Introduction
The subprime crisis has brought into sharp focus shortcomings in market practices and a regulatory framework that has not caught up with the changing financial landscape. In drawing the lessons of this crisis, the often asked question is what is so different about this crisis, and what are the similarities? The fact that the crisis happened was not a surprise, but what stunned markets and regulators alike was the speed at which it erupted and spread across markets and borders and paralysed markets.

The distressed financial markets created their own dynamics that challenged the regulators to dig deep into their toolbox for the appropriate responses to restore calm. The private sector also responded with efforts to repair the damage to market confidence and to regain the trust of investors. Going forward, much more needs to be done to strengthen the market infrastructure and financial architecture, and this would require a global response by both the official and private sectors.

These brief opening remarks set the scene for the rest of my talk this morning as I pick up on the different threads of issues that have emerged from the subprime crisis.

Shortcomings revealed
First, what were some of the shortcomings in market practices and the consequences of certain rules and regulations? I view these issues as falling under three broad categories: incentive structures, risk management, and the procyclicality of rules and regulation.

Incentive structures
The crisis has shone the spotlight on the compensation structure in the financial system that has created perverse incentives for short-term risk taking by staff to generate higher revenues and profits, without due regard to the longer-term risks and sustainability of profits to justify the risk. This is because bonuses are rewarded on the basis of current revenues and profits and not spread over the years of the transaction. Taking on higher risk assures higher rewards, and the compensation system is one of the factors contributing to the huge appetite for risk-taking by market participants. The golden handshake granted to top executives in loss-making financial institutions have further heightened criticism.

The “originate-and-distribute” model that has underpinned the phenomenal profitability of Wall Street in recent years is now viewed as the Achilles heel that triggered widespread
panic and retrenchment in financial markets. As the name suggests, this model enabled financial institutions to grant housing mortgages to borrowers without the need to retain them in their books as these loans were repackaged into mortgaged-backed securities which in turn were securitised into CDOs and so on.

This business model enabled financial institutions to generate profitable revenue streams without due regard to the creditworthiness of the borrowers, giving rise to the tremendous growth of the subprime housing market. Through this process of securitisation, conventional housing mortgages shifted from Main Street to Wall Street, transforming the banking relationship into an arms' length capital market transaction that distributed the risks across markets around the world. Accordingly, the incentive to ensure that borrowers of conventional loans have the capacity to repay is absent in the case of loans created under the “originate-and-distribute” business model.

Given the bad press on this model, there is a danger that this model could be demonised to the detriment of securitisation in general. The securitisation process has actually helped to increase the risk-bearing capacity of financial markets at a lower cost, thus benefiting borrowers. For example, mortgage-backed securities have helped the development of active secondary mortgage markets, and various forms of asset-backed securitisation have helped financial institutions to liquefy their balance sheets. Securitisation per se is not the problem. However, problems begin when different financial instruments are bundled together and then sliced and diced into various tranches of risk and securitised several times over. In the process, the market loses sight of the true extent of risks that have been so widely dispersed in the system, and where the risks ultimately reside.

Finally, regulatory loopholes that viewed SIVs and conduits as off-balance sheet entities had given rise to a proliferation of such vehicles to conduct financial intermediation without the cost of regulation: regulatory capital and liquidity requirements, compliance and disclosure requirements and supervision. In reality, the regulated financial institutions remained exposed to the risks of these vehicles either through sponsorships or backstop contingency credit lines. Their fortunes became closely intertwined through the innovative financial instruments that were widely held throughout the financial system. These entities were highly leveraged, relying on short-term funding to invest in longer-term illiquid securities.

**Risk management**

The widespread use of similar valuation models in risk management undermined the statistical independence on which such models were premised. The result is that market players made the same observations and acted to enter or exit a particular sector at the same time. So an observation of safe risk sectors quickly turns them into risky sectors as other market participants pile into the sectors, as such action drives up valuations of these sectors and increases correlations between the sectors, making them more volatile. This would also lead to more model-driven selling.

