

## I. Rescue, recovery, reform

How could this happen? No one thought that the financial system could collapse. Sufficient safeguards were in place. There was a safety net: central banks that would lend when needed, deposit insurance and investor protections that freed individuals from worrying about the security of their wealth, regulators and supervisors to watch over individual institutions and keep their managers and owners from taking on too much risk. And when an individual country faced a banking crisis, experts – feeling they knew better – would criticise the authorities for their mistakes. Prosperity and stability were evidence that the system worked. Inflation was low, growth was high, and both were stable. The policy framework, built on sound economic principles combined with a bit of learning, had delivered the Great Moderation in the industrial world. The emerging market world was wisely following the lead.

What a difference two years make. Since August 2007, the financial system has experienced a sequence of critical failures.

The financial system is the economy's plumbing. And like the plumbing in a house, it is taken for granted when it works, but when it doesn't, watch out. In the same way that modern living depends on a reliable flow of water running through pipes, the modern economic system depends on a reliable flow of financing through intermediaries. On an average day, billions of individual payments are made, each requiring the transfer of funds. But daily life is even more reliant on financial intermediation than this suggests. Many people in the industrial world own the home in which they live because they saved a portion of their income each month in a financial institution, and then combined those savings with a mortgage to purchase the home. Obtaining the mortgage almost surely required obtaining fire insurance from an insurance company. The electricity, water and heating bills are probably paid each month using funds deposited automatically by the homeowner's employer into the homeowner's account at a commercial bank. Travelling to work each day means either riding on public transport financed in part by bonds and taxes or driving in an insured car on a publicly or privately financed road. And that's really just the beginning. Modern life requires the smooth operation of banks, insurance companies, securities firms, mutual funds, finance companies, pension funds and governments. These institutions channel resources from those who save to those who invest, and they are supposed to transfer risk from those who can't afford it to those who are willing and able to bear it.

Over the past few years, this essential and complex system of finance has been critically damaged. Evidence of serious trouble emerged when banks became less willing to lend to each other, because they were no longer sure how to value the assets held and the promises made – both their own and

The financial system is the plumbing of the economy ...

... and it has been critically damaged

those of potential borrowers. For a time, central bank lending was able to fill the gap. But, as described in Chapter II, from August 2007 the stress in the financial system increased in waves. By March 2008, Bear Stearns had to be rescued; six months later, on 15 September, Lehman Brothers went bankrupt; and by the end of September, the global financial system itself was on the verge of collapse.

The financial system is based on trust, and in the wake of the Lehman failure that trust was lost. Ordinary people had placed their confidence in those who ran and monitored the financial system, only to discover that the system could fail anyway. The crisis shattered lenders' trust that a loan previously thought to be of high quality was likely to be repaid, and it dissolved the confidence of investors in the long-term safety of their investments. As the difficult and time-consuming task of cleaning up institutions' balance sheets went on, property rights that are normally taken for granted were being questioned; and so financial institutions – normally run, at least in part, by traders and loan officers together with the risk managers who try to control them – were placed in the hands of lawyers. Unfortunately, once lost, trust is regained only slowly. And before trust can be fully regained, the financial system will have to be rebuilt.

The modern financial system is immensely complex – possibly too complex for any one person to really understand it. Interconnections create systemic risks that are extraordinarily difficult to figure out. The fact that things apparently worked so well (up until the time that they did not) gave everyone a false sense of comfort. After all, when things are going well, why rock the boat? But this understandable complacency, born out of booms that make everyone better off, sows the seeds of collapse. Hence, as we attempt to explain and fix what has failed, it is essential to keep in mind that the new financial system must take better account of our inherently limited ability to understand complex processes and to foresee their potential for failure.

## What went wrong?

A financial crisis bears striking similarities to medical illness. In both cases, finding a cure requires identifying and then treating the causes of the disease. Looking at the past few years, we can divide the causes of the current crisis into two broad categories: macroeconomic and microeconomic. The macroeconomic causes fall into two groups: problems associated with the build-up of imbalances in international claims and difficulties created by the long period of low real interest rates. The microeconomic causes fall into three areas: incentives, risk measurement and regulation.<sup>1</sup>

The crisis was caused by a broad set of failures

<sup>1</sup> While they will be treated separately here, it is important to keep in mind that the macroeconomic and microeconomic causes of the crisis are related. For example, financial innovation is connected to credit booms. In the case of the current financial crisis, one could point to information technology as an important link. Without the advances in computer processing speed seen over, say, the past two decades, financial engineers would not have been able to value the complex instruments they were fabricating. And unless you convince investors that you know how to price a new instrument, there is no way to sell it. So, technological innovation that produced low-cost, high-speed computing contributed to the credit boom.

