# Monitoring Financial System Stability

*Address by Dr JF Laker, Assistant Governor (Financial System), to the 52nd International Banking Summer School, Melbourne, 1 September 1999.*

## Introduction

The twentieth century is characterised by bouts of financial instability, within individual countries and sometimes spreading world-wide. With each new bout comes a fresh wave of attention to the problem of predicting, avoiding and managing financial crises. Reactions to the recent turmoil in Asia, the Russian debt moratorium and the near-collapse of Long-Term Capital Management are no exception to this rule.

Financial crises are by definition very costly events. They invariably result in a significant loss of private wealth and pose a substantial burden on the public purse to recapitalise financial institutions and rebuild consumer confidence. Ensuing disruptions to the process of financial intermediation often exacerbate downturns in the real economy, leading in some cases to severe economic dislocation. It is hardly surprising that the search for better ways to monitor and strengthen financial system stability is a constant one.

As the Asian financial crisis unfolded, those who wondered why it had not been foreseen greatly outnumbered those who had anticipated the event. In part, this is because financial crises are inherently difficult to predict – both in terms of their timing and their severity. In addition, after a long period of financial calm and strong economic growth, there is a natural tendency by many to argue that this time 'things will be different' – that economies are now somehow less susceptible to financial crises.

Responsibility for the overall stability of the financial system generally lies with central banks. In fact, many central banks were initially created with this objective firmly in mind and they were given powers to oversee and regulate various aspects of their country's financial system. Recently, in a number of countries (including Australia, Korea and the United Kingdom), the supervision of individual financial institutions has been transferred from the central bank to a specialised supervisory agency. Even in these countries, however, central banks continue to have a mandate for financial stability.

The challenges facing central banks in monitoring financial system stability are the subject of this paper. The following sections, in turn, look at how financial stability is defined, at the types of indicators of fragility that could be monitored and at the lessons to be drawn from the history of financial crises. The paper also considers the growing importance of financial markets and then reviews the instruments available to central

banks to deal with financial instability. Along the way, the paper develops three related themes:

- in the long history of financial crises, both in Australia and overseas, rapid expansion of credit combined with asset price inflation is a recurrent problem;
- recent developments – for example, the impact of large capital flows and improvements in risk management in response to previous crises – appear to be new but have been seen before; and
- disturbances in financial markets have become a greater source of pressure on financial stability.

## Defining Financial Stability

Defining financial system stability is not an easy task. One starting point might be to consider the failure of financial institutions as defining episodes of financial instability, but this is unlikely to be sufficient. In some circumstances, the failure of one or even a few financial institutions might be part of the normal market mechanism, in that it represents the exit of unprofitable firms which took on inappropriate risks. In different circumstances, the failure of a single financial institution might be the trigger for significant financial turmoil.

As public policy agencies, central banks ultimately care about the general welfare of the community. Their main concern should be disruptions to the process of financial intermediation which have significant effects on the performance of the economy as a whole, rather than just impacting on individual financial institutions. The objective of financial system stability could therefore be defined, in broad terms, as the avoidance of disruptions to the financial system that are likely to cause significant costs to real output.[1] Such disruptions might have their origins in difficulties facing financial institutions or in disturbances in financial markets.

For many years, major financial disturbances tended to fall mainly into two different categories: *banking crises* – following loan or trading losses by one or more banks – or *exchange rate* (or balance-of-payments) *crises* – in which pressure is brought to bear on a fixed exchange rate regime, often forcing a sharp depreciation of the exchange rate.[2] Some more recent disturbances are probably best described as *financial markets crises*, which occur when a shift in expectations or sentiment causes a sharp increase in price volatility, possibly accompanied by a drying-up of market liquidity in financial markets. One such example, discussed later, is the Russian debt moratorium and the near-collapse of Long-Term Capital Management in 1998. All three types of financial crisis are encompassed within the broad definition of financial stability given above. That is, they are uncertain events that disrupt the normal process of financial intermediation and can have substantial macroeconomic costs.

Studies of exchange rate crises suggest that, in a world of uncertainty, self-fulfilling crises can be triggered by only modest changes in sentiment, and so would be very hard to predict. Similar studies of banking crises also claim that even relatively minor shocks can produce a change in sentiment sufficient to lead to banking runs, and eventual collapse of financial institutions. This view of the world, suggesting that there could be little early warning of financial disturbances, would be discouraging to central banks, but it seems an extreme view. Small changes in sentiment can indeed trigger a financial crisis, but are more likely to do so when the financial system is already in a highly vulnerable condition. If so, central banks may be able to anticipate crises by looking for signs of financial fragility well before a crisis takes hold. Nonetheless,

1. For a recent discussion of issues related to defining financial system stability, see Crockett (1997) and Kent and Debelle (1999).
2. See Davis (1999) for a survey of the literature on banking crises. For a recent survey of exchange rate crises see Kaminsky, Lizondo and Reinhart (1997).

predicting when a crisis might occur, and its severity, will remain a difficult exercise, in part because the descent into crisis is often triggered by an event which in less troubled circumstances may have passed unnoticed.

