assessing developments, risks and opportunities in the world economy and the global financial system; and (ii) providing guidance to the Basel-based central bank committees, especially the main three – the Committee on the Global Financial System, the Committee on Payment and Settlement Systems and the Markets Committee. The GEM also receives reports from the chairs of those committees and decides on publication.

As the Global Economy Meeting is quite large, it is supported by an informal group called the Economic Consultative Committee (ECC). Limited to 18 participants, the ECC includes all BIS Board member Governors, the central bank Governors from India and Brazil, and the BIS General Manager. The ECC assembles proposals for consideration by the GEM. In addition, the ECC Chairman initiates recommendations to the GEM on the appointment of chairs of the main central bank committees and on the composition and organisation of those committees.

Jean-Claude Trichet, President of the ECB, has been elected by the BIS Board as Chairman of both the GEM and the ECC.

All Governors' Meeting

The All Governors' Meeting comprises the Governors of all BIS member central banks and is chaired by the BIS Chairman. It gathers during the bimonthly meetings to discuss selected topics of general interest to its members. In 2010/11, the topics discussed were:

- strategies for exit from unconventional central bank balance sheet policies;
- the reform proposals of the Basel Committee on Banking Supervision;

[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.

- statistics needed for financial stability analysis;
- managing inflation expectations following the financial crisis;
- implications of the expansion of central bank balance sheets in Asia; and
- the role of central banks in government debt markets since the beginning of the financial crisis.

In agreement with the BIS Board and the GEM, the All Governors' Meeting guides the work of the Central Bank Governance Group, which also meets during the bimonthly meetings, and the Irving Fisher Committee on Central Bank Statistics. The All Governors' Meeting is better suited than the GEM for this responsibility because the membership of the two groups goes beyond the participants in the GEM.

Other regular consultations

During the bimonthly meetings, Governors of central banks in (i) major emerging markets and (ii) small open economies gather to discuss themes of special relevance to their economies.

The Bank hosts regular meetings of the Group of Central Bank Governors and Heads of Supervision (GHOS), which oversees the work of the Basel Committee on Banking Supervision. The GHOS met three times during the year to consider the Basel III reform package being developed by the BCBS to strengthen the regulation, supervision and risk management of the banking sector. At its meetings, the GHOS agreed on key design elements of the package, on calibration of the capital and liquidity measures, and on the pace of transition to the implementation phases of the plan.

The Bank regularly arranges 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 refers to the facilitative role of the BIS in hosting and supporting the work of the international secretariats engaged in standard setting and the pursuit of financial stability. A key example of the Basel Process is the support the BIS provides to the Financial Stability Board (FSB), which coordinates the work of national financial authorities and international standard-setting bodies and whose work programme has been endorsed by the G20 heads of state and government. Another aspect of the Basel Process

is the mandate given by the BIS to its own Financial Stability Institute (FSI), namely 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 and banking experience of the BIS; 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 agendas of the following six are set by the global community of central banks and/or supervisory authorities:

- 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.

The remaining three groups hosted at the BIS have separate governance and reporting lines:

- the FSB;
- the International Association of Deposit Insurers (IADI); and
- the International Association of Insurance Supervisors (IAIS).

The physical proximity of these groups at the BIS creates synergies that, regardless of the variation in governance arrangements, produce a broad and fruitful exchange of ideas.

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, and other international and national public authorities.

Supportive BIS expertise and experience. The work of the Basel-based committees is informed by the BIS's economic research and 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 2010/11

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) coordinates the work of national financial authorities and international standard-setting bodies and develops policies to enhance global financial stability. It closely monitors whether implementation of these policies takes place in a full and consistent manner.[2]

More specifically, under its mandate from the G20, the FSB:

- assesses vulnerabilities affecting the global financial system and identifies and reviews the regulatory, supervisory and related actions needed to address them, including the outcomes of those actions;
- promotes coordination and information exchange among authorities responsible for financial stability;
- monitors and advises on market developments and their implications for regulatory policy;
- monitors and advises on best practice in meeting regulatory standards;
- undertakes joint strategic reviews of the international standard-setting bodies to ensure that their policy development work is timely, coordinated and focused on priorities, and that it addresses 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 membership of the FSB consists of senior officials from finance ministries, central banks and financial regulators and supervisors of 24 countries and territories (the country members of the G20 plus Hong Kong SAR, the Netherlands, Singapore, Spain and Switzerland) as well as from the ECB and the European Commission. It also includes representatives of international financial institutions and of international standard-setting and central bank bodies.[3] The FSB is chaired by Mario Draghi, Governor of the Bank of Italy.

[2] The FSB was established by the G20 Leaders (heads of state and government) at their April 2009 London Summit. The G20 comprises 19 countries and the European Union. The charter setting out the objectives, mandate, membership and organisational processes of the FSB took effect in September 2009, when it was endorsed by the G20 Leaders at their Pittsburgh Summit.

[3] The international financial institutions are the BIS, the IMF, the OECD and the World Bank. The international standard-setting and central bank bodies are the BCBS, the CGFS, the CPSS, the International Accounting Standards Board (IASB), the IAIS and the International Organization of Securities Commissions (IOSCO).

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

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

Through work at the plenary meetings in June, September and October 2010, the FSB and its members further developed the international regulatory reform programme aimed at creating a sounder financial system and reducing systemic risk globally. Two central elements of that programme were endorsed by the Seoul Summit of the G20 in November 2010: (i) a strengthened global framework for bank capital and liquidity; and (ii) a comprehensive policy framework to address the moral hazard associated with institutions that are too big or too complex to fail. In addition, during the past year the FSB set out principles and timetables, and monitored implementation, in a wide range of other areas, as detailed below.

Strengthening the global capital and liquidity framework for banks

The FSB and the Basel Committee, in collaboration with the BIS and the IMF, jointly assessed the macroeconomic implications of the transition to the new capital and liquidity reform proposals in Basel III. The resulting transitional arrangements have been designed to ensure that the implementation does not harm the economic recovery.

Reducing the moral hazard posed by systemically important financial institutions (SIFIs)

In October 2010, the FSB adopted a policy framework as well as work processes and timelines for addressing the systemic risks and moral hazard posed by SIFIs.[4] The framework comprises action in five areas:

- improvements to resolution regimes to ensure that any financial institution can be resolved without disruption to the financial system and without taxpayer support;
- a requirement that SIFIs and initially in particular G-SIFIs have additional loss absorption capacity beyond the Basel III standards to reflect the greater risks these institutions pose to the global financial system;
- more intensive supervisory oversight for financial institutions that may pose systemic risk;
- stronger robustness standards for the core financial infrastructure to reduce contagion risks from the failure of individual institutions;[5] and

[4] A SIFI is a firm whose disorderly failure would cause significant disruption to the wider financial system and to overall economic activity because of its size, complexity and systemic interconnectedness. Global SIFIs (G-SIFIs) are SIFIs that are systemically important in a global context.

[5] The core financial market infrastructure includes elements such as payment systems, securities settlement systems and central counterparties.

- assessment, by an FSB Peer Review Council, of the effectiveness and consistency of national policy measures for G-SIFIs, beginning by end-2012.

In November 2011, the FSB will finalise a package of measures covering: an identification methodology for G-SIFIs; the amounts of additional going-concern and gone-concern loss absorbency that G-SIFIs will need and the instruments by which that can be met; and improvements to resolution tools and regimes. Draft proposals for these measures and their phase-in periods will be issued for public comment.

Improving the OTC and commodity derivatives markets

In October 2010, the FSB published 21 recommendations for implementing – in an internationally consistent and non-discriminatory way – the G20 commitments for improving by end-2012 the functioning, transparency and oversight of the over-the-counter (OTC) derivatives market. The G20 commitments relate to increased standardisation, central clearing, organised platform trading, and reporting of all trades to trade repositories.

The FSB has planned a series of six-month reports – derived from a survey of FSB members – on progress in reforming OTC derivatives markets. The report scheduled for release in April 2011 found that major implementation projects are under way in the largest OTC derivatives markets, and international policy development is proceeding according to timetable. Nevertheless, the FSB expressed concern that many jurisdictions may not meet the end-2012 deadline unless they take substantial, concrete steps towards implementation immediately. It saw inconsistencies in approaches between jurisdictions emerging in some areas. The FSB will continue to monitor developments to check whether progress on implementation is on track and to identify any further emerging inconsistencies that should be addressed.

At their Seoul Summit, the G20 Leaders called for a report from IOSCO on the regulation, supervision and transparency of commodity derivatives markets and the financial market for oil, and for the FSB to consider next steps. IOSCO's report, scheduled for April 2011, was to cover the work being undertaken in the short term in these areas; consider a broadened mandate to include other commodities, including agricultural and soft commodities; and outline the medium- to longer-term work being considered. The FSB supports those actions and in October 2011 will again consider next steps on the basis of a further IOSCO report.

Strengthening the oversight and regulation of shadow banking

As the recent financial crisis has shown, the "shadow banking system" – credit intermediation involving entities and activities outside the regulated banking system – can be a source of systemic risk both directly and through its interconnectedness with the regular banking system. Shadow banks can also create opportunities for arbitrage that might undermine stricter bank regulation and lead to a build-up of additional leverage and risks in the financial system as a whole. The FSB is therefore developing recommendations to strengthen

the oversight and regulation of the shadow banking system. It scheduled the release of a background note on its work for April 2011.

Reducing reliance on credit rating agencies (CRAs)

The use of CRA ratings in regulatory regimes for banks and other financial institutions contributes to a mechanistic market reliance on ratings. Because of such reliance, a downgrading by a CRA can push the rating of a securities issuer below a threshold rating level and thereby create a "cliff effect" of widespread disinvestment in the securities of that issuer, leading to sharp price declines and further disinvestment. Such cliff effects amplify procyclicality and can generate systemic disruptions. In October 2010, the FSB issued principles for reducing the reliance of market participants on ratings from CRAs and requested standard setters and regulators to consider next steps to translate the principles into more specific policy actions. The principles are applicable to central bank operations, the prudential supervision of banks, internal limits and investment policies of investment managers, private sector margin agreements, and disclosures by issuers of securities. The FSB is monitoring progress on the translation of the principles into policy actions.

Developing macroprudential frameworks and tools

The financial crisis exposed gaps in the public policy toolkit for dealing with systemic risk, and it has intensified the official sector's interest in strengthening the macroprudential aspect of current policy arrangements. The FSB, the IMF and the BIS are working on a joint report, to be delivered at the November 2011 G20 Summit, outlining both international and national advances in the design of macroprudential frameworks and tools. To survey experience, the three organisations scheduled two meetings for 2011: a high-level conference to be held in Washington in April and a roundtable to be held in Basel in June.

Addressing data gaps

The FSB is developing a template of metrics and procedures that would improve consistency in the collection and sharing of data on the interconnectedness and common exposures of SIFIs. The project is part of a broader exercise by the IMF and the FSB, set out in their November 2009 report, *The financial crisis and information gaps*, which proposed improvements to data collection to better capture the build-up of risk in the financial sector.

Strengthening accounting standards

The FSB supports the development of a single set of high-quality global accounting standards. To that end, it continues to encourage the IASB and the United States' Financial Accounting Standards Board to complete their convergence project by the end of 2011.

Strengthening 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. It has updated its Compendium of Standards, including the 12 key standards that it designates

as deserving of priority implementation. FSB member jurisdictions will lead by example by implementing the standards and disclosing their level of adherence to them.

Under a programme of country and thematic peer reviews that began in 2010, FSB member jurisdictions are evaluating each other's implementation of internationally agreed standards and policies. The FSB has now completed country peer reviews of Italy, Mexico and Spain and thematic peer reviews of compensation practices, of mortgage underwriting and origination, and of risk disclosures for structured credit products and other exposures. A country peer review of Australia is under way, and reviews of Canada and Switzerland will be launched in the second half of 2011. The FSB is conducting a second review of the implementation of sound compensation practices and will conduct a thematic review of deposit insurance systems during the second half of 2011.

Using a network of national experts, the FSB is closely monitoring implementation of its post-crisis policy recommendations to strengthen financial stability. The FSB scheduled the release of detailed information on national implementation for April 2011, and in November 2011 it will publish updated information based on a further survey.

The FSB is also encouraging jurisdictions throughout the world to follow international financial standards, including through an initiative to evaluate jurisdictions' adherence to standards for supervisory and regulatory cooperation and information exchange. By November 2011, the FSB will publish a list of all jurisdictions evaluated.

Advancing consumer finance protection

At the request of the G20, the FSB is collaborating with the OECD and other international organisations in a study of options for advancing consumer finance protection, including the development of common principles. A report is scheduled for release by November 2011.

Financial stability in emerging market and developing economies

The FSB, the IMF and the World Bank are jointly writing a report to the G20 identifying and examining financial stability issues of particular relevance to emerging market and developing economies. The report will include policy recommendations that could be taken forward by national authorities and international standard-setting bodies.

Regional consultative groups

To facilitate its interaction with a wider group of countries, the FSB is setting up six regional consultative groups that will bring together the members of the FSB and more than 60 jurisdictions outside the FSB's membership. The regional groups – covering the Americas; Asia; the Commonwealth of Independent States; Europe; the Middle East and North Africa; and sub-Saharan Africa – will provide the opportunity to discuss vulnerabilities affecting the regional and global financial systems and the financial stability initiatives of the FSB and of the various jurisdictions. The first meetings will

take place in 2011. In addition, the FSB intends to conduct outreach as needed concerning its policy initiatives with an even wider range of interested countries.

FSB capacity, resources and governance

The demands on the FSB have grown since its establishment in 2009. To help the FSB keep pace with these demands, the G20 has asked it to make proposals for strengthening its capacity, resources and governance. These will be reviewed at the G20's October 2011 meeting.

FSB: www.financialstabilityboard.org

Basel Committee on Banking Supervision

The Basel Committee on Banking Supervision 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, improving the effectiveness of techniques for supervising international banks, and setting minimum supervisory standards.

The Committee, which generally meets four times a year, consists of senior representatives of bank supervisory authorities and central banks responsible for banking supervision or financial stability issues in the Committee's member countries.[6] The Group of Governors and Heads of Supervision (GHOS) is the governing body of the Basel Committee and consists of central bank governors and (non-central bank) heads of supervision from member countries. Nout Wellink, President of the Netherlands Bank, is chairman of the Basel Committee.

On 16 December 2010, the Basel Committee published a set of global standards to address both firm-specific risks and broader, systemic threats so as to promote a more resilient banking sector. The framework, "Basel III", responded to the core of the global financial reform agenda and was endorsed by the G20 Leaders at their 2010 Seoul Summit. Basel III, together with the underlying Basel II framework and the reforms approved by the Committee in July 2009,[7] represents a major step in strengthening bank soundness and financial stability.

Over the course of 2010, the Committee also released a number of standards and proposals to enhance risk management and supervision in concert with the higher standards in Basel III.

The Basel III framework

Basel III strengthens international prudential requirements for capital and liquidity. It raises the minimum amount of capital that banks must hold against

[6] The Committee comprises representatives from Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong SAR, India, Indonesia, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. Observers on the Basel Committee are: the European Banking Authority, the European Central Bank, the European Commission, the Financial Stability Institute and the International Monetary Fund.

[7] *Enhancements to the Basel II framework*; *Revisions to the Basel II market risk framework*; and *Guidelines for computing capital for incremental risk in the trading book – final version*.

risk-weighted assets and requires capital of greater loss-absorbing capacity. Further, Basel III improves the risk coverage of the regulatory framework. It also introduces an overall leverage ratio that will apply against unweighted assets and off-balance sheet exposures to provide another check on excessive credit expansion at the level of the firm. In addition, Basel III addresses the liquidity aspect of the recent crisis by requiring a larger stock of liquid reserves and a reduction in maturity mismatches.

The GHOS agreed on transitional arrangements for implementing the new standards. These will help ensure that the banking sector can meet the higher standards through reasonable amounts of earnings retention and new capital without impairing lending activity.

Bank capital

Improving its quality. An essential element of Basel III is its stricter definition of regulatory capital. Higher-quality capital means more loss-absorbing capacity, which will allow banks to better withstand periods of stress. A key aspect of the new capital definition is its greater focus on common equity, the highest-quality component of a bank's capital. Credit losses and writedowns come directly out of retained earnings, which are part of a bank's common equity. The Basel III capital framework defines common equity more narrowly than does the present rule. In a move that further extracts lower-quality capital from required capital, the new rules require regulatory adjustments from the capital base to be made against common equity rather than, as is done currently, against the rest of Tier 1 or against Tier 2 capital.

During the financial crisis, taxpayers were exposed to loss when the public sector injected capital into a number of large, internationally active banks that were in distress. The extra funds rescued them from failure and hence supported their depositors, but the infusion allowed investors in the banks' Tier 2 capital instruments (mainly subordinated debt) and in some Tier 1 instruments to avoid loss. Therefore, the Basel III definition of capital issued in December 2010 was supplemented by the GHOS in January 2011 with additional minimum requirements to ensure that, before taxpayers are exposed to loss, all classes of bank capital fully absorb losses at the point when the firm becomes non-viable.

Requiring higher amounts. The Basel III reforms increase the minimum requirement of (now higher-quality) common equity from 2% to 4.5% of risk-weighted assets. In addition, Basel III introduces a macroprudential overlay requiring additional capital buffers (see below).