### *Macroeconomic causes: imbalances and interest rates*

The macroeconomic causes of the crisis were global imbalances ...

One set of macroeconomic causes of the developing crisis stemmed from the notorious *global imbalances* – the persistent and large current account deficits and surpluses resulting in capital flows from capital-poor emerging market countries to capital-rich industrial economies, especially the United States. The high level of the saving rate in the emerging market world and its low level in the United States were associated with these flows. Over the years from 1999 to mid-2007 – from the end of the Asian crisis to the beginning of the current crisis – the cumulative US current account deficit was \$4.6 trillion. The US Treasury estimates that, by the end of 2007, US gross external debt was roughly \$13.4 trillion, nearly four times what it had been just nine years earlier.

As this pattern of international capital flows was developing, its cause was hotly debated. One hypothesis was that it came from a *global saving glut*, which in turn was a consequence of the rise in the saving rate in emerging markets. Another proposition was that it arose from the dearth of investment opportunities worldwide. A third candidate was fast-growing emerging market countries' desire for both international diversification and low-risk liquid assets. And a fourth possibility was that emerging market economies were accumulating foreign exchange reserves to fight the appreciation of their currencies that would have naturally accompanied the current account surpluses associated with their export-led growth. Related to this last view is the possibility that emerging market countries saw these reserve stockpiles as welcome war chests to help them defend against sudden capital flow reversals of the sort that had occurred during the Asian crisis.

... combined with export-led or leverage-led growth ...

It is difficult to know what to do about the dependency that developed between the export-led growth in much of the emerging world (described in Chapter V) and the leverage-led growth in a large part of the industrial world (discussed in Chapter IV). Surely there is a need to ensure that national saving is neither too low nor too high – but what policies could achieve that? And should anything be done about the magnitude of foreign exchange reserve holdings?

It is important to keep in mind that persistent current account imbalances are not the only thing that matters. Those imbalances just measure the net flows of goods and services and the matching net flows of private capital plus changes in official reserve holdings. Apart from the net flows, the total stock of claims is important as well. The stock measures the quantity of the claims of residents in one country on the residents of another, and these claims are critical for at least two reasons. First, if the appeal of investing abroad suddenly drops, it is the stock of claims that investors will try to repatriate. Second, and even more importantly here, if one country is producing assets that are grossly mispriced and whose quality is lower than is generally perceived, they can act as a virus, carrying the disease abroad from the country of issue. That is, foreign investors overpay for the bad assets and then become as sick as domestic investors. When that happens, as it did with the securities backed by US subprime mortgages, the critical measure is the total quantity of the bad assets that are being held, not the net changes in holdings over any given period.

... and low interest rates ...

The second set of macroeconomic causes of the brewing crisis stemmed from the protracted period of low real interest rates in the first half of this

decade. The proximate cause of the low rates was the combination of policy choices in both the industrial and emerging market economies together with the capital flows from emerging market countries seeking low-risk investments. A fear of deflation in those years led policymakers to keep short-term real interest rates unusually low. The real federal funds rate in the United States was consistently below 1% from mid-2001 up to the end of 2005; indeed, for much of this period it was negative (see Chapter IV). There were two reasons why the low real rates in the United States had a much greater effect on global economies and financial conditions than the size of the United States in the world economy would suggest: international contracts are often denominated in dollars, and many fixed or quasi-fixed exchange rate regimes use the dollar as a reference currency.

Real interest rates in the other major industrial economies were not much higher than those in the United States. In response to sluggish growth in the euro area, the ECB held short-term real interest rates below 1% for most of the period between mid-2001 and 2005; in Japan, real interest rates have been hovering between 0 and 1% for most of the past decade. And – in part to contain exchange rate appreciation pressures – many emerging market economies followed suit.