Such price-sensitive models work best under normal market conditions. However, in a buoyant economic environment risks tend to be underestimated and, conversely, during an economic downturn risks are over-estimated. In a crisis situation, the models would reinforce the trend into a self-fulfilling downward spiral. The systemic implications are stark and this was played out in the widespread sell-offs that occurred across markets last year.
Some have criticised that the use of models have diminished or even replaced the use of common sense and experience. The problem is that these models are based on historical market data, which has been pretty stable over the past decade. The stability and prosperity in financial markets lulled financial institutions into placing blind faith in the robustness of these models, and they overlooked the Black Swan – the subprime surprise with huge consequences.

Similarly, making decisions on the basis of the same information such as credit ratings and market prices increases the propensity for markets to behave in a herd-like manner that could lead to an overshooting of prices on the way up or down. Benchmarking of individual performance against the overall market performance provides fund managers unlimited upside and limited downside if their portfolios track that of the market. In other words, there is safety in numbers. Taking a contrarian position exposes a manager to greater risk if he miscalculates the market trend.

The subprime crisis revealed that the financial system had neglected the management of liquidity risks. In an environment of ample liquidity, low interest rates and low inflation, liquidity risk may have been perceived to be minimal. However, the speed at which contagion swept through the financial markets demonstrates the central importance of liquidity management in a financial system that increasingly intermediates through the capital markets rather than the traditional banking system. Let me elaborate.

In a bank-dominated financial system where financial intermediation is channelled through banks, the bank assets (predominantly loans) are valued at historical cost. In a capital-market oriented system, where financial intermediation is conducted mainly through securitised instruments that are traded in the capital markets, the portfolios are valued by constantly marking the securities to market. In the case of many innovative financial instruments, there is hardly any trading to establish prices and valuations have to be marked-to-model.

As mentioned earlier, securitisation helps to liquefy assets by making them tradable. The securitisation process involves a chain of market participants whose participation is determined by the ease with which they are able to obtain funding. Such funding liquidity, in turn, is dependent on market liquidity. A market is viewed as liquid if it is able to support a given volume of securities or assets without a significant impact on prices.

The securitisation channel is therefore highly sensitive to changes in market liquidity. In distressed financial markets, a fall in asset prices is almost immediately translated into valuation losses that would erode the capital base of financial institutions, which in turn would negatively impact their ability to continue to provide liquidity to the market. Uncertainty compounds the problem as the risks are both unknown and immeasurable, and can cause liquidity to vanish in a flash.

The subprime crisis has demonstrated how the nature of some complex financial instruments, which are opaque and have short history and hardly any trading, have increased uncertainty and made it difficult for markets to trade and prices to clear, causing uncertainty to linger. The crisis also severely tested the interactions between market liquidity and funding liquidity through the valuation process. The experience has been painful and costly, as the liquidity shock had, in some cases, rapidly deteriorated into a solvency crisis requiring massive
recapitalisation or bailouts. Regulatory initiatives are underway to address this weakness in liquidity management.

The crisis has also highlighted that the risk management function in many financial institutions had not been given the credence, authority and support required to carry out their function effectively. The focus on generating revenue and profits with insufficient regard to risk management probably exposed financial institutions to more risk than should have been the case.

Procyclicality of rules and regulation
There have been concerns that bank capital requirements tend to be procyclical, requiring banks to maintain lower capital in boom times and higher capital during downturns. This feature tends to encourage greater risk-taking as asset prices increase, and to deleverage in an effort to shrink balance sheets as capital requirements increase as market conditions worsen. In the current environment, banks are cutting back on lending and this could precipitate a sharp slowdown in economic activity.

A related issue is whether regulators should lean against the wind during a boom, rather than to deal with the problems after the bubble has burst. One argument against taking counter measures is the difficulty in determining whether an asset bubble is forming. But in light of the experience of the present crisis, the conventional wisdom is being revisited.