Expanding risk coverage of the framework. By itself, the new definition of capital constitutes a significant improvement in the global capital regime. The regime will be enhanced further by better risk coverage. The Basel III framework introduces measures to strengthen capital requirements for counterparty credit exposures arising from banks' derivative, repo and securities financing activities. The reforms will increase the capital required to back those exposures, reduce procyclicality and provide additional incentives to move the trading of OTC

derivative contracts to central counterparties, thus helping reduce systemic risk across the financial system. The reforms also provide incentives to strengthen the risk management of counterparty credit exposures. In addition, as part of its July 2009 reforms, the Committee adopted higher capital requirements for trading and for derivative and securitisation activities, to become effective at the end of 2011. The better risk coverage adopted in December 2010 reinforces those requirements as well as the stronger definition of capital.

Introducing a leverage ratio. Basel III introduces a non-risk-based leverage ratio to serve as a backstop to the risk-based capital requirement. The use of this supplementary measure will help contain the build-up of excessive leverage in the system. It will also serve as an additional safeguard against attempts to "game" the risk-based requirements and will help address model risk.

Liquidity

Introducing global standards. Strong capital requirements are necessary to the stability of the banking sector, but they are not sufficient. A strong liquidity base reinforced through robust supervisory standards is of equal importance, but until now no internationally harmonised liquidity standards have been adopted. Basel III introduces two such supervisory standards – a liquidity coverage ratio (LCR) and a net stable funding ratio (NSFR) – whose purpose is to improve banks' liquidity risk management and risk profile. The LCR is designed to make banks more resilient to short-term disruptions in their access to funding, while the NSFR addresses longer-term structural liquidity mismatches in bank balance sheets.

The new liquidity framework includes a common set of monitoring metrics to assist supervisors in identifying and analysing liquidity risk at both the bank and system level. The metrics should be considered as the minimum information that supervisors should use in monitoring liquidity risk profiles.

Macroprudential framework

Introducing capital buffers. A macroprudential element of the Basel III capital framework is the requirement that, in good times, banks should build up buffers – specifically, a *capital conservation buffer* and a *countercyclical buffer* – that can be drawn down in periods of stress. This approach promotes the goal of mitigating procyclicality both in banking and in the broader financial system. These buffers are in addition to the minimum capital requirements.

Losses that begin to reduce a bank's capital conservation buffer, set initially at 2.5% of common equity, would trigger constraints on its ability to make discretionary distributions of capital. The constraints become progressively tighter as the bank's capital level moves closer to the minimum requirement.

The countercyclical buffer, to be maintained at 0–2.5% of common equity or other fully loss-absorbing capital, is aimed at the broader macroprudential goal of protecting the banking sector in periods of excess aggregate credit growth; such periods have often been associated with the accumulation of system-wide risk. In December 2010, the Committee issued *Guidance for*

national authorities operating the countercyclical capital buffer as a supplement to the requirements set out in the Basel III rules text. In addition to providing supervisory guidance, that document should help banks themselves understand and anticipate buffer-related decisions in jurisdictions to which they have credit exposures.

Addressing systemically important institutions. During the crisis, when procyclicality amplified shocks over time, excessive interconnectedness among systemically important banks transmitted shocks across the financial system and wider economy. To address the latter issue, the Basel Committee and the FSB are developing an integrated approach to systemically important financial institutions, which could include combinations of capital surcharges, contingent capital and bail-in debt. As part of this effort, the Committee developed a proposal on a provisional methodology to assess the systemic importance of financial institutions at the global level. The framework to address systemically important institutions will be finalised over the course of 2011.

Calibrating Basel III standards and assessing the impact

In developing Basel III, the Committee engaged in a four-month public consultation on the proposed reform measures. As an important input to the calibration of the new capital and liquidity standards, the Committee conducted a comprehensive quantitative study to estimate the effects of the requirements on individual banks, the results of which were published in December 2010. It complemented this "bottom up" approach with an empirical assessment of the overall level of capital that should be maintained within the banking system (*Calibrating regulatory minimum capital requirements and capital buffers: a top-down approach*). The top-down assessment, published in October 2010, helped inform the calibration of the common equity and Tier 1 risk-based ratios and the Tier 1 leverage ratio, as well as of the regulatory buffers above the minimum.

The Committee also conducted an assessment of the long-term economic impact of the reforms and estimated the costs associated with transitioning to higher capital and liquidity requirements. Its August 2010 report on that work (*An assessment of the long-term economic impact of stronger capital and liquidity requirements*) found clear net long-term economic benefits to higher regulatory standards: the higher standards raise the safety and soundness of the global banking system, which in turn reduces both the probability of financial crises and the output losses associated with such crises. And those benefits substantially exceed the potential output costs for a range of higher capital and liquidity requirements. In addition, the Committee and the FSB established the Macroeconomic Assessment Group (MAG), an international team of researchers tasked with studying the macroeconomic impact of the transition to the higher standards. The MAG study is summarised in its December 2010 *Final report: assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements*. It concludes that the transition is likely to have only a modest impact on aggregate output.

Risk management and supervision

The stronger capital and liquidity standards in Basel III must be accompanied by better risk management and supervision, particularly given the international environment of fast-paced financial innovation. In 2010, the Basel Committee issued standards and proposals and continued studies to meet that need.

Improving cross-border bank resolution. In March 2010, the Basel Committee issued 10 recommendations on effective cross-border resolution. The Committee continues to work on the topic with the FSB, including monitoring how the Committee's recommendations are being implemented and where additional work is needed to address conflicts across resolution regimes. The Committee is conducting a comprehensive analysis and will review the results in the first half of 2011. They will be used by the FSB and other standard setters to formulate standards and guidance that countries can use to reform their national resolution regimes and make them more consistent with each other.

Addressing operational risk. The regulatory capital adequacy framework envisages a gradual convergence of the operational risk discipline towards a narrower band of effective risk management and measurement practices. In December 2010, the Committee issued two consultative documents on operational risk. *Sound practices for the management and supervision of operational risk* updates the Committee's 2003 guidance on the basis of current industry best practice and supervisory experience in three areas: governance, risk management and disclosure. The second consultative document, *Operational risk – supervisory guidelines for the advanced measurement approaches*, covers governance, data and modelling. Also dealing with advanced measurement is the Committee's October 2010 publication, *Recognising the risk-mitigating impact of insurance in operational risk modelling*, which also more broadly discusses the potential benefits and shortcomings of insurance to mitigate operational risk.

Aligning remuneration and risk. The Committee's October 2010 consultative report *Range of methodologies for risk and performance alignment of remuneration* analyses methods for incorporating risk and performance in compensation schemes, including bonus pools, with the aim of furthering the practice. The report notes practical and technical issues that complicate the alignment effort and offers some clarifications on design options. The Committee's December 2010 consultative document *Pillar 3 disclosure requirements for remuneration*, developed in consultation with the FSB, is aimed at promoting consistency of disclosure. Such consistency would support market discipline by helping market participants better assess the quality of bank compensation practices.

Strengthening backtesting. Banks that are permitted to calculate their regulatory capital with internal models are required to frequently validate their

models, and backtesting is integral to the process. In its December 2010 guidance *Sound practices for backtesting counterparty credit risk models*, the Committee addresses weaknesses in backtesting that were revealed by the financial crisis.

Improving supervisory colleges. The financial crisis highlighted the importance of improving supervisory colleges to better support the effective supervision of international banking groups. On the basis of the crisis experience, the Committee issued a set of principles that aim to promote and strengthen the colleges. The paper *Good practice principles on supervisory colleges* supplements broader guidance issued by the Basel Committee on cross-border cooperation and information-sharing. The principles are designed to provide the flexibility needed to implement the guidance for a wide range of banks across jurisdictions.

Enhancing corporate governance. Drawing on the lessons of the crisis, and following a public consultation, the Committee in October 2010 updated and reinforced its guidance on corporate governance, last issued in 2006. The new document, *Principles for enhancing corporate governance*, sets out revised statements of best practice in key areas and urges regular supervisory evaluation of banks' corporate governance practices and their consistency with the Committee's principles.

Addressing microfinance. In August 2010, the Basel Committee issued the final version of its paper *Microfinance activities and the Core Principles for Effective Banking Supervision*, which provides guidance on the range of practices employed in the regulation and supervision of microfinance activities.

Assessing the impact on trade finance. As announced in December 2010, the Committee is assessing the specific impact of the regulatory regime on the capital treatment of trade finance, particularly in low-income countries.

Accounting and transparency

The Committee analyses and submits written comments on all consultative drafts issued by standard setters on international accounting and auditing issues relevant to banks and supervisors. During the year, the Committee developed a concrete proposal to make operational an expected loss approach to provisioning as an input to the IASB's reform efforts in that area.

More broadly, the Committee is promoting the development of a single set of high-quality global accounting standards, and towards that end it supports the convergence of accounting standards of the IASB and those established in the United States by the Financial Accounting Standards Board. In response to the financial crisis, the two boards have created accounting projects on several topics, including financial instruments and fair value measurements, to which the Committee has contributed.

Basel Committee: www.bis.org/bcbs

Committee on the Global Financial System

The Committee on the Global Financial System (CGFS) monitors financial market developments and analyses their implications for financial stability. The chair of the CGFS is Mark Carney, Governor of the Bank of Canada, who succeeded Donald L Kohn, then Vice Chairman of the Board of Governors of the Federal Reserve System, on 1 July 2010. Committee members consist of the Deputy Governors and other senior officials from the central banks of 23 advanced and emerging market economies and the Economic Adviser of the BIS.

Assessment of the recent sovereign debt problems in the euro area and their effects on financial stability and bank funding shaped much of the Committee's discussions. Committee members also examined the global implications of monetary stimulus programmes in the major advanced economies, particularly their effects on portfolio flows to emerging market economies.

To deepen its understanding of current policy issues, the Committee organised a number events bringing together representatives of financial institutions and central banks:

- meetings with market participants on the outlook for investments in bank debt given the prospective phasing-out of public sector support for banks and the proposed changes in bank regulation;
- a workshop for central banks, hosted by the People's Bank of China, to assess the implications of capital flows for financial stability and the role of monetary policy and exchange rates in dealing with capital flow pressures; and
- discussions with representatives from insurance firms and pension funds on the new international accounting standards and ongoing regulatory initiatives as they might affect their demand for fixed income assets and the functioning of financial markets generally.

The Committee established a study group on macroprudential polices to address build-ups of systemic financial risk in the light of the recent crisis. Other groups worked on international banking issues, including changes in banks' management of funding and liquidity in response to the crisis, and on the implications of sovereign debt management for central bank operations and monetary and financial stability.

The Committee participated in global policy forums to discuss the broader implications of the recent financial reform agenda. These included a high-level workshop it co-sponsored with IOSCO and the CPSS related to access to central counterparties (CCPs) in OTC derivatives markets; another such forum was a joint workshop with the CPSS and the Markets Committee examining the issue of liquidity for CCPs. The CGFS also further developed its plans to close gaps in statistical data, focusing particularly on enhancements to the BIS international banking statistics.

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. The Committee also facilitates cooperation among non-CPSS central banks on payment, clearing and settlement issues and provides support and expertise to meetings it organises in cooperation with regional central banks. The CPSS is chaired by William C Dudley, President and Chief Executive Officer of the Federal Reserve Bank of New York.

Review of standards

In March 2011, the CPSS and IOSCO jointly released a consultative report, *Principles for financial market infrastructures*. The document proposes new international standards to govern systemically important financial market infrastructures (FMIs) – payment systems, central securities depositories, securities settlement systems, CCPs and trade repositories. The proposals reflect the lessons learned from the recent financial crisis as well as the experience gained from applying the existing standards during the past decade.

When finalised, the new principles will replace the three existing sets of CPSS and CPSS-IOSCO standards, namely the *Core principles for systemically important payment systems* (2001); the *Recommendations for securities settlement systems* (2001); and the *Recommendations for central counterparties* (2004). The CPSS and IOSCO believe that a single set of principles will provide greater consistency in the oversight and regulation of FMIs worldwide.

Compared with the existing standards, the new principles introduce more demanding requirements. Perhaps the most crucial of those concern the financial resources and risk management procedures through which an FMI copes with the default of a participant; the mitigation of operational risk; and the links and other interdependencies among FMIs through which operational and financial risks can spread. Moreover, the new principles address issues that are not covered by the existing standards, for example segregation and portability, tiered participation and general business risk.

The consultation period ends on 29 July 2011, and the CPSS and IOSCO will publish a final report in early 2012.

Market structure in the clearing industry

A November 2010 CPSS report, *Market structure developments in the clearing industry: implications for financial stability*, assesses how far recent developments have given rise to new risks and outlines practical issues that regulators and overseers may wish to consider, either as part of their oversight role or in the context of their broader financial stability mandate. The report also examines two other topics: whether changes in market structure or ownership might affect the expansion of central clearing services, and the effect of ownership on CCPs' incentives to manage counterparty risk.

Clearing and settling repos

During the recent financial crisis, some markets for repurchase agreements (repos) proved to be less reliable than expected as a source of funding liquidity. In September 2010, the Committee published the report *Strengthening repo clearing and settlement arrangements*. Based on a survey of selected CPSS member countries, it identifies issues concerning clearing and settlement

arrangements for repos that could undermine the resilience of repo markets and outlines ways in which these issues can be addressed.

Other activities

In January 2011, the Committee co-sponsored with IOSCO and the CGFS a high-level workshop to discuss issues related to access to CCPs in OTC derivatives markets. In March 2011, it held a joint workshop with the CGFS and the Markets Committee to take stock of issues related to the liquidity needs of CCPs.

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 central bank officials to jointly monitor developments in financial markets and assess their implications for central bank liquidity management operations. Currently, 21 central banks are represented on the Committee.

Turmoil in sovereign debt markets, the continued use of unconventional policies and ongoing financial sector reforms provided the backdrop for the Committee's discussions. The Committee closely followed developments in the euro area government bond markets and banking sector and examined their impact on funding markets and central bank operations. It also considered related technical issues such as the current practice of using credit support annexes in derivative transactions between public and private sector entities.

Renewed market turmoil and slower than expected economic recovery in 2010 held back the exit of major central banks from unconventional policies and prompted additional actions in some cases. The effects of such policies on the targeted markets and on the risk-taking behaviour of investors across asset classes constituted another key theme in the Committee's deliberations.

The Committee paid increasing attention to the financial market implications of post-crisis reform initiatives that were approaching or entering the implementation stage. These included the introduction of new liquidity standards in the Basel III framework and the push towards greater use of CCPs. The Committee held a joint workshop with the CGFS and the CPSS in March 2011 to take stock of issues related to the liquidity needs of CCPs.

In March 2011, the Markets Committee set up a small group of central bank experts to conduct a fact-finding study on high-frequency trading in foreign exchange markets. Its purpose is to inform, among other things, the interpretation of the results of the April 2010 BIS Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity.

Markets Committee: www.bis.org/markets

Central Bank Governance

The Central Bank Governance Group, comprising representatives from nine central banks and chaired by Stanley Fischer, Governor of the Bank of Israel,

serves as a venue for the exchange of views on the design and operation of central banks as public policy institutions. In addition, it prioritises work on this topic which is then carried out through the BIS and the Central Bank Governance Network, consisting of more than 50 central banks. During the past year, the Governance Group examined the implications of central banks' changing financial stability responsibilities and initiated work on the financial strength that central banks need in order to be effective in the post-crisis world.

Irving Fisher Committee on Central Bank Statistics

The Irving Fisher Committee on Central Bank Statistics (IFC) provides a forum for central bank economists and statisticians to address statistical topics related to monetary and financial stability. Seventy-two central banks and relevant international and regional organisations are members of the Committee, which is chaired by Manuel Marfán, Deputy Governor of the Central Bank of Chile. The Committee's fifth conference at the BIS convened in August to review work to resolve data gaps revealed by the financial crisis. Attendees also discussed the findings of a survey of the Committee's membership on data initiatives related to financial stability.

The IFC organised workshops on:

- the use of business surveys by central banks (with the National Bank of Ukraine);
- data requirements for monitoring derivatives market activity (with the People's Bank of China);
- inflation measurement (one with the Saudi Arabian Monetary Agency and one with the Center for Latin American Monetary Studies and the Central Bank of Peru); and
- residency versus nationality views of financial positions (with the Inter-Agency Group on Economic and Financial Statistics).

It also organised two training events, one on national accounts (with the National Bank of Belgium) and one on statistical challenges for the European System of Central Banks (with the ECB). In November, the IFC presented its first annual report to the BIS All Governors' Meeting.

IFC: www.bis.org/ifc

International Association of Deposit Insurers

The International Association of Deposit Insurers (IADI) provides a forum for deposit insurers, central banks and international organisations to enhance the effectiveness of deposit insurance and bank resolution systems and cooperate on related financial stability issues. Currently, 82 organisations, including 63 deposit insurers, are IADI members or participants. IADI draws upon its membership to provide guidance on the establishment or enhancement of effective deposit insurance systems as well as on training, outreach, educational programmes and research.

In June 2009, IADI together with the Basel Committee on Banking Supervision issued the final version of *Core principles for effective deposit*

insurance systems. The principles are designed to guide jurisdictions in strengthening existing systems as well as in creating deposit insurance systems where they do not currently exist. During 2010, a methodology for assessing compliance with the core principles was developed jointly by IADI, the BCBS, the IMF, the World Bank, the European Forum of Deposit Insurers (EFDI) and the European Commission. The FSB has included the core principles in its *Compendium of standards* and in 2011 will include them in its list of "key standards for sound financial systems". Efforts are under way for the core principles and the associated assessment methodology to be included in the IMF and World Bank Financial Sector Assessment Program (FSAP) and for the FSB and the G20 to use them in their peer review programme to assess and improve national deposit insurance systems.

IADI's Training and Conference Committee developed a comprehensive training programme on a wide variety of topics critical to effective practice for deposit insurers. IADI strengthened its partnerships with the FSI, EFDI and the South East Asian Central Banks (SEACEN) Research and Training Centre to deliver these training programmes. IADI and the FSI jointly developed five deposit insurance e-learning tutorials and modules to present to all FSI Connect subscribers, including IADI members.