Low real interest rates had a variety of important effects, some more predictable than others. On the more predictable side, by making borrowing cheap they led to a credit boom in a number of industrial economies. For instance, credit in the United States and the United Kingdom rose annually by 7% and 10%, respectively, between 2003 and mid-2007 (see Chapter III). It is always difficult to establish clear causal links, but in this case it seems reasonable to conclude that cheap credit formed the basis for the increase in home purchases as well as for the dramatic rise in household revolving debt. A second predictable effect of low interest rates was to increase the present discounted value of the revenue streams arising from earning assets, driving up asset prices. This was one element feeding the property and stock market booms. Real house prices in the United States, the United Kingdom and a number of European countries increased more than 30% between 2003 and the peak reached three to four years later, while global equity markets rose more than 90% from 2003 to mid-2007.

... which caused a credit boom

Among the less expected effects of the low interest rates were the incentives they created in the asset management business. Financial institutions regularly enter into long-term contracts committing them to produce relatively high nominal rates of return. When interest rates become unusually low, the returns promised in those contracts can become more difficult to generate. At that point, the institution responds by taking on more risk in the hope of generating the returns needed to remain profitable. Something similar is true of asset managers whose clients expect high nominal returns. Again, increasing risk (and, in this case, hiding it) is one way of meeting clients' demands. So, low interest rates increase risk-taking.<sup>2</sup>

<sup>2</sup> See R Rajan, "Monetary policy and incentives", remarks at the Bank of Spain conference *Central banks in the 21st century*, Madrid, 8 June 2006, [www.imf.org/external/np/speeches/2006/060806.htm](http://www.imf.org/external/np/speeches/2006/060806.htm).

The boom caused distortions ...

All of this – the housing boom, the boom in debt-financed consumer expenditure and the search for yield – helped distort the macroeconomic structure of a number of countries. The clearest signs of the distortions were dramatic increases in residential construction, in consumer durables consumption, especially of cars, and in the size of the financial sector.

Those distortions had important short- and medium-term effects. In the short term, they fooled investors, consumers and policymakers into thinking that trend growth was higher than it really was. And in the medium term, they created the need for substantial adjustments. Where do these misperceptions show up? Unsurprisingly, bubbles tend to be concentrated in sectors where productivity growth has, or is perceived to have, risen. In the 1990s, that sector was high technology; in this decade, it was finance. The pattern is straightforward: the boom makes capital relatively cheap for the favoured industry, creating overemployment, overinvestment and overproduction. While less of a problem in the current decade than in the previous one, the result is a temporary rise in measured average productivity gains across all sectors, which everyone, including policymakers, can easily mistake for an increase in trend growth.

... that need to be unwound

The bubble-induced distortions have medium-term implications for the economic structure that are more familiar than the short-term effects. We have seen these regularly when relative prices changed in a manner requiring significant adjustment in the composition of the capital stock. Historical examples include the impact of the sudden increase in oil prices, in 1974 and again in 1979, which left households and firms with appliances, automobiles, machinery and buildings that were more energy-intensive than could be justified by the new operating cost. This time, countries have been left with bloated financial sectors, the ability to build more cars than their populations need and, in some cases, surplus housing stocks.

#### *Microeconomic causes: incentives, risk measurement and regulation*

Microeconomic causes involved incentives, risk measurement and regulation

The financial stress that began in the summer of 2007 has revealed a myriad of limitations in microeconomic financial arrangements. These include problems with incentives; flaws in techniques used to measure, price and manage risk and in the corporate governance structures used to monitor it; and failings of the regulatory system. Jointly, these weaknesses allowed the entire financial industry to book profits too early, too easily and without proper risk adjustment.

Distorted incentives involved monitoring ...