In this regard, a view is emerging that regulators should take a broader perspective in supervision and look at overall systemic risks in the financial system. The argument is that the traditional approach of focusing on institution specific risks alone might make the individual institution safe and sound, but it ignores the aggregation of risks across institutions and the implications for the financial system as a whole. For example, in good times it might make good sense for the individual institution to increase its exposure to property, and in a downturn to pull back credit. However, if all institutions behave in the same manner, the over-extension and retrenchment of credit respectively could potentially destabilise the financial system and spill over into the real economy.

The accounting rules on fair valuation are also coming under scrutiny for its role in intensifying the stress for financial institutions. How does one establish fair values in the absence of active market trading and uniform valuation techniques for structured finance? Such valuation rule may force assets into a downward spiral and over-estimate the ultimate losses but in the meantime impair balance sheets and increase recapitalisation needs. Similarly, procyclicality is a concern where overly optimistic valuations in good times elevate prices and increase risk-taking. There are also calls to review provisioning rules to be more forward looking, instead of the current practice where there is a tendency towards under-provisioning in good times.

Challenges to regulators
The subprime crisis has severely tested the resilience of the financial systems in the advanced economies and challenged regulators to resort to their full armoury of tools. The first priority was to provide liquidity, but it soon became obvious that the liquidity was not reaching those in most need of it. The Federal Reserve overcame this problem by invoking powers that were justified in the unusual circumstances. Central banks and regulators in the US and Europe were confronted with the need to put out multiple fires, and they responded
under very challenging circumstances to restore calm. However, markets are not back to fully normal functioning. Much remains to be done to strengthen financial institutions and the financial architecture in order to rebuild trust and maintain confidence.

I wish to highlight some of the challenges that complicated the regulatory response. The distress in the financial system happened in an environment where there was huge pressure on food and fuel prices. At one point, energy prices more than doubled and the market expected to hit $150 a barrel. The uncertainty in the major financial markets saw a flight to gold, pushing up gold prices. As the dollar came under pressure, it compounded the upward spiral in oil prices due to growing demand and uncertainty over oil supply.

The increase in food and commodity prices, in particular oil, brought the threat of inflation. Authorities were confronted with policy dilemmas of dealing with potential recession, inflation and the immediate problem of returning the financial system to normal functioning. Emerging markets, which were relatively unaffected by the financial turmoil, were now faced with the real and present danger of increasing inflation.

There was much debate on whether the spike in energy prices was due to speculative forces. Although initial findings found that speculation was not a factor, it subsequently came to light that the share of non-commercial participants in the energy futures market was much higher than originally thought. There are calls to require greater transparency of the OTC oil market.

As losses mounted, banks had to restore the erosion in capital at a time when their stock prices tumbled. Market jitters created an environment that was receptive to rumours, and in one case created huge selling pressure and pull back of credit lines that precipitated the fall of one large US investment bank. US regulators mounted investigations on whether there were opportunistic rumour-mongering to manipulate share prices through huge short selling positions. The US SEC issued a temporary ban on naked short-selling on 19 financial stocks in an attempt to prevent market manipulation on financial stocks that were already under tremendous pressure due to the erosion in capital. The difficult market conditions and short-selling activities also scuttled the recapitalisation plans of some financial institutions.

The UK FSA also required the reporting of short positions of 0.25 per cent or more in a company carrying out a tradable rights issue, with no requirement for any reporting of subsequent closing or extension of the position. These regulatory measures highlight the balance that regulators have to find between market efficiency and stability. These decisions were not taken lightly and they were made in the context of an unusually volatile and uncertain environment for the interest of overall market stability.

Global response
The financial turmoil generated responses from both the private and official sectors to restore market confidence and strengthen the financial system. For example, the Institute of International Finance issued a report that proposes Principles of Conduct together with Best Practice Recommendations on critical issues such as risk management, compensation policies, valuation of assets, liquidity management, underwriting and the rating of structured products as well as boosting transparency and disclosure.

The Counterparty Risk Management Policy Group III issued a report on “Containing Systemic Risk: The Road to Reform.” The report covers four areas:
reconsideration of the standards for consolidation under US GAAP of entities currently off-balance sheet coming on-balance sheet;
measures to better understand and manage high-risk financial instruments;
significant enhancements to risk monitoring and management; and
a series of sweeping measures to enhance the resiliency of financial markets generally and the credit markets in particular, with a special emphasis on OTC derivatives and credit default swaps.