IADI held its Ninth Annual General Meeting and Conference in Tokyo on 26–28 October 2010. More than 240 participants from over 50 countries attended the conference, entitled "Financial safety-nets: Going forward". In addition, IADI's seven regional committees and 12 partner organisations brought together professionals throughout the year for specialised and region-focused events such as "Bank insolvency in the Caribbean: Law and best practice"; a seminar on "Resolution of problem banks" and another on "Claims management: Reimbursement to insured depositors"; a Latin American seminar, "The role of banks in economic stability and growth"; a regional conference, "The benefits of deposit insurance in Africa"; and an Asia-Pacific conference, "Lessons learned and challenges of the deposit insurers in dealing with crisis".

IADI's Research and Guidance Committee (RGC) established a Financial Inclusion and Innovation Subcommittee to focus on deposit insurance issues related to financial inclusion and to formally engage on the topic with interested entities such as the G20 Financial Inclusion Experts Group (FIEG). In February 2011, the subcommittee held a Financial Inclusion Workshop at the BIS for IADI members in cooperation with the World Bank Consultative Group to Assist the Poor (CGAP) and the Basel Committee.

IADI: www.iadi.org

International Association of Insurance Supervisors

The International Association of Insurance Supervisors (IAIS) is the international standard-setting body for prudential supervision of the insurance industry. The mission of the IAIS is to promote effective and globally consistent regulation and supervision of the insurance industry in order to develop and maintain fair, safe and stable insurance markets for the benefit of policyholders; and to contribute to global financial stability.

The IAIS is actively involved in assessing the regulatory reforms recommended by the FSB. An important issue that the IAIS Financial Stability Committee is considering is the indicators that should be used in assessing the systemic importance of insurers. The committee is also considering macroprudential tools and developing proposals on macroprudential surveillance.

Insurance core principles

In February 2011, the IAIS concluded a two-year review of its supervisory material with the release of a comprehensive draft revision for a 60-day consultation period. The draft incorporates lessons of the financial crisis, addresses FSB recommendations and reflects the evolution of supervisory and industry practices. It organises the supervisory material into a hierarchy with insurance core principles (ICPs) at the top, standards for implementation of the ICPs at the next level and guidance third. The IAIS plans to submit a final draft for adoption at its general meeting on 1 October 2011.

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. In July 2010, the IASB released a consultative draft regarding insurance contracts. The IAIS provided extensive comments and continues to provide input to the IASB on the matter.

Group-wide supervision

Responding to recommendations by the G20, the FSB and the Joint Forum,[8] the IAIS adopted a *Guidance paper on treatment of non-regulated entities in group-wide supervision* in April 2010 to address key regulatory gaps observed from the crisis and to minimise opportunities for regulatory arbitrage. The paper calls for appropriate consideration of the complexity of group structures and the full spectrum of risks posed by non-regulated entities through measures such as capital adequacy and governance requirements.

Internationally active insurance groups

The IAIS is developing the Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame), a multilateral framework reaching beyond the regulatory approaches of individual jurisdictions and regions. ComFrame should lead to more consistency regarding each jurisdiction's supervision of internationally active insurance groups. The IAIS plans to conclude its development of ComFrame by mid-2013, after which it will undertake an impact assessment.

[8] The Joint Forum was established in 1996 under the aegis of the Basel Committee on Banking Supervision, IOSCO and the IAIS to deal with issues common to the banking, securities and insurance sectors, including the regulation of financial conglomerates. Membership consists of senior supervisors from the three sectors (www.bis.org/bcbs/jointforum.htm).

Reinsurance

Global reinsurers – firms that, for a fee or premium, agree to indemnify an insurer against losses on one or more contracts – are important for the efficient functioning of sound insurance markets. Reinsurance bolsters the ultimate security of ceding insurers, thereby protecting customers and contributing to overall financial stability.

The December 2010 issue of the IAIS's twice-yearly *Global reinsurance market report* showed that reinsurers were profitable in 2009, benefiting from sound management of asset portfolios and diversification of insurance risks as well as from a moderate year for claims arising from catastrophes. The August 2010 mid-year edition discussed macroprudential surveillance in insurance and reinsurance.

Multilateral Memorandum of Understanding

The IAIS Multilateral Memorandum of Understanding (MMoU), which became operational in June 2009, is a framework for cooperation and exchange of information with an overall goal of improving 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. Participation in the MMoU has grown to 14 signatories as of February 2011, and another 23 applications are being validated.

Standards observance

In October 2010, the IAIS established a Standards Observance Subcommittee to support the implementation of standards through the development of self-assessment and peer review mechanisms. The subcommittee will coordinate closely with the FSB to ensure the fulfilment of FSB recommendations for the insurance industry.

In addition, and more broadly, the IAIS organises regional seminars and workshops to assist insurance supervisors in implementing its principles, standards and guidance material in collaboration with the FSI, national insurance supervisory authorities and other bodies.

IAIS: www.iaisweb.org

Financial Stability Institute

The Financial Stability Institute (FSI) supports global financial stability by disseminating supervisory standards and sound practices and assisting in their implementation.

High-level meetings, seminars and conferences

The FSI conducts a well established series of high-level meetings, seminars and conferences. The 47 events held in 2010 for banking and insurance supervisors, many conducted in partnership with regional groups of supervisors, focused on current regulatory reforms and drew more than 1,700 participants. In particular, the FSI's meetings for Deputy Governors of central banks and heads of supervisory authorities took place this year in Africa, Latin

America, the Middle East and, in partnership with the IMF, in Washington for a global audience. These meetings addressed the ongoing development of supervisory reforms in response to the financial crisis as well as the implementation of existing standards.

FSI Connect

FSI Connect is an online information resource and learning tool provided by the FSI for financial sector supervisors at all levels of experience and expertise. Through FSI Connect, close to 8,500 users at more than 225 subscribing institutions have access to more than 200 tutorials on banking, insurance, deposit insurance, and payment and settlement systems. The FSI is revising the tutorials related to bank capital to ensure that they are consistent with the regulatory developments contained in Basel III. In addition, the FSI is continuing to expand FSI Connect's coverage of insurance risks and related supervisory issues and techniques.

Other major initiatives

In 2010, the FSI finalised its latest survey on Basel II implementation around the world. In addition, it awarded its fifth biennial FSI Award for research on an issue of importance to the global supervisory community.

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 groups hosted by the BIS in Basel. It also collects, analyses and disseminates statistical information for central banks and the general public on key elements of the international financial system.

The FSB and the IMF have made recommendations to the G20 regarding data gaps and the financial crisis. Those recommendations, a number of them involving the BIS and some of the Basel-based committees, were endorsed by the G20 in November 2009, and progress and plans for completion were reported back to the G20 by the FSB and the IMF in May 2010.

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 principal theme of the work was the policy implications of the global financial crisis. A major strand of this analysis addressed the implications of the crisis for bank regulation and supervision and economic activity. The analysis explored the short-term and long-term implications of Basel III for the real economy as well as the design of the macroprudential overlay of the new standards, including the identification

of systemically important banks and options for countercyclical capital schemes. This work was largely carried out in support of the Basel Committee on Banking Supervision, but some of the more technical analyses were also released in the *BIS Working Papers* series.

A second strand of the crisis-related work explored possible improvements in financial statistics that could strengthen the monitoring of systemic risks. Several studies examined how the BIS international banking statistics could help in this context and provided the basis for data collection exercises under the aegis of the CGFS. The release of the 2010 Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity supported several studies that examined major structural changes in these markets.

A third strand assessed the implications of the financial crisis for the functioning of the financial system, post-crisis macroeconomic trends and monetary policy. Work analysed the behaviour of markets under stress, notably the foreign exchange swap market; the provision of central bank liquidity assistance to markets and institutions; the need for balance sheet and operational restructuring in the financial industry; the deleveraging of private sector balance sheets; and changes in the transmission mechanism of monetary policy.

The BIS research function annually organises a number of conferences and workshops in which participation bridges the worlds of policy, research and business. The leading event, the BIS Annual Conference, brings together senior policymakers, leading academics and market participants. In June 2010, the Ninth BIS Annual Conference addressed the future of central bank governance under post-crisis mandates.

International statistical initiatives

This year, the few remaining BIS member central banks that had not been supplying national data to the BIS Data Bank started to report key macroeconomic statistics on a regular basis. The coverage of the Data Bank continued to expand in areas related to financial stability, including debt issuance by major sectors of the economy and financial positions of non-bank financial institutions. With the approval of the respective central banks, data on residential property prices are posted on the BIS public website.

In June 2010, additional data were reported by central banks from major financial centres to the semiannual collection of statistics on OTC derivatives, including on transactions cleared with central counterparties. Some additional centres will start contributing to this data collection, for which much more detail will become available at the end of the year. More than 50 central banks participated in the 2010 Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity; a special effort was made to improve the timeliness of the publication of the data. In May 2011, the BIS was scheduled to release a new online database on its website to better disseminate its international banking statistics.

The Inter-Agency Group on Economic and Financial Statistics, which consists of the BIS, the ECB, Eurostat, the IMF, the OECD, the United Nations and the World Bank, has been tasked to follow up on a number of the

recommendations made by the FSB and the IMF – and endorsed by the G20 in November 2009 – regarding data gaps revealed by the financial crisis.

In May 2010, the Working Group on Securities Databases, which consists of the BIS, the ECB and the IMF, released the second part of a *Handbook on Securities Statistics*, which covers holdings of debt securities.

The BIS is represented in a number of other international committees focused on statistics. 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 the Statistical Data and Metadata Exchange (SDMX) programme, which produces and maintains technical standards and content-oriented guidelines for the dissemination of statistical information. The BIS, other international organisations and various central banks are using SDMX to provide their statistics on their websites in standardised electronic formats and to efficiently exchange data bilaterally.

Other central bank initiatives to which the BIS lends support

The BIS contributes to the activities of regional central bank groupings by providing speakers with relevant expertise for their meetings. During the past year, such speakers, including those from the secretariats of the Basel-based groups and the BIS Representative Offices, contributed to events organised by:

- the Center for Latin American Monetary Studies (inflation measurement, monetary policy, payment systems, reserve management);
- the South East Asian Central Banks (SEACEN) Research and Training Centre (payment systems, risk management, macroeconomic and monetary policy management, central bank communication strategy, asset price inflation, financial markets, reserve management);
- the Southern African Development Community central banks (capital flows);
- the Macroeconomic and Financial Management Institute of Eastern and Southern Africa (financial market development, payment systems, portfolio management); and
- the Centre Africain d'Études Supérieures en Gestion (Masters in Banking and Finance programme).

BIS experts also contributed to events organised by:

- the Deutsche Bundesbank;
- the Bank of France's International Banking and Finance Institute;
- the Bank of England's Centre for Central Banking Studies; and
- the Bank of Japan.

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 140 such institutions, as well as a number of international organisations, make active use of these services.

Safety and liquidity are the key features of the BIS's 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, maturity and liquidity. 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 credit 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 world's major reserve currencies: the 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 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 in Basel, at the Bank's head office, and one in Hong Kong SAR, at its Asian Office.

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 2010/11

In 2010/11, financial markets started to settle into a calmer mode despite some bouts of high volatility and weak investor confidence. Against this steadier background, the Bank's customer currency deposit base reached SDR 207.1 billion at the end of 2010/11, representing an increase of SDR 11.3 billion during the financial year.

The total balance sheet of the BIS increased by SDR 2.2 billion, following a marginal increase of SDR 3.5 billion in the previous year. As a result, the balance sheet total at 31 March 2011 was SDR 261.1 billion.

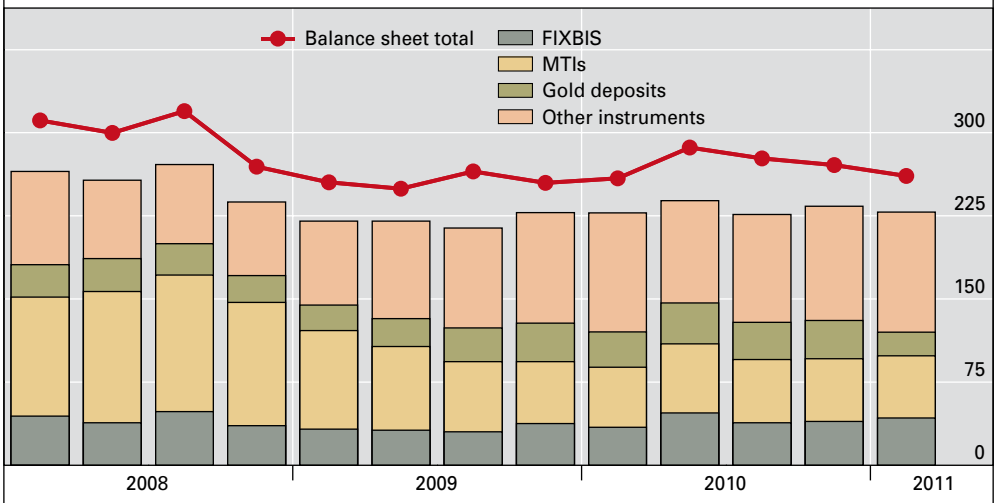
Liabilities

Customer currency and gold placements constitute the largest share of total liabilities (see graph). On 31 March 2011, customer placements (excluding repurchase agreements) amounted to SDR 228.4 billion, compared with SDR 227.8 billion at the end of 2009/10. This net increase resulted from the combined effect of a decrease in gold deposits and an increase in customer currency deposits.

Around 91% of customer placements are denominated in currencies, with the remainder in gold. Currency deposits increased from SDR 195.8 billion a year ago to SDR 207.1 billion at end-March 2011. That balance represents some 3.1% of the world's total foreign exchange reserves of nearly SDR 6.2 trillion, up from SDR 5.7 trillion at end-March 2010.[9] The share of currency placements

Balance sheet total and customer placements by product

End-quarter figures, in billions of SDR



The sum of the bars indicates total customer placements.

[9] Funds placed by institutions for which foreign exchange reserves data are not available are excluded from the calculation.

denominated in US dollars was 68%, while euro- and sterling-denominated funds accounted for 19% and 5%, respectively.

The net increase in customer currency placements resulted mainly from the combined increases of 14%, 25% and 4% in investments in fixed-term deposits, FIXBIS and MTIs, respectively, and a decrease of 38% in sight and notice accounts.

Gold deposits amounted to SDR 21.3 billion at end-March 2011, a decrease of SDR 10.8 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 119 tonnes of fine gold at 31 March 2011. The Bank's credit exposure is managed in a conservative manner, with almost all of it rated A– or higher at 31 March 2011 (see note 3. "Credit risk", in the "Risk management" section of the financial statements).

The Bank's holdings of currency assets totalled SDR 209.3 billion on 31 March 2011, up from SDR 199.0 billion at the end of the previous financial year (see note 5 to the financial statements).

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

In conformity with the agreements in force, 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 BIS's *63rd Annual Report* of June 1993).

For all funding bonds 1990–2010, the financial year 2009/10 ended on 3 October 2010, on which date all the outstanding funding bonds fell due for redemption.

The Deutsche Bundesbank, as paying agent, notified the Bank that in 2010 the Bundesamt für zentrale Dienste und offene Vermögensfragen (BADV – Federal Office for Central Services and Unresolved Property Issues) had arranged for payment of approximately €90.4 million, covering interest payments for the maturity dates of 3 April 2010 and 3 October 2010 and the final redemption due on 3 October 2010. Redemption values and other details were published by the BADV in the *Bundesanzeiger* (Federal Gazette).

The following table shows the position with regard to both loans upon final redemption.

Drawings and final redemption payments were made for the most part in euros at the Deutsche Bundesbank, Frankfurt am Main, in its capacity as principal paying agent.

Loans[1]		Issue of bonds in 1990	Drawings 1996–2009	Final redemption on 3 October 2010
Dawes Loan				
Pound sterling tranches:				
Belgian/Dutch/French/Swiss[2]	GBP	1,500,000	525,000	975,000
American	USD	15,400,000	5,390,000	10,010,000
British[2]	GBP	2,400,000	840,000	1,560,000
Swedish	SEK	4,100,000	1,435,000	2,665,000
Swiss	CHF	3,500,000	1,225,000	2,275,000
Young Loan				
American	USD	16,300,000	2,852,500	13,447,500
Belgian	BEF	45,000,000	7,875,000	37,125,000
British	GBP	4,600,000	805,000	3,795,000
Dutch	NLG	14,000,000	2,450,000	11,550,000
French	FRF	86,000,000	15,050,000	70,950,000
German	DEM	8,500,000	1,487,500	7,012,500
Swedish	SEK	24,000,000	4,200,000	19,800,000
Swiss	CHF	16,500,000	2,887,500	13,612,500

[1] All amounts are nominal values. [2] The pound sterling issues existed in two tranches: one for the Belgian, Dutch, French and Swiss issues, and one for the British.

Over the period 1996–2009, a total of 14 redemptions were made by means of drawings. Thus, with an annual redemption rate of 2.5% (1.25%) of the issue value of the Dawes Loan (Young Loan) funding bonds, a total of 35% (17.5%) of the issue value had been redeemed by 3 October 2009. Accordingly, the final redemption due in the following year on 3 October 2010 amounted to 65% (82.5%) of the issue value.[10]

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

With strong support from the BIS shareholding central banks in the Asia-Pacific region, the Asian Office took on a new research programme while continuing to co-organise high-level policy meetings in the region and to offer its specialised banking services.