The crisis has revealed distorted incentives for consumers, for financial sector employees and for rating agencies. First, consumers failed to watch out for themselves. Few people have any knowledge of the balance sheets of the banks where they do business or of the finances of the firms in which they invest through the purchase of equity or debt securities. And the overall level of financial literacy among the general population is low.<sup>3</sup> This lack of

<sup>3</sup> Indeed, it would seem that the majority of people do not understand the mechanics of interest rates. In response to a question about how many years it would take for a debt to double if the interest rate is 20% per year compounded annually and nothing is repaid, only 36% of 1,000 respondents chose the correct option ("Less than 5 years"), and nearly 20% answered "Do not know". See A Lusardi and P Tufano, "Debt literacy, financial experiences, and overindebtedness", *NBER Working Papers*, no 14808, March 2009.

knowledge combined with the existence of financial oversight structures made people all too willing to mistake the complexity of the system for sophistication. And it made them all too willing to assume that their investments were safe. After all, someone else was watching – be it a trusted manager, an equity analyst, a credit rating agency or a government official. But none of them were. The system that consumers so readily assumed was sophisticated and safe was, in fact, recklessly complex and opaque.

As if that wasn't enough, managers of financial firms saw a need to drive up returns on their equity to satisfy shareholders. That led to an explosion in debt financing. The reason is straightforward: the return on equity equals the return on assets times the ratio of assets to equity – that is, higher leverage yields higher returns to the owners. This private incentive to increase leverage created not only fragile institutions but also an unstable financial system.

Compensation schemes further encouraged managers to forsake long-run prospects for short-run return. In some cases, profits calculated with complex mathematical models were used to determine rewards even when markets for the assets underlying the calculations did not exist and so they could not be sold. Equity holders (because of limited liability) and asset managers (because of their compensation system) were unduly rewarded for risk-taking: they received a portion of the upside, but the downside belonged to the creditors (or the government!). Moreover, managers of assets in a given asset class were rewarded for performance exceeding benchmarks representing average performance in that investment category. As a result, even if managers recognised a bubble in the price of some asset, they could not take advantage of that knowledge by selling short for fear that investors would withdraw funds. The result was herding that caused arbitrage to fail.<sup>4</sup> In the end, the overall difficulty in distinguishing luck from skill in the performance of asset managers, combined with compensation based at least in part on the volume of business, encouraged managers and traders to accumulate huge amounts of risk.

... compensation ...

Added to failures in monitoring by individuals and flawed compensation schemes were the skewed incentives of the rating agencies. These organisations are designed to mitigate the information problems that plague debt financing by providing a third-party evaluation of the likelihood that a borrower will repay a loan or bond. There are a number of problems with this system. Ratings are expensive, difficult to produce and impossible to keep secret. Once information becomes public, its reproduction is costless. Knowing that, the rating agencies charge those who need the ratings most – the bond issuers. Although neither new nor unique – rating agencies have charged bond issuers for decades, and auditors are paid by those they audit – this arrangement helped distort incentives. Moreover, the complexity of the financial instruments and the pace of issue – the flood of asset-backed securities and structured finance products issued over the past decade – made the rating

... and rating agencies

<sup>4</sup> For a discussion of how arbitrage fails when individual investors cannot distinguish good asset managers from bad ones, see J Stein, "Why are most funds open-end? Competition and the limits of arbitrage", *Quarterly Journal of Economics*, vol 120, no 1, February 2005, pp 247–72.

business both more difficult and more profitable. And because of the complexity of the instruments, reliance on ratings increased even among the most sophisticated institutional investors.<sup>5</sup> In the end, the rating agencies – assigned the task of assessing the risk of fixed income securities and thus of guarding collective safety – became overwhelmed and, by issuing unrealistically high ratings, inadvertently contributed to the build-up of systemic risk.<sup>6</sup>

Challenges to risk measurement included:

Next on the list of microeconomic causes of the crisis is risk measurement. Measuring, pricing and managing risk all require modern statistical tools based largely on historical experience. Even when long data histories are available, the belief that the world evolves slowly but permanently means down-weighting the importance of the distant past. The implication is that a long period of relative stability will lead to the perception that risk is permanently lower, driving down its price.

the infrequency of infrequent events;

Addressing this misperception is an enormous challenge. The major risks – those that require substantial compensation – are large, infrequent events. In the parlance of statisticians, we need an accurate assessment of the size of the tails of the distribution of outcomes. But such an assessment can only come from historical experience, and infrequent events are, well, infrequent. Thus, the statistical models needed for measuring, pricing and managing risk will, almost by definition, be inaccurate because of a lack of data. Given its simplicity, the natural assumption is that returns of many different assets are normally distributed (and so have *thin* tails). And, although tail events are infrequent, in reality they are more frequent than is predicted by a normal distribution. Even though the problem with assuming a normal distribution was well known, the assumption persisted with the unsurprising result that insurance against infrequent catastrophes was underpriced.