## Indicators of Financial Fragility

Economic theory and the many descriptive accounts of financial crises suggest that there are a wealth of indicators of financial fragility that central banks could monitor. The following discussion identifies some of the key indicators that might emerge in different sectors of the economy.[3]

*Households, businesses and the real economy*

Early studies of financial crises emphasised the build-up of debt by households or businesses in contributing to greater financial fragility. The 'stylised facts' may be that, early on, strong growth is generated by developments such as technological innovation or greater openness to world markets. This can lead to booms in *private consumption* or *investment* (relative to GDP) and sustained high real growth rates. The boom is amplified by easy credit conditions, leading to expansion of debtors' balance sheets via increases in the ratio of *household debt-to-income* or in the ratio of *debt-to-equity* of businesses. Excessive indebtedness then leaves the economy vulnerable to negative shocks. The *concentration of investment* in particular sectors of the economy (especially property) may help to indicate if the financial system is unduly exposed to the performance of individual industries. The ability of borrowers to service their debts can be measured by the ratio of *interest payments to income/profits*. Excessive investment or consumption may also be evident from a sharp increase in the *current account deficit*.

Rapid balance sheet expansion is often associated with speculation in asset markets. Borrowers and lenders alike will then be even more exposed to the possibility of sharp downturns in asset prices – especially *property prices*, given the importance of property as a source of collateral. Downturns are more likely if asset prices have been rising very rapidly and then lose the support of favourable fundamentals. Of course, knowing whether an asset price bubble exists *ex ante* is extremely difficult in practice.

Shocks themselves are by definition unpredictable, and it may take some time before their full impact on households and businesses is felt. Therefore, a downturn in the level of *real GDP* or even a slowdown in the *growth rate of real GDP* might immediately precede a financial crisis.

*Financial institutions*

Experience over the past two decades highlights the additional role that the balance sheets of financial institutions can play as indicators of financial fragility.

For example, substantial and rapid rises in the ratio of *credit to nominal GDP* may suggest that financial institutions are becoming overextended. In addition, there are a range of prudential indicators which provide more detailed information on the general health of the financial system. Increasing *loan concentration*, either to particular sectors or to individual borrowers, reduces diversification and leaves institutions exposed well before problems become obvious. An increase in *non-performing loans* (net of provisions), a fall in *capital ratios* and declining profitability as measured by, say, the *return on equity* might signal financial problems. *Yields on debt* issued by banks (measured as a spread against Treasury securities) may provide a market assessment of bank fragility. Movements in *bank share prices* are of some value, but may not necessarily fall in response to greater risk taking.

Unfortunately, there can be problems in interpreting prudential data. For example, in boom conditions when bank lending is growing strongly, recorded bank profitability may rise while non-performing loans may fall, suggesting that all is well. It may take time

3. This discussion is based on an excellent recent survey of indicators of risks to financial stability by Davis (1999).

before the consequences of bad lending decisions become apparent. Similarly, *measures of liquidity*, such as the share of assets held as cash or as government securities, may prove sufficient during good times but inadequate during periods of fragility. Prudential data are also not always available on a timely basis.

*Government sector*

Inappropriate fiscal and monetary policies can increase the fragility of the financial system. Large *fiscal deficits*, for example, may encourage an unsustainable boom in the real economy and raise a country's indebtedness, making it more susceptible to higher interest rates in the future. Likewise, inappropriate easy monetary policy – as evidenced by the growth of *monetary aggregates* and/or low *real interest rates* – can lead to higher rates of *inflation* in the general price level and easy credit conditions. This type of climate encourages excessive borrowings and rapid inflation of asset prices, and leaves the financial system vulnerable to negative shocks. One such shock would be a sharp reversal in monetary policy itself aimed at slowing aggregate demand and containing inflation.

*External sector*

Foreign *capital inflows* are frequently the source of finance behind a consumption or investment boom. Short-term inflows through the domestic banking system – so called 'hot money' – can exit the country rapidly, leaving it vulnerable to even minor swings in sentiment. Hence, the *ratio of net foreign debt to GDP*, and the *currency composition* and *maturity structure* of foreign debt, may be important indicators of financial stability. A financial or business sector with a large *proportion of foreign-currency-denominated debt* can be extremely sensitive to investor confidence and exchange rate depreciation.