[10] See the BIS's *50th Annual Report* of June 1980 with respect to the Bank's reservations regarding the application by the BADV of the exchange guarantee clause for the Young Loan, which reservations also extend to the funding bonds 1990–2010.

The Asian Consultative Council

The Asian Consultative Council (ACC), comprising the Governors of the 12 BIS shareholding central banks in the region,[11] helps guide the activities of the Asian Office and reports to the BIS Board on those activities. In October, Zeti Akhtar Aziz, Governor of the Central Bank of Malaysia, completed her term as chair of the ACC, and the BIS Board appointed Masaaki Shirakawa, Governor of the Bank of Japan, to serve as chair for the next two years.

At its semiannual meeting in June 2010, the Council endorsed a BIS proposal for a two-year research strategy to be carried out by the Asian Office. At its January 2011 meeting, the Council discussed the progress of the research and offered suggestions to help the Office pursue the strategy more effectively.

Two-year research strategy for the Asian Office

The research strategy addresses two themes of high relevance to ACC central banks: on the monetary side, the role of central bank balance sheets in monetary policy and exchange rate issues; and on the financial side, property prices. Much of this work is being carried out in collaboration with academics and central bank researchers, and the effort will culminate in research conferences.

The research on the implications of the size and structure of central bank balance sheets addresses four topics: (i) the implications of prolonged intervention in currency markets; (ii) modelling the balance sheet transmission mechanism; (iii) international spillovers of monetary policy; and (iv) the use of reserve requirements. The conference to present this research is scheduled for late 2011.

The research on property markets in the region covers four broad issues: (i) measurement and valuation; (ii) housing finance systems; (iii) the relationship of property markets to the health of the banking sector; and (iv) the ability of various policy instruments to influence property prices and market activity. A research workshop will be held jointly with the Monetary Authority of Singapore in September 2011, and the conference to present completed work is scheduled for late 2012.

The Asian Office has engaged in collaborative research with most BIS shareholding central banks in the region as well as with regional organisations of central banks. The work has fed into the numerous meetings organised by the Asian Office and produced several articles in refereed journals and the major BIS publications.

The Special Governors' Meeting and other high-level meetings in Asia

The Asian Office organised 14 high-level policy meetings in the region during the period. Each meeting was held jointly with a central bank in the region or with a regional body of central banks, such as the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP) and the South East Asian Central Banks (SEACEN) Research and Training Centre.

[11] The central banks of Australia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore and Thailand.

The annual Special Governors' Meeting was organised jointly with the Bank of Japan and held in Kyoto in January 2011. The event gathered together the Governors of the major central banks in the region and other Governors from around the world. The Governors discussed the domestic and international implications of the expansion of central bank balance sheets in Asia. For the first time, the event also included a meeting of the Governors with the chief executive officers of large financial institutions in the region, in which views were exchanged on the evolving business models of banking in Asia.

Other high-level events included the June 2010 meeting of the Working Party on Monetary Policy in Asia, co-hosted by the People's Bank of China in Xi'an; the September 2010 BIS meeting on Monetary Policy Operating Procedures, co-hosted by the Bangko Sentral ng Pilipinas in Manila; the November 2010 Sixth High-Level Seminar on Financial Markets, co-hosted by the Bank of Japan in Hong Kong; the January 2011 BOK-BIS Conference on Macroprudential Regulation and Policy, co-hosted by the Bank of Korea in Seoul; and the January 2011 SEACEN-BIS Exco Seminar, co-hosted by the National Bank of Cambodia in Phnom Penh.

Banking activity and the Asian Bond Funds

Ongoing concerns about the global economic and financial environment led central banks in the region to remain cautious in their reserve portfolio management and to rely especially on the short-term liquid instruments offered by the BIS Banking Department.

As fund administrator, the BIS continued to support the second Asian Bond Fund (ABF2), an EMEAP initiative to foster the development of local currency bond markets. At the end of March 2011, the combined size of the funds stood at $4.0 billion, an increase from $3.5 billion at the end of March 2010. Private sector investment amounted to $1.1 billion, of which investments in the Pan Asia Bond Index Fund (PAIF) accounted for about 86% and investments in the eight single-market funds the remainder. The total return on the PAIF from its inception on 7 July 2005 to the end of March 2011 was 50.5%, which compared favourably with the 31.9% return on a US Treasury index of similar duration.

The Americas Office

The Americas Office, together with staff at the BIS head office, is monitoring the way capital inflows may be influencing regional monetary policy and how the new recommendations to enhance key supervisory standards and strengthen financial stability will affect local economies. Within the region, the Office is disseminating BIS research and analysis on these and related topics.

The Office's work with BIS member banks, non-shareholding central banks, regulatory authorities and the academic community generated several publications this year, including "Currency collapses and output dynamics: a long-run perspective", "Monetary policy in the presence of informal labor markets" and "The use of reserve requirements as a policy instrument in Latin America", all available on the Americas Office pages of the BIS website.

At the November 2010 annual meeting of the Latin American and Caribbean Economic Association (LACEA), the Americas Office and the BIS Monetary and Economic Department organised a discussion with academics, regional central bank directors and former Governors. They also sponsored a session on each of two contributed papers, one on the implications of global factors for monetary policies in emerging market economies and the other on financial stability considerations in monetary frameworks.

The Office co-organised and contributed to meetings at regional central banks, including the September 2010 meeting of the Working Party on Monetary Policy in Latin America, convened at the Central Bank of Brazil, and offered support to several training events organised by the BIS's Financial Stability Institute in cooperation with regional groupings of supervisors. In October 2010, the Office hosted and co-chaired a regional meeting of heads of internal audit from central banks in the Americas; and in December 2010, it hosted a meeting in Mexico City on the future of international banking, organised jointly by the BIS and the Bank of Spain. The Office provided speakers to, or participated in, various conferences and meetings convened by regional central banks and research organisations.

The Consultative Council for the Americas

The Office serves as the secretariat to the Consultative Council for the Americas (CCA). The CCA, which comprises the Governors of the six BIS member central banks in the Americas,[12] was established in May 2008 as an advisory committee to the BIS Board of Directors. Henrique de Campos Meirelles chaired the CCA from March 2010 until the end of his term as Governor of the Central Bank of Brazil, on 1 December 2010. In January 2011, the BIS Board appointed José de Gregorio, Governor of the Central Bank of Chile, to a two-year term as chair. CCA members are regularly informed of the work of the BIS and the Americas Office in the region and provide valuable guidance on current and possible future work at the BIS of interest to the Americas.

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 2010/11 financial year, the BIS employed 604 staff members from 53 countries.

The General Meeting of BIS member central banks

Fifty-six central banks and monetary authorities are currently members of the BIS. These 56 institutions have rights of voting and representation at General

[12] The central banks of Argentina, Brazil, Canada, Chile, Mexico and the United States.

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 committees 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.

Hans Tietmeyer retired from the Board of Directors at the end of his term, 31 December 2010. He had been a member of the Board since 1993 and had served as its Vice-Chairman since 2003. At its January 2011 meeting, the BIS Board elected Masaaki Shirakawa, Governor of the Bank of Japan, to succeed Mr Tietmeyer as Vice-Chairman for a three-year term commencing on 10 January 2011. At the same meeting, the Board appointed Philipp Hildebrand, Chairman of the Governing Board of the Swiss National Bank, to succeed Mr Tietmeyer as Chairman of the Bank's Administrative Committee with effect from 10 January 2011.

Henrique de Campos Meirelles stepped down as Governor of the Central Bank of Brazil, and therefore as a member of the BIS Board, at the end of December 2010. In January 2011, the Board elected Agustín Carstens, Governor of the Bank of Mexico, as a member of the Board for the remainder of Mr Meirelles' term.

In March 2011, the Board re-elected Stefan Ingves, Governor of Sveriges Riksbank, for a further period of three years ending on 31 March 2014.

Baron Guy Quaden retired as Governor of the National Bank of Belgium at the end of March 2011. Luc Coene succeeded Baron Quaden as Governor on 1 April 2011 and became an ex officio member of the Board of Directors. Mr Coene subsequently appointed Baron Quaden as a member of the Board until 31 March 2014.

Axel Weber stepped down as President of the Deutsche Bundesbank, and therefore as a member of the BIS Board, on 30 April 2011. On 1 May 2011, Jens Weidmann succeeded Mr Weber at the Deutsche Bundesbank and became an ex officio member of the Board.

Christian Noyer, Governor of the Bank of France, reappointed Jean-Pierre Landau, Second Deputy Governor of the Bank of France, as a member of the BIS Board until 31 December 2011. Mervyn King, Governor of the Bank of England, reappointed Paul Tucker, Deputy Governor of the Bank of England, as a member of the Board until 31 December 2011.

BIS shareholding institutions and members of the BIS Board of Directors are listed on the following pages.

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 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)

Board of Directors

Christian Noyer, Paris
Chairman of the Board of Directors

Masaaki Shirakawa, Tokyo
Vice-Chairman

Ben S Bernanke, Washington
Mark Carney, Ottawa
Agustín Carstens, Mexico City
Luc Coene, Brussels
Mario Draghi, Rome
William C Dudley, New York
Philipp Hildebrand, Zurich
Stefan Ingves, Stockholm
Mervyn King, London
Jean-Pierre Landau, Paris
Guy Quaden, Brussels
Fabrizio Saccomanni, Rome
Jean-Claude Trichet, Frankfurt am Main
Paul Tucker, London
Jens Weidmann, Frankfurt am Main
Nout H E M Wellink, Amsterdam
Zhou Xiaochuan, Beijing

Alternates

Mathias Dewatripont or Jan Smets, Brussels
Andreas Dombret or Karlheinz Bischofberger, Frankfurt am Main
Paul Fisher or Michael Cross, London
Pierre Jaillet or Christian Durand, Paris
Ignazio Visco, Rome
Janet L Yellen or D Nathan Sheets, Washington

Committees of the Board of Directors

Administrative Committee, chaired by Philipp Hildebrand
Audit Committee, chaired by Mark Carney
Banking and Risk Management Committee, chaired by Stefan Ingves
Nomination Committee, chaired by Christian Noyer

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

Deputy Secretary General Jim Etherington and Deputy Head of Banking Department Louis de Montpellier were each reappointed for a five-year period.

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 expenditure – including remuneration, pensions, and health and accident

insurance – amounts to around 70% of administrative expenditure. The other major expenditure categories, each accounting for about 10% of administrative spending, are information technology (IT), telecommunications, and building and equipment. Capital spending mainly relates to building expenses and IT investment and can vary significantly from year to year. Most of the Bank's administrative and capital expenditure is incurred in Swiss francs.

Administrative expenditure before depreciation[13] for the financial year 2010/11 amounted to 253.7 million Swiss francs, 3.0% below the budget of 261.6 million Swiss francs, while capital expenditure, at 21.7 million Swiss francs, was 1.8 million under budget. The largest sources of the underspending in administrative expenditure were lower than budgeted management and staff costs and IT and telecommunications spending.

Administrative and capital expenditure in 2010/11 reflected the main priority in the budget, which was to further reinforce the Bank's response to the global financial crisis in the following areas:

- Human and financial 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). A key achievement was the completion of the new Basel III reform package and its endorsement by the G20. This was the outcome of major efforts by the BCBS, the FSB and the BIS's Monetary and Economic Department.
- In the Banking Department and the Risk Control, Finance and Compliance units, dealing with the aftermath of the financial crisis was the main priority. Work in the banking business was oriented towards carefully managing the balance sheet and enhancing risk management, valuation, operational controls and management accounting.

Also in 2010/11, the Banking Department started work on the asset management infrastructure project, which will further enhance data management, compliance checking, portfolio analysis, order management and trade processing.

In March 2011, the Board approved a 2.6% increase in the administrative budget for the financial year 2011/12, to 268.5 million Swiss francs. It approved an increase of 3.1 million Swiss francs in the capital budget, to 26.6 million.

The Bank's business plan, on which the proposed administrative budget for 2011/12 is based, builds on the achievements in 2010/11 and gives priority to further enhancing financial stability activities. It allocates additional human and financial resources to deal with the expanding financial stability workload, particularly in the FSB, the BCBS and the Committee on Payment and Settlement Systems. The additional work includes disseminating the Basel III package to the global community of central banks and financial supervisors

[13] 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").

and enhancing the Bank's statistical capacity for the monitoring of financial markets and institutions.

Strengthening the resilience of BIS banking activities based on appropriate levels of profitability and financial risk from a medium-term perspective will be the main priority of the Banking Department and the Risk Control, Finance and Compliance units. Additional resources were also made available in the budget to complete the asset management infrastructure project started in 2010/11.

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 survey benchmarks BIS salaries 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 survey took place in the second half of 2010. As of 1 July 2011, it will result in an alignment of the midpoints of the Bank's salary ranges with the observed market benchmarks.

In years between comprehensive salary surveys, the salary structure is adjusted on the basis of the rate of inflation in Switzerland and the weighted average change in real wages in advanced economies. In view of the negative inflation and real salary growth in the reference period, the salary structure was reduced by 1% on 1 July 2010. Movements of salaries of individual staff members within the ranges of the salary structure are based on performance.

Through the Bank, BIS staff members have access 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. It currently amounts to 14% of annual salary 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. In the Representative Offices, the BIS makes a distinction 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, but they include access to the same health insurance and pension plans available to 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 2010. 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 2010, the annual remuneration of senior officials, before expatriation allowances, is based on the following salary structure:

- General Manager[14] 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 2011. 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 a net profit of SDR 816.0 million for the 81st financial year, ended 31 March 2011. This result represents a return to a more normal level of profitability in comparison with the exceptionally high profit of SDR 1,859.8 million recorded for the preceding financial year, which was achieved against the background of recovery in global financial markets, particularly in the credit markets, where many spreads against Libor had narrowed back to pre-September 2008 levels. The principal factors behind the 2010/11 result are discussed below.

Principal factors behind the 2010/11 profit

The financial year 2010/11 was marked by changeable global financial market conditions. In the first quarter of the financial year, tensions in the euro zone credit markets resulted in widened credit spreads against Libor for the debt instruments in the Bank's borrowed funds credit portfolios. In the second quarter, the tensions eased and credit spreads narrowed somewhat. This quarterly pattern of change in euro zone tensions and credit spreads in the first half of the financial year was repeated in the second half. Money market and foreign exchange spreads were, however, more stable than in the previous three financial years.

Net interest income amounted to SDR 1,465.4 million in 2010/11, compared with SDR 1,431.2 million in the preceding financial year. This increase was mainly attributable to:

- a 2.7% increase in the average volume of currency deposits from customers; and

[14] In addition to the basic salary, the General Manager receives an annual representation allowance and enhanced pension rights.

- the impact of early repurchases of Medium-Term Instrument (MTI) liabilities and the associated hedging arrangements. This increase is offset by an equivalent loss within net valuation movements.[15]

The impact of these positive factors was reduced by narrowing intermediation margins in the second half of the financial year.

Net valuation movements amounted to a loss of SDR 509.2 million in contrast to a gain of SDR 520.5 million last year.

The valuation loss in 2010/11 was mainly attributable to:

- the impact of MTI hedging mentioned above; and
- widening credit spreads on euro zone debt instruments held by the Bank's credit portfolios.

Operating expense (see note 24 to the financial statements) amounted to SDR 205.0 million, 7.4% above the preceding year's figure of SDR 190.8 million. Expressed in Swiss francs, the currency in which most of the Bank's administrative expenditure is incurred, operating expense rose by 1.1%. Administrative expense before depreciation, at SDR 190.8 million, exceeded the previous year's figure of SDR 177.7 million by 7.4%. The depreciation charge of SDR 14.2 million was 9.2% above the previous year's level of SDR 13.1 million.

After taking into account the above factors, the Bank's operating profit amounted to SDR 738.5 million, SDR 1,015.9 million below the SDR 1,754.4 million recorded in 2009/10.

Over the past two financial years, the Bank sold investment securities to align the portfolio with its benchmark duration of three years. The 2010/11 operation, which involved securities that had been acquired when interest rates were higher, produced a net gain of SDR 55.7 million. The sales in 2009/10 generated a net gain of SDR 105.4 million.

The Bank gained SDR 21.8 million on the sale of one tonne of its gold investment assets. The Bank made no such sales in 2009/10.

As a result of these factors, the net profit for 2010/11 amounted to SDR 816.0 million, SDR 1,043.8 million below the preceding year's SDR 1,859.8 million.

Movements in equity

The Bank's revaluation accounts, one for investment securities and one for gold, form part of the Bank's equity. They consist of net realised gains or losses – which are transferred to the profit and loss account – and net unrealised gains or losses.

The securities revaluation account decreased by SDR 197.3 million because of net unrealised losses on investment securities (–SDR 141.6 million),

[15] Holders of MTIs may sell these financial instruments back to the BIS at their current market value. When an MTI is repurchased by the BIS, the corresponding assets and hedging arrangements are retained and are normally refinanced through the issue of new liability financial instruments with similar market risk characteristics. Recent repurchases have taken place in a period when interest rates have been lower than when the repurchased MTIs were originally issued. As a result, the Bank's interest accrual margin has widened because the interest rates paid on the refinanced liabilities are lower than on the original MTIs. This has produced a higher net interest income, but this benefit is offset by a correspondingly lower net valuation movement as the assets and hedging arrangements converge to par value at maturity.

incurred as interest yields began to rise in the second half of the financial year; and, as noted above, because of the transfer to the profit and loss account of realised gains (–SDR 55.7 million) on sales.

The gold revaluation account increased by SDR 650.4 million because of net unrealised gains (+SDR 672.2 million) on the Bank's own gold investment assets, which were attributable to the year-on-year appreciation of gold; and, as noted above, because of the transfer to the profit and loss account of realised gains (–SDR 21.8 million) on the sale of one tonne of gold.