new instruments;

The difficulty of assessing the tails of the distribution of outcomes is even greater for new financial instruments. With no history, their riskiness cannot be statistically measured at all. This lack of experience was one of the problems associated with securitising subprime mortgages in the United States. The innovation of pooling together large numbers of what were objectively low-quality loans, and then creating a mix of high-quality and low-quality securities backed by the pool, allowed debt market access to an entirely new class of borrowers.<sup>7</sup> The major flaw, however, was that originators generally retained little of the default risk, and so as the boom developed, the quality of the loans progressively worsened. But even if originators had been forced to retain a

<sup>5</sup> For an analysis of the challenges involved in rating asset-backed securities and a discussion of the limitations of ratings as measures of risk, see Committee on the Global Financial System, “The role of ratings in structured finance: issues and implications”, *CGFS Publications*, no 23, January 2005.

<sup>6</sup> Differences in the methodologies used by the rating agencies also provided incentives for the originators to structure their asset-backed securities in ways that would allow them to “shop” for the best available combination of ratings (across both rating agencies and the liabilities structure of those instruments). See I Fender and J Kiff, “CDO rating methodology: some thoughts on model risk and its implications”, *BIS Working Papers*, no 163, November 2004.

<sup>7</sup> For a detailed description of how this worked, see A Ashcraft and T Schuermann, “Understanding the securitization of subprime mortgage credit”, *Federal Reserve Bank of New York Staff Reports*, no 318, March 2008.

significant first loss, securitised pools of subprime mortgages might still have run into trouble because of a lack of default experience.

Reliance on historical performance to measure, price and manage risk has another pitfall – it can offer misleading conclusions about the correlation among various risks. Risk is reduced through (1) hedging, whereby two risks are thought to offset each other because their payoffs are negatively correlated; and (2) diversification, whereby risk is spread among assets whose returns are less than perfectly correlated. The problem is that historical correlations may be poor guides to future price movements. For example, before the crisis, investing globally was thought to reduce risk, as prices in various regions of the world would not move together. This assumption turned out to be false when everyone most needed it to be true. When asset prices that previously moved independently (providing diversification) or in opposite directions (providing a hedge) start to move together, what used to reduce risk increases it. When the bad times came, correlations became large and positive. What was risk reduction became risk concentration.

reliance on historical performance;

Finally, there were governance problems in risk management practices. For both structural and behavioural reasons, senior managers and board members were neither asking the right questions nor listening to the right people. The structural problem was that risk officers did not have sufficient day-to-day contact with top decision-makers, often because they did not have sufficiently senior positions in their organisations. Without support from top management, it didn't matter much what the chief risk officer said or to whom he or she said it. The structural problem was compounded by the behavioural response to a risk officer whose job it is to tell people to limit or stop what they are doing. If what they are doing is profitable, it is going to be difficult to get managers and directors to listen.

and governance

Risk management in financial institutions has of course improved over time in addressing the incentive-related problems that arose during previous booms. But while there had been progress, it was based on a world with less leverage and risk-taking than we saw in the latest boom.

Beyond the problems with incentives and risk measurement was the fact that financial institutions found it relatively easy to move activities outside the regulatory perimeter. Inside the supervisors' sphere of influence, banks are required to hold capital in order to engage in risky activities. While it may be hard to believe, the regulatory capital requirement did limit the build-up of leverage on bank balance sheets. However, lower leverage meant lower profitability, so bank managers found ways to increase risk without increasing the capital they were required to hold. That is the story of the structured investment vehicle. More generally, the crisis showed that the enlarged financial sector – comprising both traditional banks and an increasingly important parallel financial system composed of non-bank intermediaries and off-balance sheet entities – had become much riskier than in the past.<sup>8</sup>

Weaknesses in regulation also contributed to the crisis

<sup>8</sup> See R Rajan, "Has financial development made the world riskier?", in *The Greenspan era: lessons for the future*, symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 2005, pp 313–69.