In addition to macroeconomic and prudential indicators, changes in market structure and market behaviour can have important implications for system stability. For example, liberalisation of the financial system, involving new entry and greater competition, may put pressure on *interest rate margins* and encourage institutions to try and maintain market share through an aggressive expansion of lending, accompanied by less stringent *lending criteria*. On the behavioural side, one area of recent interest is the role of uncertainty in generating periods of excessive optimism – which can gradually drive down the price of risk as measured by *credit spreads* – eventually followed by periods of excessive pessimism when there is a reassessment of market and credit risks, a flight to quality and/or a loss of liquidity and a sharp change in market prices. These swings in sentiment and sharp market reactions can disrupt the normal processes of financial intermediation and force substantial losses on banks and other financial institutions.

In summary, the various indicators outlined above can be useful as early warnings of increasing financial fragility, coming through a number of avenues:

- an initial positive shock to the economy and/or an easing in monetary or fiscal policies which generates excessive optimism;
- increasing indebtedness, either across the whole economy or within specific sectors, and a significant increase in the ratio of credit to GDP;
- asset price booms, especially in property markets which form the basis of collateral;
- a weakening in prudential standards within financial institutions, especially an excessive concentration of lending to particular sectors and inadequate loan loss provisioning;
- structural developments, such as changes in the regulatory environment or financial liberalisation, which sharpens competition between financial institutions;
- overly optimistic assessment of risks, leading to inadequate risk premia priced into the costs of funds; and
- just prior to a crisis, some shock such as a tightening of monetary policy, a rise in world interest rates, a decline in the terms of trade or a financial crisis in another country.

Because each of these developments tends to be reinforcing, the vulnerability of a financial system is likely to be greater when a combination of these factors is present.

## Lessons from Past Financial Crises

The list of potential indicators of financial stability sketched above is by no means exhaustive, but it is still quite long. The challenge for a central bank is how to weigh these indicators, and eliminate any that are redundant or misleading, so that the right early warning signals are heeded. There are at least two approaches that could be followed. One is to assess the significance of individual indicators, and combinations of indicators, using econometric models of financial crises. The other is to rely on descriptive analysis, which is less rigorous but may provide a more intuitive understanding of how crises may develop.

### Econometric studies of financial crises

Econometric studies of financial crises – narrowed to banking crises for the purposes of this paper – are of two basic types. Microeconomic studies use data on individual banks, whereas macroeconomic studies look at a cross-section of countries using macroeconomic data, sometimes combined with aggregate prudential data. In the latter studies, the data are typically drawn from a large number of developed and developing countries over a period of time.

Microeconomic studies of bank failures in the United States analyse a range of financial ratios constructed from banks' balance sheets and income statements. In the main, these studies confirm that the various prudential indicators described above are all relevant in explaining bank failures (Demirguc-Kunt 1989). A study of bank failures in Mexico showed that bank-specific indicators, in combination with aggregate banking sector indicators (a proxy for the impact of contagion), help to explain the likelihood of a bank failing, while macroeconomic indicators help to explain the timing of failure (Gonzalez-Hermosillo, Pazarbasioglu and Billings 1997).

The common macroeconomic approach is to test whether financial crises can be explained by movements in a set of key indicators of financial stability. Because a financial crisis is difficult to measure as a single variable, most studies use some form of 'dummy' variable which distinguishes between periods of normality and periods of crisis. One recent study has shown that the likelihood of a crisis was greater during periods of low GDP growth, high real interest rates and high inflation. It also found that explicit deposit insurance schemes tended to increase the likelihood of a banking crisis. This may have been due to 'moral hazard' problems: that is, banks may have been inclined to take on greater risk without fear of being disciplined by insured deposit holders and other creditors (Demirguc-Kunt and Detragiache 1998a). A subsequent paper by the same authors showed that banking crises were more likely to occur a few years after financial liberalisation and tended to be more severe for developing countries (Demirguc-Kunt and Detragiache 1998b).

A separate study of 38 countries found that a consumption boom can be a leading indicator of a crisis, as can excessive investment in sectors with poor returns. Like many other studies, it found a consistent tendency for credit booms prior to crises, followed by a credit squeeze during crises. Private capital inflows also tended to increase well before, and then retreated just prior to, a crisis (Hardy and Pazarbasioglu 1998).

An alternative macroeconomic approach examines the signalling properties of a range of indicators, the aim being to find systematic differences across tranquil and crisis periods. Significant indicators are those that provide a timely signal of actual crises more often than they produce false signals of crises. A study of 20 countries concluded that banking crises were preceded by declines in real output, falling terms of trade, a substantial decline in the stock market, substantial growth in credit

and an increase in real interest rates. The study also showed that while banking crises helped to predict currency crises, the reverse did not appear to be true (Kaminsky and Reinhart 1999).