After taking these gains into account, the Bank's total return[16] for 2010/11 was SDR 1,269.1 million. This represented a return of 7.8% on average equity of SDR 16,238 million. In 2009/10, the total return was SDR 2,204.1 million, or 14.9%, on average equity of SDR 14,795 million. Taking into account the payment of the dividend of SDR 374.1 million for 2009/10, the Bank's equity increased by SDR 895.0 million during the year ended 31 March 2011.

Proposed dividend

The Board's review of the BIS dividend policy in 2009/10 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 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 takes into account the Bank's capital adequacy and leverage ratio requirements. The policy, which is due to be reviewed again in 2014/15, incorporates:

- a normal sustainable dividend, decided ex ante in conformity with the medium-term dividend policy, 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 ensures 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 results 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 coincides with the outcome of the annual economic capital allocation process

[16] The total return is shown as "Total comprehensive income" in the table entitled "Statement of comprehensive income" on page 146 in the financial statements.

(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 this dividend policy, it is proposed for the financial year 2010/11 to declare a normal dividend of SDR 295 per share, SDR 10 above the normal dividend for 2009/10. Last year, a supplementary dividend of SDR 400 per share was paid in recognition of the exceptionally high net profit. Given the return to a more normal level of profit, no supplementary dividend will be proposed for 2010/11.

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 816.0 million for the financial year 2010/11 be applied by the General Meeting in the following manner:

(a) SDR 161.1 million to be paid as a normal dividend of SDR 295 per share;
(b) SDR 65.5 million to be transferred to the general reserve fund;[17]
(c) SDR 6.0 million to be transferred to the special dividend reserve fund; and
(d) SDR 583.4 million, representing the remainder of the available net profit, to be transferred to the free reserve fund.

If approved, the dividend could be paid out on 1 July 2011 in any constituent currency of the SDR, or in Swiss francs, according to the instructions of each shareholder named in the Bank's share register on 31 March 2011.

The number of issued and paid-up shares is 547,125. Of these shares, 1,000, namely the suspended shares of the Albanian issue, were held in treasury at 31 March 2011. No dividend will be paid on treasury shares; therefore, the dividend will be paid on 546,125 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 2011 and the results of its operations for the year then ended. Their report is to be found immediately following the financial statements.

[17] The general reserve fund exceeded four times the Bank's paid-up capital at 31 March 2011. Article 51 of the Bank's Statutes requires that 10% of the profit after payment of the dividend be paid into the general reserve fund until its balance equals five times the paid-up capital.

Financial statements

as at 31 March 2011

The financial statements on pages 144–208 for the financial year ended 31 March 2011 were approved on 9 May 2011 for presentation to the Annual General Meeting on 26 June 2011. 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

SDR millions	Notes	**2011**	2010
Assets			
Cash and sight accounts with banks	3	329.8	1,516.2
Gold and gold loans	4	36,637.2	43,039.8
Treasury bills	5	76,932.1	84,714.8
Securities purchased under resale agreements	5	51,464.0	42,305.9
Loans and advances	6	24,170.4	19,288.6
Government and other securities	5	56,987.9	53,687.7
Derivative financial instruments	7	5,790.3	10,114.7
Accounts receivable	8	8,616.3	4,035.7
Land, buildings and equipment	9	190.8	189.9
Total assets		**261,118.8**	258,893.3
Liabilities			
Currency deposits	10	207,085.6	195,755.1
Gold deposits	11	21,269.9	32,064.1
Derivative financial instruments	7	6,959.5	4,187.4
Accounts payable	12	8,758.1	10,792.4
Other liabilities	13	375.4	319.0
Total liabilities		**244,448.5**	243,118.0
Shareholders' equity			
Share capital	14	683.9	683.9
Statutory reserves	15	12,154.4	10,668.7
Profit and loss account		816.0	1,859.8
Less: shares held in treasury	16	(1.7)	(1.7)
Other equity accounts	17	3,017.7	2,564.6
Total equity		**16,670.3**	15,775.3
Total liabilities and equity		**261,118.8**	258,893.3

Profit and loss account

For the financial year ended 31 March

SDR millions	Notes	**2011**	2010
Interest income	19	3,324.4	4,051.9
Interest expense	20	(1,859.0)	(2,620.7)
Net interest income		**1,465.4**	1,431.2
Net valuation movement	21	(509.2)	520.5
Net interest and valuation income		**956.2**	1,951.7
Net fee and commission income	22	3.1	10.7
Net foreign exchange loss	23	(15.8)	(17.2)
Total operating income		**943.5**	1,945.2
Operating expense	24	(205.0)	(190.8)
Operating profit		**738.5**	1,754.4
Net gain on sales of securities available for sale	25	55.7	105.4
Net gain on sales of gold investment assets	26	21.8	–
Net profit for the financial year		**816.0**	1,859.8
Basic and diluted earnings per share (in SDR per share)	27	**1,494.2**	3,405.4

Statement of comprehensive income

For the financial year ended 31 March

SDR millions	Notes	**2011**	2010
Net profit for the financial year		**816.0**	1,859.8
Unrealised loss on securities available for sale	17A	(197.3)	(112.5)
Unrealised gain on gold investment assets	17B	650.4	456.8
Total comprehensive income for the financial year		**1,269.1**	2,204.1

Statement of cash flows

For the financial year ended 31 March

SDR millions	Notes	**2011**	2010
Cash flow from / (used in) operating activities			
Interest and similar income received		3,591.1	4,875.0
Interest and similar expenses paid		(1,769.2)	(2,522.8)
Net fee and commission income	22	3.1	10.7
Foreign exchange transaction gain	23	21.5	0.3
Operating expenses paid		(190.8)	(177.6)
Non-cash flow items included in operating profit			
Valuation movements on operating assets and liabilities	21	(509.2)	520.5
Foreign exchange translation loss	23	(37.3)	(17.5)
Change in accruals and amortisation		(356.5)	(921.2)
Change in operating assets and liabilities			
Currency deposit liabilities held at fair value through profit and loss		17,500.9	3,220.0
Currency banking assets		(10,882.2)	6,472.1
Sight and notice deposit account liabilities		(11,022.2)	(2,839.8)
Gold deposit liabilities		(10,794.2)	9,012.0
Gold and gold loan banking assets		7,042.6	(17,170.5)
Accounts receivable		1.5	(0.7)
Other liabilities / accounts payable		(332.7)	339.9
Net derivative financial instruments		7,096.5	1,005.0
Net cash flow from / (used in) operating activities		**(637.1)**	1,805.4
Cash flow from / (used in) investment activities			
Net change in currency investment assets available for sale	5B	(829.8)	(606.4)
Net change in currency investment assets held at fair value through profit and loss		(82.9)	131.1
Net change in gold investment assets	4B	32.2	3.7
Net purchase of land, buildings and equipment	9	(15.1)	(12.1)
Net cash flow from / (used in) investment activities		**(895.6)**	(483.7)

SDR millions	Notes	**2011**	2010
Cash flow from / (used in) financing activities			
Dividends paid		(374.1)	(144.7)
Net cash flow from / (used in) financing activities		**(374.1)**	(144.7)
Total net cash flow		**(1,906.8)**	1,177.0
Net effect of exchange rate changes on cash and cash equivalents		178.4	49.8
Net movement in cash and cash equivalents		(2,085.2)	1,127.2
Net change in cash and cash equivalents		**(1,906.8)**	1,177.0
Cash and cash equivalents, beginning of year	28	**2,488.8**	1,311.8
Cash and cash equivalents, end of year	28	**582.0**	2,488.8

Movements in the Bank's equity

For the financial year ended 31 March

SDR millions	Notes	Share capital	Statutory reserves	Profit and loss	Shares held in treasury	Other equity accounts	Total equity
Equity at 31 March 2009		**683.9**	**10,367.3**	**446.1**	**(1.7)**	**2,220.3**	**13,715.9**
Total comprehensive income	17	–	–	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		**683.9**	**10,668.7**	**1,859.8**	**(1.7)**	**2,564.6**	**15,775.3**
Total comprehensive income	17	–	–	816.0	–	453.1	1,269.1
Payment of 2009/10 dividend – normal		–	–	(155.6)	–	–	(155.6)
Payment of 2009/10 dividend – supplementary		–	–	(218.5)	–	–	(218.5)
Allocation of 2009/10 profit		–	1,485.7	(1,485.7)	–	–	–
Equity at 31 March 2011 per balance sheet before proposed profit allocation		**683.9**	**12,154.4**	**816.0**	**(1.7)**	**3,017.7**	**16,670.3**
Proposed dividend	14	–	–	(161.1)	–	–	(161.1)
Proposed transfers to reserves		–	654.9	(654.9)	–	–	–
Equity at 31 March 2011 after proposed profit allocation		**683.9**	**12,809.3**	**–**	**(1.7)**	**3,017.7**	**16,509.2**

At 31 March 2011 statutory reserves included share premiums of SDR 811.7 million (2010: SDR 811.7 million).

Statement of proposed profit allocation

For the financial year ended 31 March

SDR millions	Notes	2011
Net profit for the financial year		**816.0**
Transfer to legal reserve fund	15	–
Proposed dividend:		
SDR 295 per share on 546,125 shares		**(161.1)**
Proposed transfers to reserves:		
General reserve fund	15	(65.5)
Special dividend reserve fund	15	(6.0)
Free reserve fund	15	(583.4)
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

						2011
SDR millions	Notes	Legal reserve fund	General reserve fund	Special dividend reserve fund	Free reserve fund	Total statutory reserves
Balance at 31 March 2010		**68.3**	**3,079.9**	**154.0**	**7,366.5**	**10,668.7**
Allocation of 2009/10 profit	15	–	148.6	12.0	1,325.1	1,485.7
Balance at 31 March 2011 per balance sheet before proposed profit allocation		**68.3**	**3,228.5**	**166.0**	**8,691.6**	**12,154.4**
Proposed transfers to reserves	15	–	65.5	6.0	583.4	654.9
Balance at 31 March 2011 after proposed profit allocation		**68.3**	**3,294.0**	**172.0**	**9,275.0**	**12,809.3**

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 31.

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 2010 and effective 1 January 2011. As currently calculated, one SDR is equivalent to the sum of USD 0.660, EUR 0.423, JPY 12.1 and GBP 0.111. Prior to 1 January 2011, one SDR was equivalent to the sum of USD 0.632, EUR 0.410, JPY 18.4 and GBP 0.0903. The change in the composition of the SDR basket was such that the values of the SDR under the old and new baskets were equivalent at 31 December 2010 and no significant gains or losses resulted from the change in the weights of the currencies. The composition of the SDR currency basket is subject to review every five years by the IMF; the next review is due to be undertaken in December 2015.

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 traded portfolios. The currency investment 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". They are considered to be cash equivalents for the purposes of the cash flow statement.

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 banking 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 under the profit and loss account heading "Interest expense" on an effective interest rate basis.

After trade date, the currency deposit liabilities are revalued to fair value, with all realised and unrealised movements in fair value included under "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 traded investment portfolios. The currency investment 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 the profit and loss account under "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 "Net valuation movement".

12. Currency investment 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 traded investment portfolios.

These currency investment 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 the profit and loss account under "Interest income" on an effective interest rate basis.

After trade date, the currency investment 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 loss on securities available for sale". Realised profits on disposal are included in the profit and loss account under "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 fair value on a trade date basis.

14. Gold

Gold comprises gold bar assets held in custody at central banks and sight accounts denominated in gold. 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. 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 the profit and loss account under "Interest income" on an effective interest rate basis.

16. Gold deposits

Gold deposits comprise unallocated sight and fixed-term deposits of gold from central banks.

Unallocated gold deposits provide customers with a general claim on the Bank for delivery of gold of the same weight and quality as that delivered by the customer to the Bank, but do not provide the right to specific gold bars. Unallocated 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 the profit and loss account under "Interest expense" on an effective interest rate basis.

Allocated (or "earmarked") gold deposits provide depositors with a claim for delivery of the specific gold bars deposited by the customer with the Bank on a custody basis. Beneficial ownership and risk remain with the customer. As such, allocated gold deposit liabilities

and the related gold bar assets are not included on the Bank's balance sheet. They are disclosed as off-balance sheet items (see note 31).

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 in the profit and loss account under "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 "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 / (loss) 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 the profit and loss account under "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 "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 the profit and loss account under "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 "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 to the extent that a decline in fair value below amortised cost is considered other than temporary. Impairment of currency assets is included in the profit and loss account under "Net valuation movement", with impairment of gold loans included under "Interest income". 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 the 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 Canada, China, Japan, Mexico, 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, makes assumptions and exercises judgment.

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.

Judgment is exercised when selecting and applying the Bank's accounting policies. The judgments relating to the designation and valuation of financial instruments are another key element in the preparation of these financial statements.

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	**2011**	2010
Treasury bills	0.2	0.3
Securities purchased under resale agreements	0.3	0.1
Loans and advances	0.5	0.3
Government and other securities	10.2	9.8
Currency deposits	14.3	15.0
Derivative financial instruments	4.3	5.6

B. Impairment provision on financial assets

Gold loans include a provision of SDR 29.0 million following an impairment review as at 31 March 2011 (31 March 2010: SDR 23.5 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 2011 is due to changes in gold prices and exchange rates, which are included under the profit and loss account heading "Net foreign exchange loss". No additional impairment charge was recognised during the financial year (2010: nil). Impairment charges, when recognised, are included in the profit and loss account under the heading "Net interest income".

C. Actuarial assumptions

The valuation of the Bank's pension fund and health care arrangements relies on actuarial assumptions which include expectations of inflation, interest rates, medical cost inflation and retirement age and life expectancy of participants. Changes to these assumptions 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*	**2011**	2010
Gold	35,401.7	41,596.9
Gold loans	1,235.5	1,442.9
Total gold and gold loan assets	**36,637.2**	43,039.8
Comprising:		
Gold investment assets	3,451.2	2,811.2
Gold and gold loan banking assets	33,186.0	40,228.6

Included in "Gold" is SDR 11,940.5 million (409 tonnes) of gold (2010: SDR 8,160.1 million; 346 tonnes) that the Bank holds in connection with its gold swap contracts. Under such contracts the Bank exchanges currencies for physical gold, and has an obligation to return the gold at the end of the contract. See note 7 for more details on gold swap transactions.

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 17B provides further analysis of the gold revaluation account. Note 26 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	**2011**	2010
Balance at beginning of year	2,811.2	2,358.1
Net change in gold investment assets		
Disposals of gold	(26.7)	–
Impairment, sight account and other net movements	(5.5)	(3.7)
	(32.2)	(3.7)
Gold price movement	672.2	456.8
Balance at end of year	**3,451.2**	2,811.2

At 31 March 2011 the Bank's gold investment assets amounted to 119 tonnes of fine gold (2010: 120 tonnes).

5. Currency assets

A. Total holdings

Currency assets comprise treasury bills, securities purchased under resale agreements, fixed-term loans and advances, 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 currency deposit liabilities along with currency investment assets that are part of more actively traded portfolios. The remaining part of the Bank's currency investment assets are categorised as available for sale and, together with the gold investment assets, largely represent 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 usually short-term 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 Bank monitors the fair value of the collateral securities and may call for additional collateral or be required to return collateral based on the movement in its market value.

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. These loans are recognised in the balance sheet total "Loans and advances", which also includes notice accounts (see note 6).

Government and other securities are debt securities issued by governments, international institutions, other public sector institutions, commercial banks and corporates. They include commercial paper, certificates of deposit, fixed and floating rate bonds, covered bonds and asset-backed securities.

The tables below analyse the Bank's holdings of currency assets:

As at 31 March 2011	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	**76,739.3**	**–**	**192.8**	**192.8**	**76,932.1**
Securities purchased under resale agreements	**51,464.0**	**–**	**–**	**–**	**51,464.0**
Fixed-term loans and advances	**23,918.2**	**–**	**–**	**–**	**23,918.2**
Government and other securities					
Government	11,498.1	11,083.5	–	11,083.5	22,581.6
Financial institutions	18,933.2	226.9	601.6	828.5	19,761.7
Other	13,808.6	836.0	–	836.0	14,644.6
	44,239.9	**12,146.4**	**601.6**	**12,748.0**	**56,987.9**
Total currency assets	**196,361.4**	**12,146.4**	**794.4**	**12,940.8**	**209,302.2**

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	17,435.8
Financial institutions	18,878.3	677.7	543.2	1,220.9	20,099.2
Other	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

B. Currency investment 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 investment assets available for sale:

For the financial year ended 31 March

SDR millions	**2011**	2010
Balance at beginning of year	11,556.2	10,859.3
Net change in currency investment assets available for sale		
Additions	5,299.8	5,233.1
Disposals	(2,996.5)	(3,941.1)
Other net movements	(1,473.5)	(685.6)
	829.8	606.4
Net change in transactions awaiting settlement	(98.0)	97.6
Fair value and other movements	(141.6)	(7.1)
Balance at end of year	**12,146.4**	11,556.2

6. Loans and advances

Loans and advances comprise fixed-term loans to commercial banks, advances and notice accounts. Advances relate to committed and uncommitted standby facilities which the Bank provides for its customers. Notice accounts are very short-term financial assets, typically having a notice period of three days or less.

Fixed-term loans and advances are designated as held at fair value through profit and loss. Notice accounts are designated as loans and receivables and are included in the balance sheet at amortised cost.