## Warnings

There were danger signs. Pervasive current account deficits were unsustainable. And households could not borrow forever – they would need to repay their loans eventually. In many regions, house prices were rising more quickly than they ever had, and price levels far exceeded both replacement costs and values justified by rental incomes. Rather than seeing their houses as merely a place to live and a hedge against future increases in the price of housing – a view that could have dampened the boom – many home buyers thought that they would profit from rising prices, feeding the boom.

There were warnings ...

There were warnings. Observers noted that risk was underpriced and that, constrained by low policy rates, asset managers were too aggressive in their search for yield. Some worried that monetary policy was inattentive to the dangers that arise when an asset price boom is coupled with a credit boom.<sup>9</sup> They warned that a single-minded focus on price stability (combined with prudential regulators' narrow focus on individual institutions) left officials insufficiently aware of systemic threats arising from credit and asset price booms.<sup>10</sup> Commentators cautioned about the deterioration of credit standards, especially in the issuance of mortgages.<sup>11</sup> And they warned about the risks that come with rapid financial innovation.<sup>12</sup>

... but little agreement on detail ...

Many of these warnings turned out to be accurate, but obviously they were issued in vain.<sup>13</sup> While people agreed on the general nature of the stresses that were building in the system, there was little agreement on the details. The implications of the porous regulatory perimeter – through which firms could easily move activity beyond the view of officials – and the build-up of financial leverage – in which the capital structure shifted to one with relatively more debt and relatively less equity – were simply not well understood. Although some people called for effective regulation of hedge funds, they were much less vocal about the need to keep intermediaries from shifting loans to conduits and structured investment vehicles that had virtually no capital. Finally, almost no one realised that the US assets being spread around the world would turn out to be toxic.

... or required policy responses

It is not surprising that government officials and market participants were largely deaf to the alarms. A common response was: "Even if you are right, and the financial system is in danger, what do you want me to do?" Monetary

<sup>9</sup> See A Crockett, "In search of anchors for financial and monetary stability", speech delivered at the SUERF Colloquium, Vienna, April 2000.

<sup>10</sup> See, for example, C Borio and W White, "Whither monetary and financial stability? The implications of evolving policy regimes", in *Monetary policy and uncertainty: adapting to a changing economy*, symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 2003; and BIS, *73rd Annual Report*, June 2003, Chapter VIII.

<sup>11</sup> See Committee on the Global Financial System, "Housing finance in the global financial market", *CGFS Publications*, no 26, January 2006, [www.bis.org/publ/cgfs26.htm](http://www.bis.org/publ/cgfs26.htm); and BIS, *74th Annual Report*, June 2004, Chapter I.

<sup>12</sup> More than 20 years ago, the Cross Report noted that new financial instruments appeared to be underpriced due to a lack of history and a lack of understanding of systemic risk; see Eurocurrency Standing Committee, *Recent innovations in international banking (Cross Report)*, April 1986, [www.bis.org/publ/ecsc01.htm](http://www.bis.org/publ/ecsc01.htm).

<sup>13</sup> See, for example, BIS, *75th Annual Report*, June 2005, Chapters I and VIII.

policymakers' only available instrument was the short-term interest rate, and there was a broad consensus that this tool would be ineffective against the alleged threat. At the macroeconomic level, the expectation was that price stability would be enough and that asset and credit booms would self-correct. And at the microeconomic level, officials believed that investors' self-interest would lead them to pay attention to the risks inherent in what they purchased and act as their own regulators. The narrow focus on regulated institutions, combined with a belief in the efficacy of self-regulation, meant that officials were insufficiently alert to system-wide threats. And across countries, markedly differing views about what could and should be done sharply limited progress on what turned out to be an international problem.

Discussions of the need for someone to monitor and address the risk in the financial system as a whole mostly fell flat. Numerous central banks took their financial stability objectives seriously, issuing periodic reports on the subject. Some, especially in Asia, fashioned tools aimed at moderating booms in asset prices and credit. Examples were Thailand's implementation of limits on credit card issuance, Hong Kong SAR's control over mortgage loan-to-value ratios, and India's tightening of capital requirements and provisions. Authorities in many central and eastern European countries, as well as in Spain and some Latin American countries, strengthened their monitoring and enforcement of provisioning and loan evaluation and required banks to increase regulatory capital consistent with the underlying risks. Active use of reserve requirements to tighten or loosen liquidity denominated in both domestic and foreign currencies was also a feature in some emerging market economies. But overall, action of this sort was the exception, not the rule. In the industrial economies – especially the United States, where the problem was becoming the most severe – there was little discussion of what types of tools policymakers might try to use to combat the property and credit booms, and the consequent build-up of systemic risk. And it is easy to see why. Making what would have been wholesale changes to the monetary and regulatory policy frameworks in many countries would have presented nearly insurmountable political and intellectual difficulties. Why would anyone risk such a move when the existing apparatus appeared to be working so well?