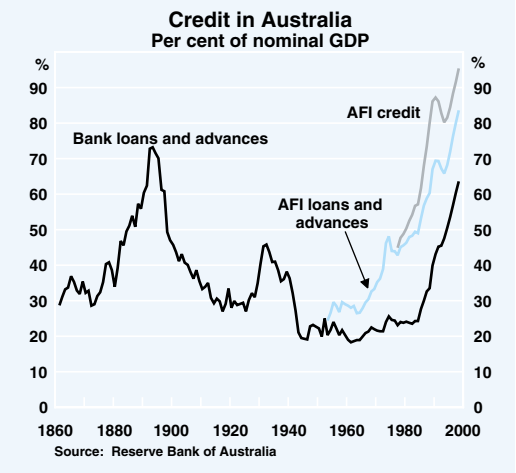
While the various macroeconomic studies show that there are many similarities over time and across countries, there are also significant regional differences in the performance of indicators. For example, most macroeconomic factors were poor predictors of the recent Asian financial crisis compared to measures of balance sheet developments for corporations, and financial institutions in particular. Differences in performance may reflect, in part, differences in financial structures between countries which are not easy to capture in econometric work. Not surprisingly, the predictive power of macroeconomic models, while encouraging, still leaves a lot of the variation in banking performance unexplained. Similarly, the predictive power of microeconomic studies within countries is limited by the fact that most countries experience financial crises relatively infrequently.

### A descriptive approach to financial crises

One alternative to the econometric approach is to rely on a descriptive analysis of financial crises or a 'case study' approach. Here, the exact comparability of data is less of a restriction and a much richer set of financial crises can be considered by going further back in time. The approach can also incorporate indicators, which because of their nature or lack of data are difficult to quantify, but nonetheless may be crucial to financial system stability.

The descriptive approach can be illustrated by tracing the history of credit in Australia over the past 140 years. Movements in the ratio of credit to nominal GDP are shown in Figure 1. The early years lack data on non-bank financial institutions (NBFIs), but in more recent years the figures incorporate loans and advances by banks and NBFIs, and credit provided through the issue of bank bills.

**Graph 1**




There are four turning points in credit – during the depressions of the early 1890s and early 1930s, and the recessions of the mid 1970s and the early 1990s. Each of these turning points was associated with financial distress (Kent and Lowe 1998; Fisher and Kent 1999).

During the 1890s, a substantial proportion of the financial system collapsed, extending the decline in the Australian economy for some years. Many finance companies and building societies failed, over half of the trading banks were forced to close their doors for a period, and bank deposits and credit fell dramatically. In contrast, the financial problems of the 1930s were relatively mild, with only three institutions suspending payment and a more moderate decline in bank deposits and credit. This difference in performance occurred despite the fact that the initial negative shock to real GDP was at least as large in the first year of the 1930s depression as it was during the 1890s depression.

Financial fragility leading up to the 1890s was apparent in a range of macroeconomic and prudential indicators: the rapid rise in the share of credit to GDP; relatively high levels of private investment in the form of a very substantial building boom; the entry of a new set of NBFIs leading to increased competition for banks; the entry also of new banks and a

rapid expansion of branch networks; an increased willingness to lend for speculative purposes; a sharp rise in property prices; and rapid expansion of banks' balance sheets supported by substantial capital inflow from London. These indicators are summarised in Table 1. All the while, measures of prudence in the banking system, such as capital and liquidity ratios, were declining.

Although there was a boom of sorts leading up to the 1930s depression, the same factors which lead to financial instability during the 1880s were more muted or even operated in the opposite direction. The rise in bank credit was smaller; the share of building activity in GDP was much lower, although property prices still rose substantially; the expansion of banks' balance sheets was less pronounced and capital inflows were not sustained at the same level, nor for as long, as during the 1880s; lending as a share of banks' total assets was substantially lower; and, in contrast to the 1880s, trading banks were increasing both capital and retained earnings at a greater rate than their total assets. The more prudent behaviour of banks in this episode reflected a less intense competitive environment and, perhaps, lingering memories of the 1890s financial crisis.

Growth in credit during the late 1960s and early 1970s was also accompanied by a boom in the property sector. This was driven in part by growing internationalisation of the Australian economy, a mining boom and growth in the size and number of NBFIs. Relatively easy monetary conditions also played a role. Despite some early liberalisation, the banking system remained heavily regulated – banks were constrained in their ability to make additional loans on the back