As at 31 March

SDR millions	**2011**	2010
Fixed-term loans and advances	23,918.2	18,316.0
Notice accounts	252.2	972.6
Total loans and advances	**24,170.4**	19,288.6

The amount of the change in fair value recognised in the profit and loss account on fixed-term loans and advances is SDR 12.3 million (2010: SDR –11.6 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 agreements to receive or pay a net amount based on changes in interest rates or bond prices on a future date. 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 bilateral contractual agreements to exchange cash flows related to currencies, gold or interest rates (for example, fixed rate for floating rate). Cross-currency interest rate swaps involve the exchange of cash flows related to a combination of interest rates and foreign exchange rates. Except for certain currency and gold swaps and cross-currency interest rate swaps, no exchange of principal takes place.

Currency and gold forwards are bilateral contractual agreements involving the exchange of foreign currencies or gold at a future date. This includes undelivered spot transactions.

Forward rate agreements are bilateral 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 bilateral 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 notes 10 and 11). 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	**2011**			2010		
	Notional amounts	Fair values		Notional amounts	Fair values	
SDR millions		Assets	Liabilities		Assets	Liabilities
Bond futures	1,095.0	0.5	(0.4)	754.9	0.8	–
Cross-currency interest rate swaps	1,597.0	4.8	(314.8)	345.8	56.1	(401.9)
Currency and gold forwards	2,747.7	13.6	(25.2)	736.2	2.7	(1.1)
Currency and gold options	3,430.0	43.7	(43.8)	6,034.1	47.9	(47.2)
Currency and gold swaps	128,060.9	766.9	(3,711.9)	108,476.1	3,282.5	(199.8)
Forward rate agreements	18,945.7	6.3	(5.1)	7,975.6	0.7	(2.9)
Interest rate futures	7,559.2	0.1	–	2,015.9	–	–
Interest rate swaps	304,357.4	4,954.4	(2,853.3)	309,000.7	6,721.1	(3,532.8)
Swaptions	773.4	–	(5.0)	845.2	2.9	(1.7)
Total derivative financial instruments at end of year	**468,566.3**	**5,790.3**	**(6,959.5)**	436,184.5	10,114.7	(4,187.4)
Net derivative financial instruments at end of year			**(1,169.2)**			5,927.3

8. Accounts receivable

As at 31 March		
SDR millions	**2011**	2010
Financial transactions awaiting settlement	8,606.0	4,023.9
Other assets	10.3	11.8
Total accounts receivable	**8,616.3**	4,035.7

"Financial transactions awaiting settlement" relates to short-term receivables (typically due in three days or less) where transactions have been effected but cash has not yet been transferred. This includes assets that have been sold and liabilities that have been issued.

9. Land, buildings and equipment

For the financial year ended 31 March				2011	2010
SDR millions	Land	Buildings	IT and other equipment	Total	Total
Historical cost					
Balance at beginning of year	**41.2**	**243.9**	**88.6**	**373.7**	361.6
Capital expenditure	–	6.3	8.8	15.1	12.1
Disposals and retirements	–	–	(4.5)	(4.5)	–
Balance at end of year	**41.2**	**250.2**	**92.9**	**384.3**	373.7
Depreciation					
Balance at beginning of year	**–**	**115.2**	**68.6**	**183.8**	170.6
Depreciation	–	7.8	6.4	14.2	13.1
Disposals and retirements	–	–	(4.5)	(4.5)	–
Balance at end of year	**–**	**123.0**	**70.5**	**193.5**	183.7
Net book value at end of year	**41.2**	**127.2**	**22.4**	**190.8**	189.9

The depreciation charge for the financial year ended 31 March 2011 includes an additional charge of SDR 1.0 million for IT and other equipment following an impairment review (2010: SDR 0.6 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*	**2011**	2010
Deposit instruments repayable at one to two days' notice		
Medium-Term Instruments (MTIs)	54,453.9	52,420.8
Callable MTIs	1,556.7	1,717.3
Fixed Rate Investments of the BIS (FIXBIS)	42,751.3	34,223.7
	98,761.9	88,361.8
Other currency deposits		
Floating Rate Investments of the BIS (FRIBIS)	962.8	116.9
Fixed-term deposits	89,550.9	78,434.1
Dual Currency Deposits (DCDs)	85.7	95.8
Sight and notice deposit accounts	17,724.3	28,746.5
	108,323.7	107,393.3
Total currency deposits	**207,085.6**	195,755.1
Comprising:		
Designated as held at fair value through profit and loss	189,361.3	167,008.6
Designated as financial liabilities measured at amortised cost	17,724.3	28,746.5

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 2011 and December 2011 (2010: June 2010 and December 2010). The balance sheet total for callable MTIs includes the fair value of the embedded interest rate option.

FIXBIS are fixed rate investments at the Bank for any maturities between one week and one year.

FRIBIS are floating rate investments at the Bank 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 4 April 2011 and 9 May 2011 (2010: between 21 April 2010 and 12 May 2010).

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 the 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 obliged to pay at maturity to the holder of the deposit. The amount the Bank is contractually obliged to pay at maturity in respect of its total currency deposits (including accrued interest to 31 March 2011) is SDR 206,432.4 million (2010: SDR 193,896.3 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. 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.

13. Other liabilities

The Bank's other liabilities consist of:

As at 31 March

SDR millions	**2011**	2010
Post-employment benefit obligations (see note 18)		
Staff pensions	22.7	12.1
Directors' pensions	5.9	5.2
Health and accident benefits	258.3	217.5
Short positions in currency assets	65.7	66.0
Payable to former shareholders	0.6	0.5
Other	22.2	17.7
Total other liabilities	**375.4**	319.0

14. Share capital

The Bank's share capital consists of:

As at 31 March *SDR millions*	**2011**	2010
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	**2011**	2010
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

15. 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, (see note 14), 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.

16. Shares held in treasury

For the financial year ended 31 March	**2011**	2010
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.

17. 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	**2011**	2010
Securities revaluation account	121.3	318.6
Gold revaluation account	2,896.4	2,246.0
Total other equity accounts	**3,017.7**	2,564.6

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	**2011**	2010
Balance at beginning of year	318.6	431.1
Net valuation movement		
Net gain on sales	(55.7)	(105.4)
Fair value and other movements	(141.6)	(7.1)
	(197.3)	(112.5)
Balance at end of year	**121.3**	318.6

The table below analyses the balance in the securities revaluation account, which relates to government and other securities:

SDR millions	Fair value of assets	Historical cost	Securities revaluation account	Gross gains	Gross losses
As at 31 March 2011	12,146.4	12,025.1	**121.3**	190.4	(69.1)
As at 31 March 2010	11,556.2	11,237.6	318.6	322.2	(3.6)

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	**2011**	2010
Balance at beginning of year	2,246.0	1,789.2
Net valuation movement		
Net gain on sales	(21.8)	–
Gold price movement	672.2	456.8
	650.4	456.8
Balance at end of year	**2,896.4**	2,246.0

18. 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	**2011**	2010	2009	2008	2007
Present value of obligation	(1,039.1)	(913.1)	(747.4)	(709.7)	(653.7)
Fair value of fund assets	881.9	762.4	619.6	714.3	648.6
Funded status	(157.2)	(150.7)	(127.8)	4.6	(5.1)
Unrecognised actuarial losses	134.5	138.6	125.4	41.2	47.3
Unrecognised past service cost	–	–	–	(45.8)	(42.2)
Liability at end of year	**(22.7)**	(12.1)	(2.4)	–	–

As at 31 March	Directors' pensions				
SDR millions	**2011**	2010	2009	2008	2007
Present value of obligation	(7.2)	(6.5)	(5.7)	(5.4)	(4.6)
Fair value of fund assets	–	–	–	–	–
Funded status	(7.2)	(6.5)	(5.7)	(5.4)	(4.6)
Unrecognised actuarial losses	1.3	1.3	0.9	0.6	0.3
Unrecognised past service cost	–	–	–	–	–
Liability at end of year	**(5.9)**	(5.2)	(4.8)	(4.8)	(4.3)

As at 31 March	Post-employment health and accident benefits				
SDR millions	**2011**	2010	2009	2008	2007
Present value of obligation	(316.7)	(284.2)	(225.4)	(208.0)	(186.3)
Fair value of fund assets	–	–	–	–	–
Funded status	(316.7)	(284.2)	(225.4)	(208.0)	(186.3)
Unrecognised actuarial losses	63.3	72.3	40.1	30.3	42.0
Unrecognised past service cost	(4.9)	(5.6)	(6.3)	(7.7)	(7.8)
Liability at end of year	**(258.3)**	(217.5)	(191.6)	(185.4)	(152.1)

B. Present value of defined 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	**2011**	2010	2009	**2011**	2010	2009	**2011**	2010	2009
Present value of obligation at beginning of year	913.1	747.4	709.7	6.5	5.7	5.4	284.2	225.4	208.0
Current service cost	40.1	32.0	29.8	0.3	0.2	0.2	9.4	8.5	7.9
Employee contributions	5.2	4.5	3.9	–	–	–	–	–	–
Interest cost	25.6	24.5	24.9	0.2	0.2	0.2	8.1	7.5	7.4
Actuarial loss / (gain)	(11.8)	84.3	29.3	–	–	0.3	(11.9)	30.2	11.5
Benefit payments	(29.0)	(28.3)	(24.5)	(0.4)	(0.3)	(0.3)	(2.5)	(2.2)	(1.9)
Exchange differences	95.9	48.7	(25.7)	0.6	0.7	(0.1)	29.4	14.8	(7.5)
Present value of obligation at end of year	**1,039.1**	913.1	747.4	**7.2**	6.5	5.7	**316.7**	284.2	225.4

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	**2011**	2010	2009
Fair value of fund assets at beginning of year	762.4	619.6	714.3
Expected return on fund assets	39.4	31.8	34.0
Actuarial gain / (loss)	0.9	74.4	(99.3)
Employer contributions	22.0	20.0	18.3
Employee contributions	5.2	4.5	3.9
Benefit payments	(29.0)	(28.3)	(24.5)
Exchange differences	81.0	40.4	(27.1)
Fair value of fund assets at end of year	**881.9**	762.4	619.6

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	**2011**	2010	2009	**2011**	2010	2009	**2011**	2010	2009
Current service cost	40.1	32.0	29.8	0.3	0.2	0.2	9.4	8.5	7.9
Interest cost	25.6	24.5	24.9	0.2	0.2	0.2	8.1	7.5	7.4
Less: expected return on fund assets	(39.4)	(31.8)	(34.0)	–	–	–	–	–	–
Less: past service cost	–	–	–	–	–	–	(1.2)	(1.1)	(6.3)
Net actuarial losses recognised in year	4.2	4.4	–	0.1	0.1	–	3.5	1.4	–
Total included in operating expense	**30.5**	29.1	20.7	**0.6**	0.5	0.4	**19.8**	16.3	9.0

The Bank expects to make a contribution to its post-employment arrangements of SDR 26.9 million in 2011/12.

E. Major categories of fund assets as a percentage of total fund assets

As at 31 March		
Percentages	**2011**	2010
European equities	14.6	7.1
Other equities	32.0	33.4
European fixed income	16.3	18.5
Other fixed income	30.1	30.9
Other assets	7.0	10.1
Actual return on fund assets	**4.9%**	14.4%

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	**2011**	2010
Applicable to all three post-employment benefit arrangements		
Discount rate – market rate of highly rated Swiss corporate bonds	2.75%	2.75%
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 2011 (2010: 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 2010/11 calculation would have the following effects:

For the financial year ended 31 March

SDR millions	**2011**	2010
Increase / (decrease) of the total service and interest cost		
6% medical inflation	7.1	5.2
4% medical inflation	(5.2)	(3.9)

As at 31 March

SDR millions	**2011**	2010
Increase / (decrease) of the benefit obligation		
6% medical inflation	88.9	70.0
4% medical inflation	(67.5)	(53.1)

19. Interest income

For the financial year ended 31 March

SDR millions	**2011**	2010
Currency assets available for sale		
Government and other securities	299.9	317.7
	299.9	317.7
Currency assets held at fair value through profit and loss		
Treasury bills	335.6	529.9
Securities purchased under resale agreements	188.3	156.7
Loans and advances	123.9	101.7
Government and other securities	838.7	959.1
	1,486.5	1,747.4
Assets designated as loans and receivables		
Sight and notice accounts	2.8	2.0
Gold investment assets	1.2	2.7
Gold banking assets	2.2	3.1
	6.2	7.8
Derivative financial instruments held at fair value through profit and loss	**1,531.8**	1,979.0
Total interest income	**3,324.4**	4,051.9

20. Interest expense

For the financial year ended 31 March

SDR millions	**2011**	2010
Liabilities held at fair value through profit and loss		
Currency deposits	1,811.0	2,573.8
Liabilities designated as financial liabilities measured at amortised cost		
Sight and notice deposit accounts	46.6	44.9
Gold deposits	1.4	2.0
	48.0	46.9
Total interest expense	**1,859.0**	2,620.7

21. Net valuation movement

The net valuation movement arises entirely on financial instruments designated as held at fair value through profit and loss.

For the financial year ended 31 March

SDR millions	**2011**	2010
Currency assets held at fair value through profit and loss		
Unrealised valuation movements on currency assets	(473.7)	698.6
Realised gains on currency assets	108.5	53.2
	(365.2)	751.8
Currency liabilities held at fair value through profit and loss		
Unrealised valuation movements on financial liabilities	646.4	1,977.4
Realised losses on financial liabilities	(292.4)	(928.4)
	354.0	1,049.0
Valuation movements on derivative financial instruments	**(498.0)**	(1,280.3)
Net valuation movement	**(509.2)**	520.5

22. Net fee and commission income

For the financial year ended 31 March

SDR millions	**2011**	2010
Fee and commission income	12.1	18.8
Fee and commission expense	(9.0)	(8.1)
Net fee and commission income	**3.1**	10.7

23. Net foreign exchange loss

For the financial year ended 31 March

SDR millions	**2011**	2010
Net transaction gain	21.5	0.3
Net translation loss	(37.3)	(17.5)
Net foreign exchange loss	**(15.8)**	(17.2)

24. 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	**2011**	2010
Board of Directors		
Directors' fees	2.2	2.3
Pensions to former Directors	0.6	0.6
Travel, external Board meetings and other costs	1.2	1.3
	4.0	4.2
Management and staff		
Remuneration	120.4	118.8
Pensions	50.8	51.8
Other personnel-related expense	48.3	44.2
	219.5	214.8
Office and other expense	**71.3**	73.7
Administrative expense in CHF millions	**294.8**	292.7
Administrative expense in SDR millions	190.8	177.7
Depreciation in SDR millions	14.2	13.1
Operating expense in SDR millions	**205.0**	190.8

The average number of full-time equivalent employees during the financial year ended 31 March 2011 was 547 (2010: 540).

25. Net gain on sales of securities available for sale

For the financial year ended 31 March

SDR millions	**2011**	2010
Disposal proceeds	3,038.7	3,941.1
Amortised cost	(2,983.0)	(3,835.7)
Net gain on sales of securities available for sale	**55.7**	105.4
Comprising:		
Gross realised gains	69.9	107.7
Gross realised losses	(14.2)	(2.3)

26. Net gain on sales of gold investment assets

For the financial year ended 31 March

SDR millions	**2011**	2010
Disposal proceeds	26.7	–
Deemed cost (see note 17B)	(4.9)	–
Net gain on sales of gold investment assets	**21.8**	–

27. Earnings and dividends per share

For the financial year ended 31 March	**2011**	2010
Net profit for the financial year (SDR millions)	816.0	1,859.8
Weighted average number of shares entitled to dividend	546,125	546,125
Basic and diluted earnings per share (SDR per share)	**1,494.2**	3,405.4
Dividends per share (SDR per share)		
Normal	**295**	285
Supplementary	**–**	400
Total	**295**	685

The Bank's dividend policy incorporates two elements: a normal sustainable dividend that is intended to change in a predictable manner from year to year, and a supplementary dividend that is appropriate when profits are high and the Bank's capital requirements are met.

28. Cash and cash equivalents

The cash and cash equivalents in the cash flow statement comprise:

As at 31 March

SDR millions	**2011**	2010
Cash and sight accounts with banks	329.8	1,516.2
Notice accounts	252.2	972.6
Total cash and cash equivalents	**582.0**	2,488.8

29. 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 Americas Office.

30. 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	
	2011	2010	**2011**	2010
USD	**0.631**	0.658	**0.654**	0.644
EUR	**0.895**	0.889	**0.864**	0.909
JPY	**0.00762**	0.00704	**0.00764**	0.00694
GBP	**1.013**	0.998	**1.016**	1.027
CHF	**0.689**	0.625	**0.647**	0.606
Gold (in ounces)	**907.5**	732.9	**844.9**	657.4

31. 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 other assets of the Bank. They are not included in the Bank's balance sheet and comprise:

As at 31 March

SDR millions	**2011**	2010
Safe custody arrangements	11,260.6	11,115.6
Collateral pledge agreements	33.9	88.8
Portfolio management mandates	10,507.9	8,981.2
Gold bars held under earmark	8,671.1	5,003.9
Total	**30,473.5**	25,189.5

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 comprise specific gold bars which have been deposited with the Bank on a custody basis. They are included at their weight in gold (translated at the gold market price and the USD exchange rate into SDR). At 31 March 2011 gold bars held under earmark amounted to 297 tonnes of fine gold (2010: 212 tonnes).

The financial instruments held under the above arrangements are deposited with external custodians, either central banks or commercial institutions.

In addition to the off-balance sheet items listed above, the Bank also manages portfolios of BIS currency deposits on behalf of its customers. These totalled SDR 5,776.7 million at 31 March 2011 (2010: SDR 5,713.0 million). The assets in these portfolios are included in the balance sheet under the heading "Currency deposits".