On the part of the official sector, the Financial Stability Forum (FSF) recommends action in five areas to enhance market and institutional resilience:

- Strengthened prudential oversight of capital, liquidity and risk management;
- Enhancing transparency and valuation;
- Changes in the role and uses of credit ratings;
- Strengthening the authorities' responsiveness to risks; and
- Robust arrangements for dealing with stress in the financial system.

IOSCO, the International Organisation of Securities Commissions, amended the Code of Conduct for Credit Rating Agencies (CRAs) to address issues which have arisen during the turmoil in relation to the activities of CRAs in the market for structured finance products. The amended Code of Conduct will assist CRAs in strengthening their processes and procedures to protect the integrity of the ratings process, ensure that investors and issuers are treated fairly and safeguard confidential material information provided. IOSCO is currently exploring the means by which its members might work together to verify the proper and complete disclosure by CRAs of information required by the Code of Conduct, and adherence to the mechanisms designed to protect against conflicts of interest.

To deal with future developments that could impact financial stability, various initiatives have been introduced at the national level. The US Treasury announced plans to support Fannie Mae and Freddie Mac, the backbone of mortgage financing in the US, in the event recapitalisation in the marketplace falls short. The UK Treasury established a Special Resolution Regime to deal with bank failures so as to minimise their impact on stability. The crisis has highlighted the need to enable the authorities to intervene in the event of a major default by a non-bank institution which could have systemic implications on stability. The debate on these issues as well as the reform of the financial system, safety nets, moral hazard, coordination and communication among national regulators and with overseas counterparts has only just started and would provide interesting insights to regulators around the world.

To address the shortcoming in the originate-and-distribute model, the EU has issued a draft regulation that would require banks wishing to invest in credit risk transfer instruments to do so only if the originators and distributors retain 10 per cent of the risk. In addition, discipline is imposed on originators and distributors by requiring them to be exposed to positions with the same risk profile in order to align their incentives with those of investors.

**Concluding remarks**

More than a year has passed since the crisis erupted on the world. Today, the world understands what went wrong, what are the weaknesses that need to be addressed. It has also raised many structural and operational issues on how to enhance market and institutional resilience, including strengthening the regulatory framework to better cope with threats to financial stability that could also emanate from outside the regulated sector.
The regulatory framework has not kept pace with market developments. Institutions operate globally and markets are integrated beyond national borders. Regulators operate as separate agencies, at the national level, and sometimes at the state and regional level. This raises issues surrounding the need for better coordination among agencies nationally and internationally, and the need for dialogue and communication with industry on emerging issues that could potentially affect stability.

The catalyst for the present crisis was the problems in the subprime mortgage market. However, the subprime crisis is a symptom and not the cause of the wider financial crisis that has struck at the very heart of the US housing market (e.g. Fannie Mae and Freddie Mac) and its financial system with profound repercussions that could trigger a potentially severe economic downturn around the world. At one point, some had suggested that the impact could be as severe as the Depression of the 1930s, the stagflation of the 1970s or the economic recession of the 1980s.

Every crisis has a label that conveniently describes the nature of the crisis. Crises may appear to be different, but the underlying causes are the same – easy credit combined with inappropriate incentive structures and lax controls and weak self-discipline and market discipline that led to an increase in overall leverage and risk in the system. The easy credit fuelled asset prices, reinforcing one another in an upward spiral, and substantially increased leverage which amplified losses when asset prices started to fall. In the present crisis, risk management overlooked the market and liquidity risks of these exotic instruments and instead relied on sophisticated valuation models whose assumptions were based on data of market conditions in earlier periods that were unusually benign and stable. Let us hope that this fundamental lesson remains etched in the minds of the market.

Going forward, the challenge for regulators is to strike the appropriate balance between stability and efficiency, as they consider the many proposals and initiatives to strengthen the national and international financial architecture.

Thank you for your attention.