**Table 1: Indicators of Financial System Stability**
Australia's two depressions

| Indicators | 1890s Episode | | 1930s Episode | |
|---|---|---|---|---|
| | Before Depression | During Depression | Before Depression | During Depression |
| Real GDP growth | 3.6% per annum 1881–1891 | fell 15% 1891–1893 | 3.2% per annum 1920–1930 | fell by 9% 1930–1931 |
| Building activity | average of 14% of GDP 1881–1891 | | average of 9% of GDP 1920–1930 | |
| Ratio of bank credit to nominal GDP | 39% 1881 to 73% 1893 | fell to 43% by 1903 | 28% 1920 to 46% 1932 | fell to 27% by 1942 |
| Foreign capital inflows as a share of nominal GDP | above 6% for 8 consecutive years during 1880s | | above 6% for only two years during 1920s | |
| Trading bank holdings of liquid assets | averaged almost 20% of deposits in late 1880s | | averaged above 40% of deposits in late 1920s | |
| Number of trading bank branches | almost doubled from late 1870s to peak in 1892 | | expanded by 40% over 1920s | |
| Trading bank shareholders' funds as a share of assets | fell from 23% in 1881 to 15% by 1892 | | rose from 15% in 1920 to 20% by 1929 | |

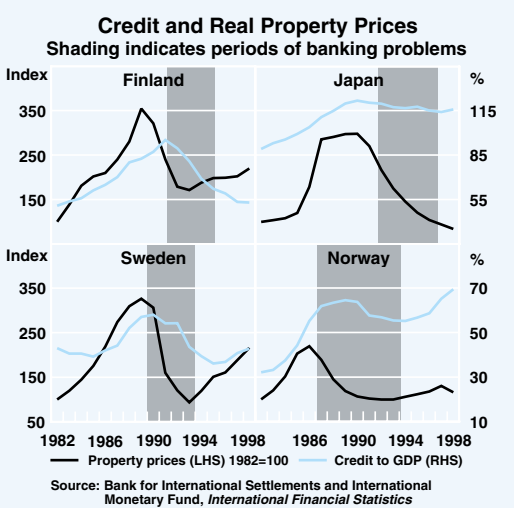
Source: Fisher and Kent (1999).

of higher property prices. This provided the opportunity for the rapid expansion of NBFIs (some of which were bank-owned), fuelled in part by substantial capital inflows. The property price cycle peaked at the time when monetary policy was tightened, leading first to the failure of property developers and later, as prices continued to fall, the failure of finance companies. Banks faired better since they had largely been prevented from participating in lending for property speculation. Even so, some bank-owned finance companies incurred substantial losses, eventually creating serious problems for one bank.

The boom and bust of the late 1980s and early 1990s shared many of the characteristics of earlier cycles but was different to the 1970s episode in two noticeable ways. First, deregulation of the banking sector in the early 1980s allowed banks to rapidly expand their lending, particularly for property. When the recession took hold and property prices fell substantially, banks suffered accordingly, with low profitability and the exit of two large State Government-owned banks and a number of other financial institutions. Secondly, inflation remained high after the boom of the 1970s, meaning that the real price of property could adjust downwards without a substantial fall in its nominal price. In contrast, with low inflation in the 1990s, the bubble in real property prices was deflated only by a substantial decline in nominal prices. This fall in the value of collateral, and the financial problems it created, was associated with a prolonged downturn in the real economy.

Australia's experience in the late 1980s and early 1990s was similar in many ways to crises in the Scandinavian countries and Japan. The rapid growth of credit and rises in property prices in these countries are shown in Figure 2. The bursting of asset price bubbles from the late 1980s exposed the weakness of previous bank lending, and bank failures then acted to exacerbate downturns in the real economy.[4] As in Australia, the problems can be traced in part to earlier changes in regulatory regimes. Banks and regulators moved rapidly from an environment of tightly controlled risk to one in which banks had substantially more discretion, and supervisors lacked a rigorous framework of prudential standards. The Basel minimum capital standards came rather late in the 1980s, and were only being implemented as these economies were turning down.

**Graph 2**




One significant response to these sorts of financial crises has been pressure for improved standards of disclosure by banks, coming both from prudential supervisors and market participants. The outcome has been new and better measures of a range of prudential indicators, such as impaired assets, commercial property exposures and large exposures. Another response has been a general improvement in the internal risk-management systems of financial institutions, and prudential oversight of these systems, across a range of countries.

## The Importance of Financial Markets

Central banks concerned about financial system stability have traditionally focussed on

4. For a discussion of these episodes see, for example, Llewellyn (1992) and Herring and Wachter (1999).

the behaviour of individual financial institutions. Increasingly, however, they have needed to broaden their focus to deal with problems generated within financial markets. Financial market disturbances may prove to be a major source of threats to system stability in the future. Of course, such disturbances have been experienced in the past, albeit in a slightly different guise.