32. Commitments

The Bank provides a number of committed standby facilities for its customers on a collateralised or uncollateralised basis. As at 31 March 2011 the outstanding commitments to extend credit under these committed standby facilities amounted to SDR 2,287.7 million (2010: SDR 4,919.8 million), of which SDR 189.4 million was uncollateralised (2010: SDR 2,420.7 million).

33. The fair value hierarchy

The Bank categorises its financial instrument fair value measurements using a hierarchy that reflects the significance of 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 used by the Bank comprises the following levels:

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 that are not observable in financial markets.

A. Assets measured at fair value

As at 31 March 2011

SDR millions	Level 1	Level 2	Level 3	Total
Financial assets held at fair value through profit and loss				
Treasury bills	71,198.0	5,734.2	–	76,932.1
Securities purchased under resale agreements	–	51,464.0	–	51,464.0
Fixed-term loans	–	23,918.2	–	23,918.2
Government and other securities	18,401.2	26,376.2	64.1	44,841.5
Derivative financial instruments	5.5	5,784.8	–	5,790.3
Financial assets designated as available for sale				
Government and other securities	11,862.1	284.4	–	12,146.4
Total financial assets accounted for at fair value	**101,466.7**	**113,561.7**	**64.1**	**215,092.5**
Financial liabilities held at fair value through profit and loss				
Currency deposits	–	(189,361.3)	–	(189,361.3)
Derivative financial instruments	(16.5)	(6,943.0)	–	(6,959.5)
Other liabilities (short positions in currency assets)	–	(65.7)	–	(65.7)
Total financial liabilities accounted for at fair value	**(16.5)**	**(196,370.0)**	**–**	**(196,386.5)**

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 in this manner 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 2010 and 2011 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 2011

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	91.4	–	91.4
Gains in profit or loss	0.7	–	0.7
Gains in equity	–	–	–
Total gains	**0.7**	–	**0.7**
Disposals	(11.4)	–	(11.4)
Transfers out of level 3	(31.7)	–	(31.7)
Transfers into level 3	15.1	–	15.1
Balance at end of year	**64.1**	–	**64.1**
Gains in profit or loss for assets and liabilities held at end of year	1.0	–	1.0

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 in profit or loss	109.0	–	109.0
Gains in equity	–	1.0	1.0
Total gains	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 in profit or loss for assets and liabilities held at end of year	28.2	–	28.2

34. 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 2011

Percentages	USD	EUR	GBP	JPY	Other currencies
Assets					
Gold loans	–	–	–	–	0.46
Treasury bills	0.26	0.93	0.60	0.11	0.82
Securities purchased under resale agreements	0.08	0.60	0.53	0.04	–
Loans and advances	0.28	0.94	0.68	0.10	0.16
Government and other securities	1.54	2.64	2.08	0.51	5.07
Liabilities					
Currency deposits	0.82	1.02	1.06	0.04	0.56
Gold deposits	–	–	–	–	0.38
Short positions in currency assets	4.53	–	–	–	–

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	–	–	–	–

35. Geographical analysis

A. Total liabilities

As at 31 March

SDR millions	**2011**	2010
Africa and Europe	76,200.4	93,697.7
Asia-Pacific	105,303.5	100,001.4
Americas	48,847.3	40,988.6
International organisations	14,097.3	8,430.3
Total	**244,448.5**	243,118.0

B. Off-balance sheet items

As at 31 March

SDR millions	**2011**	2010
Africa and Europe	7,652.0	6,107.7
Asia-Pacific	18,918.4	17,911.3
Americas	3,903.1	1,170.5
Total	**30,473.5**	25,189.5

Note 31 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 3B).

C. Credit commitments

As at 31 March

SDR millions	**2011**	2010
Africa and Europe	179.1	2,861.7
Asia-Pacific	2,108.6	2,058.1
Americas	–	–
Total	**2,287.7**	4,919.8

Note 32 provides further analysis of the Bank's credit commitments.

36. Related parties

The Bank considers the following to be its related parties:

- the members of the Board of Directors;
- the senior officials of the Bank;
- close family members of the above individuals;
- enterprises which could exert significant influence over a member of the Board of Directors or senior official, and enterprises over which one of these individuals could exert significant influence;
- the Bank's post-employment benefit arrangements; and
- central banks whose Governor is a member of the Board of Directors and institutions that are connected with these central banks.

A listing of the members of the Board of Directors and senior officials is shown in the section of the Annual Report entitled "Board of Directors and senior officials". Note 18 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	**2011**	2010
Salaries, allowances and medical cover	7.7	6.9
Post-employment benefits	2.2	1.9
Total compensation in CHF millions	**9.9**	8.8
SDR equivalent	6.8	5.5

Note 24 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	**2011**	2010
Balance at beginning of year	19.7	12.8
Deposits taken including interest income (net of withholding tax)	4.2	8.6
Withdrawals	(2.2)	(1.7)
Balance at end of year in CHF millions	**21.7**	19.7
SDR equivalent	15.0	12.3
Interest expense on deposits in CHF millions	0.5	0.4
SDR equivalent	0.3	0.2

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 or withdrawals and the 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 2011 was SDR 20.9 million (2010: SDR 20.0 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	**2011**	2010
Balance at beginning of year	57,512.6	50,475.4
Deposits taken	362,877.5	356,011.2
Maturities, repayments and fair value movements	(370,954.6)	(351,789.4)
Net movement on notice accounts	(2,279.2)	2,815.4
Balance at end of year	**47,156.3**	57,512.6
Percentage of total currency deposits at end of year	22.8%	29.4%

Gold deposit liabilities from related central banks and connected institutions

For the financial year ended 31 March

SDR millions	**2011**	2010
Balance at beginning of year	27,688.7	19,468.7
Deposits taken	–	40.8
Net withdrawals and gold price movements	–	(40.8)
Net movement on gold sight accounts	(12,152.7)	8,220.0
Balance at end of year	**15,536.0**	27,688.7
Percentage of total gold deposits at end of year	73.0%	86.4%

Securities purchased under resale transactions with related party central banks and connected institutions

For the financial year ended 31 March

SDR millions	**2011**	2010
Balance at beginning of year	4,942.7	4,602.5
Collateralised deposits placed	1,176,076.2	903,642.0
Maturities and fair value movements	(1,175,071.9)	(903,301.8)
Balance at end of year	**5,947.0**	4,942.7
Percentage of total securities purchased under resale agreements at end of year	11.6%	11.7%

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 314.6 million as at 31 March 2011 (2010: SDR 1,417.9 million). Gold held with related party central banks and connected institutions totalled SDR 35,383.0 million as at 31 March 2011 (2010: SDR 41,575.7 million).

Derivative transactions with related party central banks and connected institutions

The BIS enters into derivative transactions with 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 2011 was SDR 35,893.0 million (2010: SDR 19,431.3 million).

37. Contingent liabilities

In the opinion of the Bank's Management there were no material contingent liabilities at 31 March 2011.

Capital adequacy

1. Capital

The table below shows the composition of the Bank's Tier 1 and total capital.

As at 31 March

SDR millions	**2011**	2010
Share capital	683.9	683.9
Statutory reserves per balance sheet	12,154.4	10,668.7
Less: shares held in treasury	(1.7)	(1.7)
Tier 1 capital	**12,836.6**	11,350.9
Profit and loss account	816.0	1,859.8
Other equity accounts	3,017.7	2,564.6
Total equity	**16,670.3**	15,775.3

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 of maintaining superior credit quality. The Bank's economic capital frameworks measure economic capital to a 99.995% confidence level assuming a one-year horizon, 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	**2011**	2010
Credit risk	5,974.2	5,659.8
Market risk	2,836.5	2,708.7
Operational risk	700.0	475.0
Other risks	300.0	300.0
Total economic capital utilisation	**9,810.7**	9,143.5

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 related minimum capital requirements for credit risk, market risk and operational risk.

As at 31 March		**2011**			2010		
	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%	158,491.3	7,538.3	603.1	207,871.9	9,027.4	722.2
Securitisation exposures, externally managed portfolios and other assets	Standardised approach, where (B) is derived as (A) x 8%	2,256.6	1,190.0	95.2	2,820.7	1,159.5	92.8
Market risk							
Exposure to foreign exchange risk and gold price risk	Internal models approach, where (A) is derived as (B) / 8%	–	10,806.2	864.5	–	10,768.1	861.4
Operational risk	Advanced measurement approach, where (A) is derived as (B) / 8%	–	3,760.4	300.8	–	2,256.3	180.5
Total			**23,294.9**	**1,863.6**		23,211.3	1,856.9

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	**2011**	2010
Tier 1 capital (A)	**12,836.6**	11,350.9
Total risk-weighted assets (B)	23,294.9	23,211.3
Tier 1 capital ratio (A) / (B)	**55.1%**	48.9%

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 2B to the financial statements 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 2011 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 controlled as well as monitored and reported.

2. Risk management approach and organisation

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 monthly and a quarterly 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 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. It uses a comprehensive range of quantitative methodologies for valuing financial instruments and for measuring risk to its net profit and 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. A financial asset is considered past due when a counterparty fails to make a payment on the contractual due date.

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 controlled 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. Default risk

The following tables show the exposure of the Bank to default risk, without taking into account any collateral held or other credit enhancements available to the Bank. Credit risk is further 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 exposures set out in the tables below are based on the carrying value of the assets on the balance sheet as categorised by sector, geographical region and credit quality. 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 reported at their notional amounts. Gold and gold loans exclude gold bar assets held in custody, and accounts receivable do not include unsettled liability issues, because these items do not represent credit exposures of the Bank.

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.

Gold loans include a provision of SDR 29.0 million following an impairment review as at 31 March 2011 (31 March 2010: SDR 23.5 million). The increase in the provision during the reporting period ended 31 March 2011 is due to changes in gold prices and exchange rates.

As at 31 March 2011, no financial assets were considered past due (31 March 2010: nil).

Default risk by asset class and issuer type

The following tables show the exposure of the Bank to default risk by asset class and issuer type, without taking into account any collateral held or other credit enhancements available to the Bank. "Public sector" includes international and other public sector institutions.

As at 31 March 2011

SDR millions	Sovereign and central banks	Public sector	Banks	Corporate	Securitisation	Total
On-balance sheet exposures						
Cash and sight accounts with banks	316.7	–	6.8	6.3	–	329.8
Gold and gold loans	–	–	1,225.1	29.1	–	1,254.2
Treasury bills	76,932.1	–	–	–	–	76,932.1
Securities purchased under resale agreements	5,947.0	–	45,517.0	–	–	51,464.0
Loans and advances	1,182.5	424.2	22,563.7	–	–	24,170.4
Government and other securities	28,467.5	14,375.1	9,206.9	3,589.2	1,349.2	56,987.9
Derivatives	156.2	31.4	5,602.1	0.6	–	5,790.3
Accounts receivable	2.0	434.9	131.5	8.0	–	576.4
Total on-balance sheet exposure	**113,004.0**	**15,265.6**	**84,253.1**	**3,633.2**	**1,349.2**	**217,505.1**
Commitments						
Undrawn unsecured facilities	189.4	–	–	–	–	189.4
Undrawn secured facilities	2,098.3	–	–	–	–	2,098.3
Total commitments	**2,287.7**	**–**	**–**	**–**	**–**	**2,287.7**
Total exposure	**115,291.7**	**15,265.6**	**84,253.1**	**3,633.2**	**1,349.2**	**219,792.8**

As at 31 March 2010

SDR millions	Sovereign and central banks	Public sector	Banks	Corporate	Securitisation	Total
On-balance sheet exposures						
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

Default risk by geographical region

The following tables represent the exposure of the Bank to default risk by geographical region, without taking into account any collateral held or other credit enhancements available to the Bank.

As at 31 March 2011

SDR millions	Africa and Europe	Asia-Pacific	Americas	International institutions	Total
On-balance sheet exposures					
Cash and sight accounts with banks	315.1	1.2	13.5	–	329.8
Gold and gold loans	901.8	58.3	294.1	–	1,254.2
Treasury bills	37,831.2	36,796.9	2,304.0	–	76,932.1
Securities purchased under resale agreements	45,359.2	5,710.0	394.8	–	51,464.0
Loans and advances	19,224.0	3,429.6	1,345.2	171.6	24,170.4
Government and other securities	31,368.7	3,427.6	13,667.5	8,524.1	56,987.9
Derivatives	4,082.8	175.1	1,532.1	0.3	5,790.3
Accounts receivable	140.6	0.8	435.0	–	576.4
Total on-balance sheet exposure	**139,223.4**	**49,599.5**	**19,986.2**	**8,696.0**	**217,505.1**
Commitments					
Undrawn unsecured facilities	–	189.4	–	–	189.4
Undrawn secured facilities	179.1	1,919.2	–	–	2,098.3
Total commitments	**179.1**	**2,108.6**	**–**	**–**	**2,287.7**
Total exposure	**139,402.5**	**51,708.1**	**19,986.2**	**8,696.0**	**219,792.8**

As at 31 March 2010

SDR millions	Africa and Europe	Asia-Pacific	Americas	International institutions	Total
On-balance sheet exposures					
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

The Bank has allocated exposures to regions based on the country of incorporation of each legal entity.

Default risk by counterparty / issuer rating

The following tables show the exposure of the Bank to default risk by class of financial asset, without taking into account any collateral held or other credit enhancements available to the Bank.

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.

As at 31 March 2011 *SDR millions*	AAA	AA	A	BBB	BB and below	Unrated	Total
On-balance sheet exposures							
Cash and sight accounts with banks	315.3	11.7	2.1	0.3	0.1	0.3	329.8
Gold and gold loans	–	303.8	921.3	29.1	–	–	1,254.2
Treasury bills	28,360.2	41,532.1	7,039.8	–	–	–	76,932.1
Securities purchased under resale agreements	237.0	13,499.4	37,727.6	–	–	–	51,464.0
Loans and advances	1,543.6	7,498.1	15,128.7	–	–	–	24,170.4
Government and other securities	36,427.9	12,321.0	7,501.6	686.5	50.9	–	56,987.9
Derivatives	31.3	798.3	4,914.0	0.1	46.0	0.6	5,790.3
Accounts receivable	435.0	0.3	134.9	0.3	1.4	4.5	576.4
Total on-balance sheet exposure	**67,350.3**	**75,964.7**	**73,370.0**	**716.3**	**98.4**	**5.4**	**217,505.1**
Percentages	*31.0%*	*34.9%*	*33.7%*	*0.3%*	*0.1%*	*0.0%*	*100.0%*
Commitments							
Undrawn unsecured facilities	–	–	–	189.4	–	–	189.4
Undrawn secured facilities	–	710.0	721.8	419.7	246.8	–	2,098.3
Total commitments	**–**	**710.0**	**721.8**	**609.1**	**246.8**	**–**	**2,287.7**
Total exposure	**67,350.3**	**76,674.7**	**74,091.8**	**1,325.4**	**345.2**	**5.4**	**219,792.8**

As at 31 March 2010 *SDR millions*	AAA	AA	A	BBB	BB and below	Unrated	Total
On-balance sheet exposures							
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 exposure	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%*	*0.0%*	*100%*
Commitments							
Undrawn unsecured facilities	2,223.4	–	–	197.3	–	–	2,420.7
Undrawn secured facilities	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

C. 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 requires counterparties to provide 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. During the term of the agreement, the Bank monitors the fair value of the collateral securities and may call for further collateral or be required to return collateral based on the movement in its market value.

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.

The table below shows the collateral obtained by the Bank. It excludes transactions which have yet to settle (on which neither cash nor collateral has been exchanged).

As at 31 March	**2011**		2010	
SDR millions	Fair value of relevant contracts	Value of collateral	Fair value of relevant contracts	Value of collateral
Collateral obtained for				
Securities purchased under resale agreements	45,703.9	45,858.7	34,301.6	35,055.3
Advances	63.1	67.5	1,512.8	2,170.6
Derivatives	1,639.8	1,743.5	4,144.6	4,425.2
Total collateral obtained	**47,406.8**	**47,669.7**	39,959.0	41,651.1

The Bank is allowed to sell or pledge collateral obtained, but must deliver equivalent financial instruments upon expiry of the contract. The Bank accepts sovereign securities and cash 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 as well as units in the BIS Investment Pools (BISIPs) and securities in portfolios managed by the BIS.

As at 31 March 2011 the total amount of undrawn facilities which could be drawn down subject to collateralisation by the counterparty was SDR 2,098.3 million (2010: SDR 2,499.1 million).

The Bank did not provide collateral on any of its financial instrument contracts as at 31 March 2011 (2010: nil).

D. 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	**2011**				2010			
SDR millions	Average	High	Low	At 31 March	Average	High	Low	At 31 March
Economic capital utilisation for credit risk	5,807.1	6,315.0	5,345.7	**5,974.2**	5,653.2	6,072.9	5,110.5	5,659.8

E. Minimum capital requirements for credit risk

Exposure 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.

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 effects of collateral obtained giving consideration to market price volatility, remargining and revaluation frequency.

During the reporting period methodological refinements have been implemented to shift the recognition of the risk-reducing effects of collateral obtained for derivative contracts, reverse repurchase agreements and collateralised advances to the EAD. In addition, refinements have been implemented with the aim of extending the scope for the recognition of netting agreements.

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 2011 includes SDR 463.0 million for interest rate contracts (31 March 2010: SDR 4,687.7 million) and SDR 287.5 million for FX and gold contracts (31 March 2010: SDR 6,028.4 million).