## The crisis evolves

The next five chapters of this Report provide a detailed description of what has happened so far in the crisis in financial markets and institutions and in the real economy, as well as how policymakers have responded. The story is divided into five stages, described in detail in Chapter II: (1) the prelude, leading up to the March 2008 takeover of Bear Stearns; (2) the gradual deterioration in financial conditions from mid-March to the failure of Lehman Brothers on 15 September 2008; (3) from mid-September to late October, a global loss of confidence, a massive flight to quality and the near collapse of the financial system; (4) from late October, the severe decline in the global economy; and (5) beginning in mid-March 2009, the deepening downturn and the first signs of stabilisation. Table I.1 presents a summary.

The crisis has evolved in five stages, discussed in Chapter II

The financial system was more interconnected and risky than assumed (Chapter III)

Our analysis of the crisis leads to a variety of conclusions and highlights a number of risks for the financial system. In a modern financial system, bank-based finance and market-based finance should be viewed as complementary rather than as rivals or substitutes. The crisis revealed that the presumed benefits of diversification derived from the creation of financial conglomerates – the hypermarkets of the financial system – were an illusion. When the crisis hit, all business lines were affected. Similarly, the benefits of slicing risk into its smallest components through financial engineering were oversold. However, reducing the size of the bloated financial industry should not be confused with a recommendation of financial autarky. The retreat of finance back inside national borders must be resisted. If left unchecked, the process would result in protectionism.

The crisis has impacted on the real economy globally (Chapter IV)

For industrial economies, a powerful interaction between the financial sector and the real economy began to take hold in the last quarter of 2008. A dramatic loss of confidence was combined with the unwinding of imbalances that had built up on household, industrial and financial system balance sheets in the industrial economies since the beginning of the decade. The outcome has been a severe downturn in both real activity and inflation. But since leverage has only begun to adjust – credit in both the financial and non-financial sectors of the economies that have had credit booms remains well above the level of only a few years ago – it is reasonable to anticipate both a protracted downturn and a slow recovery.

Emerging market economies experienced sharp trade and capital flow reversals (Chapter V)

For the emerging market economies, circumstances are quite different, as they initially exhibited a great deal of resilience to the financial crisis. The high degree of economic and financial integration that supported an extended period of rapid growth also left them exposed to sharp reversals in capital flows and declines in demand for their exports. Countries that maintained prudent policies and low public debt, such as those in Asia and parts of Latin America, still have flexibility to respond. However, some countries with large current account deficits, and some where banks were making foreign currency loans, have run into external financing difficulties requiring external official assistance.

Responses are unprecedented in their scale and scope (Chapter VI) ...

Policymakers have implemented a wide array of responses aimed at restoring confidence in large banks and repairing the financial system. Interest rates in most industrial economies were cut until they were at or near the zero lower bound. A number of central banks expanded their balance sheets massively to ease the acute tensions in financial markets. But even though governments have taken on large commitments, they continue to be unwilling or unable to fully address the impaired assets on bank balance sheets.

Traditional and unconventional central bank actions have been matched in many places by equally aggressive fiscal expansion. Clearly, different countries have different needs and capacities for increases in government spending. In any case, an assessment of the various spending programmes will have to wait until they take full effect.

... but policymakers must aid, not hinder adjustment (Chapter VII) ...

Policymakers face enormous challenges. They must complete the urgent task of financial repair while they keep the financial system operating in the short term. At the same time, they must design exit strategies from the various

policy measures that have been implemented. And, all the while, officials must work to build a resilient framework for the long term, crafting a system capable of quickly returning to its normal state of operation in the event of a failure.