Financial deregulation, improvements in technology and globalisation have all contributed to making financial markets more vital to the process of financial intermediation. One clear illustration is the rapid growth of trading in derivative products. The notional value of outstanding over-the-counter (OTC) derivatives positions has risen from about 1.7 times the value of annual world GDP in March 1995 to 2.5 times in June 1998. Since there is no payment of principal for many of these contracts, an alternative measure is their gross market value, which reflects the accumulation of gains and losses due to changes in the prices of the underlying assets. Gross market values are influenced not only by the number and size of transactions but also by the volatility of market prices. As Table 2 shows, the gross market value of interest rate contracts has almost doubled in three years; however, because the major currency markets were more volatile around the earlier date, the gross value of foreign exchange contracts fell considerably over the period. Gross market values also provide a measure of the degree of exposures to counterparty credit risks. The Bank for International Settlements (1999) estimates that these exposures (US$2.6 trillion) are about one-quarter the size of international banking assets (US$10.5 trillion).

Highly leveraged positions built up through derivatives markets are seen as a major explanation for the near-collapse of the hedge fund Long-Term Capital Management (LTCM) in September last year. The emergence of leveraged funds as significant counterparties in derivatives markets is illustrated in a recent BIS survey. Table 3 shows the breakdown of the notional value of outstanding foreign exchange and interest rate derivatives contracts by the three different types of counterparties. The first are the reporting dealers – primarily commercial and investment banks and securities houses, which act as market makers or intermediaries, and other entities which are active dealers in the

**Table 2: Estimated Global Positions in OTC Derivatives Markets**
Amounts outstanding in billions of US dollars

| | End-March 1995 | End-June 1998 |
|---|---|---|
| **Notional amounts** | | |
| Foreign exchange | 17 700 | 22 055 |
| Interest rate | 28 850 | 48 124 |
| Other | 980 | 1 964 |
| **Total** | **47 530** | **72 143** |
| **Gross market values** | | |
| Foreign exchange | 1 420 | 982 |
| Interest rate | 700 | 1 354 |
| Other | 85 | 244 |
| **Total** | **2 205** | **2 580** |

Source: Bank for International Settlements (1999).

**Table 3: Estimated Global Positions in OTC Foreign Exchange and Interest Rate Derivatives Markets**
Amounts outstanding in billions of US dollars

| | End-March 1995 | End-June 1998 |
|---|---|---|
| **Notional amounts by counterparty** | | |
| Reporting dealers | 22 853 | 30 329 |
| Other financial institutions | 9 383 | 28 695 |
| Non-financial customers | 7 504 | 11 155 |
| **Total** | **39 740** [(a)] | **70 179** |

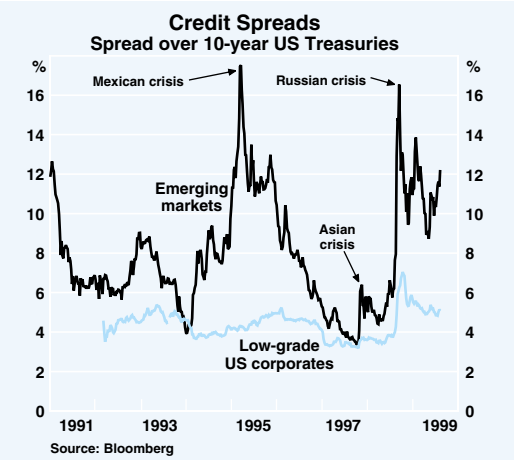
(a) The total value for end-March 1995 has not been adjusted for estimated gaps in reporting and therefore is less than the values reported in Table 2.

Source: Bank for International Settlements (1999).

market. Their share of the market fell from almost 60 per cent to a little over 40 per cent over the three-year period. The second type of counterparties are other financial institutions which can be considered as end-users of the market, and include mutual funds, pension funds, hedge funds, money market funds, insurance companies and central banks. This group increased their outstanding exposures by almost three-fold over the same period (almost doubling their market share from around 20 to 40 per cent).[5] The market share of the third type of counterparty – mainly corporate firms and governments – fell a little over the period.

In the second half of 1998, the Russian debt moratorium and the subsequent near-collapse of LTCM graphically demonstrated that problems in financial markets in one country can spread rapidly to financial markets around the world. The impact of this turmoil is highlighted by the sharp rise in credit spreads (Figure 3). This was most pronounced in the market for emerging country debt where, at their peak, spreads over US treasuries were up by around 10 percentage points. This spread has since fallen, but still remains at twice the level it was before the problems of last August/September. Spreads in the United States also rose dramatically as the turmoil unfolded. Fears of a credit crunch and general market instability led the US Federal Reserve to ease monetary policy in the latter part of 1998.

**Graph 3**




Looking back over a slightly longer period, it is interesting that prior to the Asian crisis in mid-1997, spreads on emerging market debt were falling consistently. At one point the market assessed the risk associated with this debt as being equivalent to that on low-grade US corporates. A convergence of these spreads also occurred in early 1994, but was rapidly reversed following increases in US interest rates, which was one factor leading to the Mexican crisis of 1994–95.