As at 31 March 2011

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
SDR millions / percentages	*SDR millions*	*%*	*%*	*%*	*SDR millions*
AAA	63,927.4	0.004	37.8	1.9	1,197.8
AA	61,483.3	0.02	40.7	4.1	2,496.1
A	32,008.5	0.05	48.2	10.6	3,399.1
BBB	1,008.2	0.19	41.7	39.5	398.1
BB and below	63.9	1.00	42.3	73.7	47.2
Total	**158,491.3**				**7,538.3**

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
SDR millions / percentages	*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

The table below summarises the impact of collateral arrangements on the amount of credit exposure after taking netting into account.

As at 31 March 2011

SDR millions	Amount of exposure after taking netting into account	Benefits from collateral arrangements	Amount of exposure after taking into account netting and collateral arrangements
Total	212,964.8	54,473.5	**158,491.3**

F. Securitisation exposures

The Bank only invests in highly rated securitisation exposures based on traditional, ie non-synthetic, securitisation structures. 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 2011

SDR millions	External rating	Amount of exposures	Risk weight	Risk-weighted assets
Residential mortgage-backed securities	AAA	161.1	20%	32.2
Securities backed by credit card receivables	AAA	376.3	20%	75.3
Securities backed by other receivables (government-sponsored)	AAA	795.8	20%	159.2
Total		**1,333.2**		**266.7**

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

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 of maintaining 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 119 tonnes (2010: 120 tonnes). These gold investment assets are held in custody or placed on deposit with commercial banks. At 31 March 2011 the Bank's net gold investment assets amounted to SDR 3,451.2 million (2010: SDR 2,811.2 million), approximately 21% of its equity (2010: 18%). 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 2011

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	2.6	(8.6)	(16.9)	(11.0)	(27.4)	(32.1)	(29.3)
Japanese yen	0.9	(3.3)	(6.1)	(5.2)	(13.7)	(2.8)	(3.2)
Pound sterling	1.8	(2.9)	(3.5)	(12.8)	(9.5)	(9.1)	(19.9)
Swiss franc	(1.2)	(0.3)	(0.4)	(0.6)	(0.8)	(5.7)	7.5
US dollar	19.4	(15.9)	(13.5)	(47.5)	(39.4)	(26.7)	(7.3)
Other currencies	(0.7)	(5.6)	0.2	(0.6)	0.4	0.3	–
Total	**22.8**	**(36.6)**	**(40.2)**	**(77.7)**	**(90.4)**	**(76.1)**	**(52.2)**

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)

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 2011 *SDR millions*	SDR	USD	EUR	GBP	JPY	CHF	Gold	Other currencies	Total
Assets									
Cash and sight accounts with banks	–	12.6	151.3	8.0	–	151.3	–	6.6	329.8
Gold and gold loans	–	9.0	–	–	–	–	36,628.2	–	36,637.2
Treasury bills	–	2,304.0	29,737.0	397.2	36,796.9	5,337.0	–	2,360.0	76,932.1
Securities purchased under resale agreements	–	394.8	37,559.5	7,799.6	5,710.0	–	–	0.1	51,464.0
Loans and advances	171.7	8,460.0	10,937.4	1,368.1	1,062.4	544.4	–	1,626.4	24,170.4
Government and other securities	–	29,061.1	21,378.5	3,769.8	1,209.5	35.3	–	1,533.7	56,987.9
Derivative financial instruments	(36.5)	23,335.2	8,337.9	(408.9)	(26,700.9)	327.2	(247.0)	1,183.3	5,790.3
Accounts receivable	0.1	6,969.2	684.9	426.6	–	8.0	–	527.5	8,616.3
Land, buildings and equipment	189.7	–	–	–	–	1.1	–	–	190.8
Total assets	**325.0**	**70,545.9**	**108,786.5**	**13,360.4**	**18,077.9**	**6,404.3**	**36,381.2**	**7,237.6**	**261,118.8**
Liabilities									
Currency deposits	(7,691.5)	(140,478.2)	(38,882.7)	(10,083.1)	(4,667.5)	(680.8)	–	(4,601.8)	(207,085.6)
Gold deposits	–	(5.6)	–	–	–	–	(21,264.3)	–	(21,269.9)
Derivative financial instruments	4,221.7	79,073.2	(59,048.3)	126.6	(11,840.3)	(5,452.7)	(11,666.5)	(2,373.2)	(6,959.5)
Accounts payable	–	(1,964.2)	(4,761.1)	(1,491.8)	–	(275.6)	–	(265.4)	(8,758.1)
Other liabilities	–	(66.6)	(2.8)	–	–	(305.3)	–	(0.7)	(375.4)
Total liabilities	**(3,469.8)**	**(63,441.4)**	**(102,694.9)**	**(11,448.3)**	**(16,507.8)**	**(6,714.4)**	**(32,930.8)**	**(7,241.1)**	**(244,448.5)**
Net currency and gold position	**(3,144.8)**	**7,104.5**	**6,091.6**	**1,912.1**	**1,570.1**	**(310.1)**	**3,450.4**	**(3.5)**	**16,670.3**
Adjustment for gold investment assets	–	–	–	–	–	–	(3,450.4)	–	(3,450.4)
Net currency position	**(3,144.8)**	**7,104.5**	**6,091.6**	**1,912.1**	**1,570.1**	**(310.1)**	**–**	**(3.5)**	**13,219.9**
SDR-neutral position	3,144.8	(6,818.8)	(6,196.9)	(1,840.6)	(1,508.4)	–	–	–	(13,219.9)
Net currency exposure on SDR-neutral basis	**–**	**285.7**	**(105.3)**	**71.5**	**61.7**	**(310.1)**	**–**	**(3.5)**	**–**

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 assets	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 liabilities	(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)	–

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	**2011**				2010			
SDR millions	Average	High	Low	At 31 March	Average	High	Low	At 31 March
Economic capital utilisation for market risk	2,884.2	3,069.2	2,684.0	**2,836.5**	2,803.0	3,097.8	2,374.1	2,708.7

The table below provides further analysis of the Bank's market risk exposure by category of risk.

For the financial year	**2011**				2010			
SDR millions	Average	High	Low	At 31 March	Average	High	Low	At 31 March
Gold price risk	1,956.7	2,121.0	1,830.6	**1,909.8**	1,870.9	2,013.0	1,721.9	1,900.9
Interest rate risk	1,617.7	1,760.7	1,456.1	**1,542.2**	1,790.8	2,182.7	1,434.4	1,647.9
Foreign exchange risk	797.0	874.6	666.3	**814.6**	715.2	800.4	651.3	658.4
Diversification effects	(1,487.1)	(1,711.4)	(1,352.4)	**(1,430.1)**	(1,573.9)	(1,815.3)	(1,454.9)	(1,498.5)

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 and the related risk-weighted assets over the reporting period.

As at 31 March	**2011**			2010		
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%	288.2	10,806.2	**864.5**	287.1	10,768.1	861.4

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 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% (2010: 93%) of its total liabilities. At 31 March 2011 currency and gold deposits originated from 171 depositors (2010: 174). Within these deposits, there are significant individual customer concentrations, with four customers each contributing in excess of 5% of the total on a settlement date basis (2010: six customers).

The following tables show the maturity profile of cash flows for assets and liabilities. The amounts disclosed are the undiscounted cash flows to which the Bank is committed.

As at 31 March 2011

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	329.8	–	–	–	–	–	–	–	329.8
Gold and gold loans	35,402.2	0.2	116.9	235.6	675.2	241.4	–	–	36,671.5
Treasury bills	20,560.7	34,860.3	9,809.3	11,493.0	–	–	–	–	76,723.3
Securities purchased under resale agreements	37,247.3	6,508.0	1,922.6	–	–	–	–	–	45,677.9
Loans and advances	10,979.7	11,508.3	1,159.4	–	–	–	–	–	23,647.4
Government and other securities	2,714.6	3,182.7	4,433.6	11,945.4	12,101.3	20,634.4	5,019.1	608.1	60,639.2
Total assets	**107,234.3**	**56,059.5**	**17,441.8**	**23,674.0**	**12,776.5**	**20,875.8**	**5,019.1**	**608.1**	**243,689.1**
Liabilities									
Currency deposits									
Deposit instruments repayable at 1–2 days' notice	(7,108.9)	(15,075.9)	(17,684.3)	(16,343.5)	(18,205.4)	(21,450.7)	(2,331.1)	–	(98,199.8)
Other currency deposits	(63,470.8)	(21,510.5)	(12,675.9)	(7,303.5)	(3.2)	–	–	–	(104,963.9)
Gold deposits	(20,714.5)	–	–	(82.4)	(236.3)	(239.9)	–	–	(21,273.1)
Securities sold short	(0.4)	(0.7)	(1.1)	(2.1)	(4.2)	(12.7)	(21.4)	(71.3)	(113.9)
Total liabilities	**(91,294.6)**	**(36,587.1)**	**(30,361.3)**	**(23,731.5)**	**(18,449.1)**	**(21,703.3)**	**(2,352.5)**	**(71.3)**	**(224,550.7)**
Derivatives									
Net settled									
Interest rate contracts	99.2	243.4	410.3	447.1	634.0	318.3	4.5	–	2,156.8
Gross settled									
Exchange rate and gold price contracts									
Inflows	42,049.4	52,875.9	21,374.8	11,771.3	–	–	–	–	128,071.4
Outflows	(42,703.7)	(54,108.8)	(21,993.1)	(12,287.9)	–	–	–	–	(131,093.5)
Subtotal	(654.3)	(1,232.9)	(618.3)	(516.6)	–	–	–	–	(3,022.1)
Interest rate contracts									
Inflows	0.8	50.4	1.4	39.1	289.4	1,023.5	25.1	–	1,429.7
Outflows	–	(54.5)	(9.9)	(76.8)	(400.7)	(1,215.6)	(34.7)	–	(1,792.2)
Subtotal	0.8	(4.1)	(8.5)	(37.7)	(111.3)	(192.1)	(9.6)	–	(362.5)
Total derivatives	**(554.3)**	**(993.6)**	**(216.5)**	**(107.2)**	**522.7**	**126.2**	**(5.1)**	**–**	**(1,227.8)**
Total future undiscounted cash flows	**15,385.4**	**18,478.8**	**(13,136.0)**	**(164.7)**	**(5,149.9)**	**(701.3)**	**2,661.5**	**536.8**	**17,910.6**

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 assets	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 liabilities	(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									
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

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 2011	(38.6)	(0.1)	–	(5.1)	–	(5.0)	–	–	**(48.8)**
As at 31 March 2010	–	(5.9)	(8.4)	(32.0)	(1.2)	(1.4)	–	–	(48.9)

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 2011	–	–	–	268.5	–	–	–	1,919.2	**2,287.7**
As at 31 March 2010	2,683.8	–	–	375.2	–	–	–	1,860.8	4,919.8

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. In quantifying its operational risk, the Bank does not take potential protection it may obtain from insurance into account.

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 holding period. 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	**2011**				2010			
SDR millions	Average	High	Low	At 31 March	Average	High	Low	At 31 March
Economic capital utilisation for operational risk	643.8	700.0	475.0	**700.0**	460.4	475.0	450.0	475.0

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 shows the minimum capital requirements for operational risk and related risk-weighted assets.

As at 31 March	**2011**			2010		
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%	300.8	3,760.4	**300.8**	180.5	2,256.3	180.5

Independent auditor's report

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, which comprise the balance sheet as at 31 March 2011, and the profit and loss account, the statement of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the Statutes and with the principles of valuation described under significant accounting policies in the notes, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. 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 risks 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 believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements give a true and fair view of the financial position of the Bank for International Settlements as at 31 March 2011 and of its financial performance and its cash flows for the year then ended in accordance with the accounting principles described in the notes to the financial statements and the Statutes of the Bank.

Deloitte AG

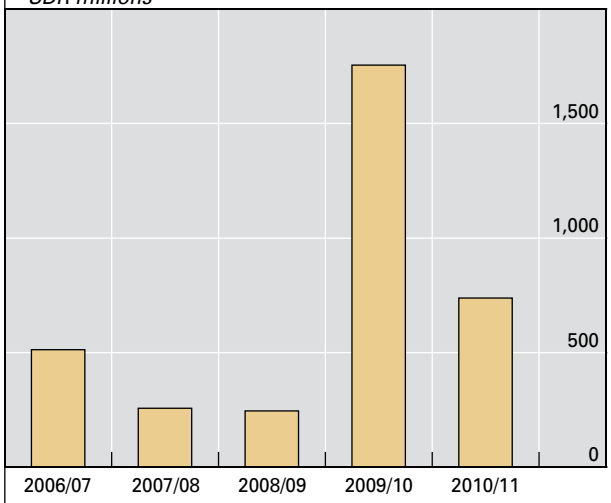
Mark D. Ward Erich Schärli

Zurich, 9 May 2011

Five-year graphical summary

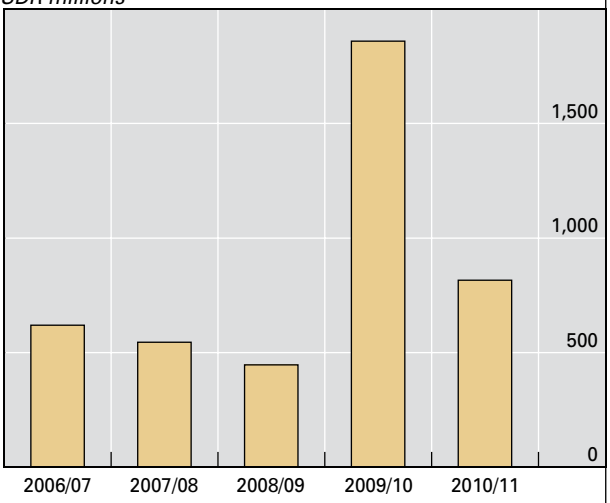
Operating profit

SDR millions



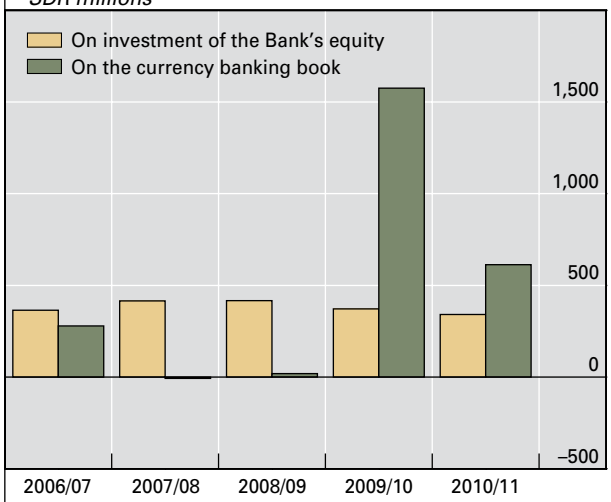
Net profit

SDR millions



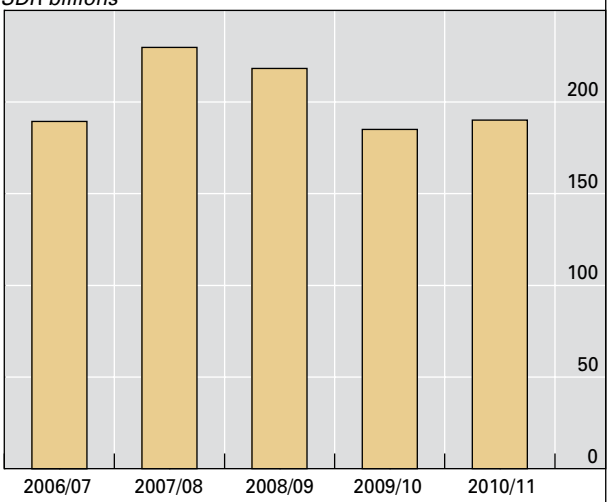
Net interest earned on currency investments

SDR millions



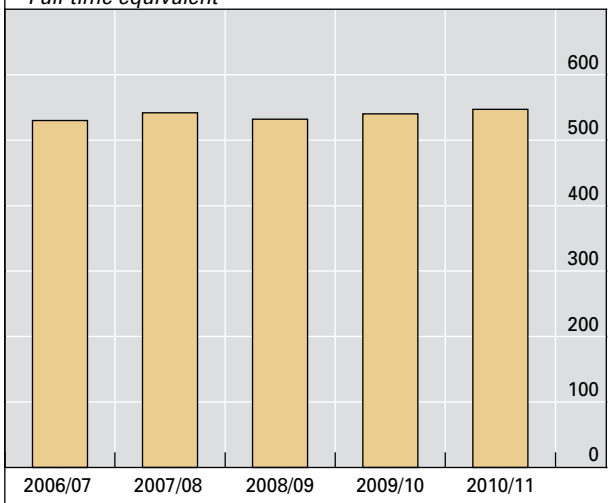
Average currency deposits (settlement date basis)

SDR billions



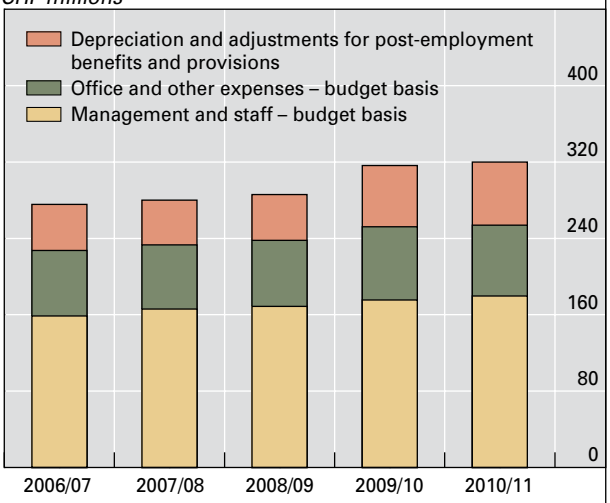
Average number of employees

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.

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