A healthy financial system is a precondition for a sustained recovery. Delaying financial repair risks hampering the efforts on other policy fronts. To speed economic recovery, authorities must act quickly and decisively in their efforts to repair the financial system, and must persevere until the job is done.

Officials will face a number of difficulties in exiting from the various crisis-related policy interventions. When real activity returns to normal, inflated central bank balance sheets will have to be slimmed down and policy interest rates raised in a timely way. Public sector borrowing will have to be pulled back to a sustainable path. And the intermediation now being conducted by central banks will have to be returned to the private sector at the same time that the financial sector shrinks.

Ensuring financial stability requires a redesign of macroeconomic as well as regulatory and supervisory policies with an eye to mitigating systemic risks. For macroeconomic policies, this means leaning against credit and asset price booms; for regulatory and supervisory policies, it means adopting a macroprudential perspective. Importantly, reform must focus on identifying systemic risks arising in all parts of the financial system – risks that arise from the complexity, opacity and ownership concentration of financial instruments; from the counterparty risk and margining practices in financial markets; from the risk of joint failure created by interconnections and common exposures; and from the procyclicality that is inherent in financial institution management and can be compounded by microprudential regulation.

... and policies must be sustainable in the long run

The redesign of the financial system must be comprehensive

Stages of the crisis	Markets and institutions	Industrial economies		Emerging market economies	
		Macroeconomic conditions	Policy responses	Macroeconomic conditions	Policy responses
1. Pre-March 2008: <b>prelude to the crisis</b>	Subprime mortgage defaults create widespread financial stress. Uncertainty about size and distribution of losses. Crisis starts when interbank markets are disrupted in August 2007; waves of increasing intensity until March 2008.	Growth weakens.	Central bank (CB) rate cuts. Liquidity operations targeted at money markets.	Robust growth with inflation rising. Many inflation targeters above their targets.	Rate increases in response to high inflation.
2. Mid-March to mid-September 2008: <b>towards the Lehman bankruptcy</b>	Takeover of Bear Stearns in March slows decline, but bank losses and writedowns accumulate as downturn weighs on asset prices. More countries affected. Liquidity crisis reveals underlying solvency crisis, increasing pressure on financial institutions.	G3 economies contract even as oil prices fall steeply after August.	Initially further rate cuts. Liquidity facilities grow. GSEs put into conservatorship in early September.	GDP growth slows after June but remains positive. Exports weaken in central Europe.	Further rate increases due to high inflation.
3. 15 September 2008 to late October 2008: <b>global loss of confidence</b>	Demise of Lehman Brothers on 15 September 2008 triggers a bigger run on key funding markets. More financial institutions fail or are rescued. Loss of confidence affects markets and countries globally. Reprieve only after unprecedented and broad-based policy intervention.	As confidence falls and financing conditions tighten, forecasts are revised down sharply.	Sharp rate cuts, CB swap lines expanded, rapid CB balance sheet growth. Large-scale bank rescues, deposit and debt guarantees.	Confidence slumps. Financing conditions tighten. Steep currency depreciations.	Rate cuts, more flexible provisions of central bank liquidity. Deposit and debt guarantees. Capital injections.
4. Late October 2008 to mid-March 2009: <b>global downturn</b>	Markets remain volatile, with increasingly dire economic data releases, weak earnings reports and uncertainties over ongoing government intervention. Downturn means that credit losses keep mounting.	Spending drops, leading to declines in goods trade and GDP. Inflation falls, with the price level declining in some countries.	Rates cut to near zero, liquidity provision to non-banks. Outright purchases of public debt. Big fiscal stimulus packages.	GDP growth declines sharply in Q4 2008 as exports slump. Capital inflows reverse.	Further rate cuts, lower reserve requirements. FX intervention, CB swap lines. Large fiscal stimulus packages in some EMEs.
5. Since mid-March 2009: <b>downturn deepens but loses speed</b>	Asset prices recover somewhat after more policy action. But signs of market dysfunction remain, as official efforts have failed to fully restore confidence in the global financial system. Continued credit losses.	Consumption and production continue to decline, with possible signs of bottoming-out.	Further rate cuts in some countries. Accounting rules for banks eased.	Equity markets recover, and exchange rates stabilise.	Increased external official financing to support EMEs.

Table I.1