Various lessons are being drawn from the financial market disturbances of last year. First, while globalisation – the increasing openness of countries to world markets for goods and capital – has many undisputed benefits, it has increased the scope for contagion. In part, this may reflect the problems of 'herding' in markets, whereby poor information about countries' fundamental strengths and weaknesses leads investors to somewhat arbitrarily lump countries together. A second lesson comes from the interaction of sophisticated derivative products, which allowed companies to rapidly build speculative positions, and the overly generous provision of bank credit to these companies. LTCM had ready access to credit partly because of its reputation of having earned strong returns in the past, as well as its high-profile principals and management (including two Nobel laureates).

While these lessons might seem new, a brief review of history reveals some familiar themes. LTCM got into difficulties because it took a highly leveraged bet that risk premiums around the world were too high – that is, that credit spreads, which incorporate the market's belief about the risk of default, were too high in the months before August 1998. However, rather than falling back to their levels before the Asian crisis, credit spreads rose sharply following the Russian Government's moratorium on its foreign currency debt. This

5. Interestingly, the share of this group in the foreign currency spot market did not grow in line with their increasing share of the derivatives market.

forced investors to reassess their global risks and instigated a general flight to quality.

These developments have their echo in the Barings crisis of the 1890s. This period can be described as perhaps the first era of globalisation, with capital flowing out of Europe into emerging markets such as Argentina, Australia, Canada and New Zealand. Baring Brothers was a London discount house which helped to underwrite the issue of Argentinian Government securities. Barings' involvement helped to reassure the London market about the soundness of Argentina, in part because of the reputation Barings had built up from its earlier success in organising Anglo-American trade finance. However, confidence in Argentina subsequently waned, a series of new debt issues failed, the Argentinian Government failed to make interest payments and Barings was left holding a considerable amount of bonds of greatly reduced value. The failure of Barings in 1890 jaundiced the London market against all foreign securities, and the emerging markets of the time found it increasingly difficult to continue to attract funds. In Australia's case, the loss of access to world capital markets played a role in the economic downturn that eventually led to depression and a serious banking collapse.

Notwithstanding the echoes, there are two new factors that distinguish the recent problem with LTCM from the Barings episode. The first is that technological change makes it that much easier to build up very significant exposures within a relatively short period of time. As a result, both private market participants as well as central banks and supervisors find it more difficult to monitor risk in financial markets. The second difference is that the private sector has come to learn that governments, and international financial institutions, have found it very difficult not to bail out countries, and financial systems, in times of crisis. This creates a climate in which lenders and investors may be less cautious about the risks they are undertaking. These two factors help to explain why the recent financial turmoil has been followed by calls for greater disclosure, particularly about the activities of highly leveraged institutions. Greater disclosure would allow counterparties, as well as central banks and prudential regulators, to better assess the risks that various institutions pose for financial system stability.

## Central Banks and Financial System Stability

As noted in the Introduction, central banks normally have a mandate to maintain financial system stability. They also have various instruments at their disposal to try and prevent financial disturbances from arising, or to ameliorate the costs of disturbances if they do occur. These instruments are available whether or not central banks have responsibility for supervising individual financial institutions. However, it would be unrealistic – and even inappropriate – to expect that central banks will be able to prevent all financial disturbances.

Drawing on the experience of financial crises across the globe, the most effective insurance would appear to be a sound macroeconomy. Central banks have an important role to play here in maintaining low and stable inflation. This should help to prevent the build up of speculative pressures in asset markets, which are often the precursor to financial crises. However, while low inflation is a necessary condition for financial stability, it is certainly not a guarantee, as the experience of Japan in the late 1980s has demonstrated. There, property and equity prices were rising sharply and financial institutions were expanding their balance sheets rapidly, yet general inflation remained subdued.

In such circumstances, there might appear to be a conflict for central banks between their price stability and financial stability objectives. An increase in interest rates might not be needed for short-term inflation control, but might be required to slow credit growth and deflate an asset price bubble. However, this apparent tension between the two objectives

can be easily overstated. If a central bank allows financial imbalances to build up unchecked, financial instability can undermine its monetary policy responsibilities and threaten price stability over the medium term. Nonetheless, the appropriate role of monetary policy in financial disturbances remains a controversial one.

Central banks have other preventative roles to play. Firstly, they can promote a safe and robust payments system, in which problems in one financial institution do not spread contagiously throughout the financial system. Over recent years, the development of real-time gross settlement systems in most major countries, including Australia, has helped to eliminate settlement risk at the core of the payments system, where high-value payments between financial institutions take place.

Secondly, central banks can encourage efficient and smoothly functioning financial markets by closely monitoring developments in, and the integrity of, key markets through their own operations in these markets for monetary policy purposes and, where they have the responsibility, by establishing an appropriate regulatory framework.

Thirdly, central banks can help to develop a sound framework for prudential supervision. Even when they do not have direct supervisory responsibilities, central banks can contribute through their close relationships with financial regulators domestically, through their understanding of, and participation in, many key financial markets and the payments system, and through their participation in the various international fora which deal with financial stability issues.

Leaving aside the possible role of monetary policy, central banks have ways of mitigating the impact of financial disturbances if they do occur. Traditionally, central banks are able to provide liquidity to money markets through the operation of some form of discount window. They can also lend directly to an individual financial institution, which is fundamentally sound but in temporary distress, through 'lender of last resort' loans.

## Conclusions

Though it is not clear that financial systems are becoming inherently less stable, the forces of financial deregulation, technical change and globalisation have certainly changed the nature of financial risks and the speed with which they can accumulate. For central banks, the mandate to maintain financial system stability has become a much more challenging one. This is particularly so for those central banks which have recently shed their prudential supervision function.

There is a wealth of possible indicators which central banks could monitor as early warnings of incipient financial pressures. This paper has outlined a number of macroeconomic and prudential indicators, and illustrated how their performance can be weighed through econometric analysis or through a careful trawling of history. However this weighing is done, one thing stands out. That is human nature and the tendency for people to expect 'good times' to continue forever. History demonstrates, all too clearly, that extended periods of strong economic growth can generate excessively optimistic expectations of the future and unrealistically large increases in asset values. The potential for over-heating in asset markets, seen over the centuries, still remains. This gives an urgency to the work which is under way in financial institutions, central banks and prudential supervisors to better monitor and contain financial risks.

## References

Bank for International Settlements (1999), *Central Bank Survey of Foreign Exchange and Derivatives Market Activity 1998*, Bank for International Settlements, Basel.

Crockett, Andrew (1997), 'Why is Financial Stability a Goal of Public Policy?', in *Maintaining Financial Stability in a Global Economy*, a Symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, pp. 7–36.

Davis, EP (1999), 'Financial Data Needs for Macroprudential Surveillance – What are the Key Indicators of Risks to Domestic Financial Stability?', Centre for Central Banking Studies, Bank of England, London, mimeo.

Demirguc-Kunt, Asli (1989), 'Deposit-Institution Failures: A Review of Empirical Literature', *Federal Reserve Bank of Cleveland Economic Review*, 25(4), pp. 2–18.

Demirguc-Kunt, Asli and Enrica Detragiache (1998a), 'The Determinants of Banking Crises in Developing and Developed Countries', *IMF Staff Papers*, 45(1), pp. 81–109.

Demirguc-Kunt, Asli and Enrica Detragiache (1998b), 'Financial Liberalization and Financial Fragility', International Monetary Fund Working Paper No. 98/83.

Fisher, C and C Kent (1999), 'Two Depressions, One Banking Collapse', Reserve Bank of Australia Research Discussion Paper No. 1999-06.

Gonzalez-Hermosillo, Brenda, Ceyla Pazarbasioglu and Robert Billings (1997), 'Determinants of Banking System Fragility: A Case Study of Mexico', *IMF Staff Papers*, 44(3), pp. 295–314.

Hardy, Daniel C and Ceyla Pazarbasioglu (1998), 'Leading Indicators of Banking Crises: Was Asia Different?', International Monetary Fund Working Paper No. 98/91.

Herring, Richard J and Susan M Wachter, (1999), 'Real Estate Booms and Banking Busts – An International Perspective', Group of Thirty Occasional Paper No. 58, Washington D.C.

Kaminsky, Graciela, Saul Lizondo and Carmen M Reinhart (1997), 'Leading Indicators of Currency Crises', International Monetary Fund Working Paper No. 97/79.

Kaminsky, Graciela L and Carmen M Reinhart (1999), 'The Twin Crises: The Causes of Banking and Balance-of-Payments Problems', *American Economic Review*, 89(3), pp. 473–500.

Kent, C and G Debelle (1999), 'Trends in the Australian Banking System: Implications for Financial System Stability and Monetary Policy', Reserve Bank of Australia Research Discussion Paper No. 1999-05.

Kent, C and P Lowe (1998), 'Property-Price Cycles and Monetary Policy', BIS Conference Papers Vol. 5, *The Role of Asset Prices in the Formulation of Monetary Policy*, Basel, pp. 239–263.

Llewellyn, Daniel (1992), 'The Performance of Banks in the UK and Scandinavia: A Case Study in Competition and Deregulation', *Sveriges Riksbank Quarterly Review*, 3, pp. 20–30.