

# The framework for financial supervision: macro and micro issues

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## Introduction

Nearly 20 months after the beginning of the Asian crisis, we are still struggling with the painful exercise of restructuring banks across Asia. The financial crisis in Asia is most commonly associated with banking crisis and contagion. This paper looks at the macro and micro issues in the framework for financial stability.

*Financial supervision is all about risk management.* Indeed, financial supervision is about the activities of the regulator to ensure that the management of financial institutions is managing their risks in a safe or prudent manner. This is the micro aspect of governance. But governance of financial institutions in an economy depends on the stability of the macroeconomy itself. Hence, the risk management of financial institutions is also related to the management of not only micro-risk factors (such as credit risk to a single borrower), but also macro-risk factors such as market risks – interest rate and exchange rate risks that are beyond the control of a single market participant. Such variables used to be under the control of central banks, but in an open economy global forces now determine these variables. Globalisation has brought about contagion and systemic risks, as we all found out to our cost during the Asian crisis.

Box 1 sets out the financial market risks that both the bank manager and the bank supervisor must assess at the micro and macro levels. Before we do this, it may be useful to rethink what recent market developments imply for proper risk management.

## Finance as a derivative of the real economy

Bank problems do not happen overnight, they have very complex roots. Many of the factors are country-specific and originate in the real

## Box 1 Financial market risks

Credit risk – the risk that the counterparty will fail to fulfil the (credit) contract. The size of the loss is the replacement cost of the contract in the market.

Liquidity (maturity) risk – risk of losses resulting from forced sales when there is insufficient liquidity to meet contractual obligations.

Interest rate risk – risk of interest rate changes on value of assets or liabilities.

Foreign exchange risk – risk of exchange rate changes on value of foreign currency assets or obligations.

Settlement risk – the risk that one party (or agent bank) will not settle or deliver final value when settling a contractual obligation.

Operational risk – risk of losses due to failure of adequate internal controls, procedures and operating equipment, software and systems.

Legal risk – risk of losses caused by inadequate laws or court processes, including uncertainties in the legal definition of obligation or court reversals of commonly understood obligations, such as the legal obligations of multilateral netting.

Reputational risk – risk of loss of reputation of a market participant that leads to the market cutting off credit and transactions with that party.

Political risk – risk of losses due to political changes that affect public confidence.

Systemic risk – failure of one party triggers failure elsewhere in system (for example, contagion).

Source: Sheng, 1996.

economy. Some of these problems are structural, others cyclical. For example, excessive sovereign debt was a problem of the 1970s, but the 1990s problem involved excessive private sector debt. Bank problems involve political, sectoral, legal, social, institutional and incentive dimensions. A combination of policy and institutional weaknesses could lead to losses in the real sector, which sooner or later manifest themselves in the banking system.

At the last count, 150 of the 180 IMF members had suffered varying degrees of bank distress or fragility in the last 15 years. What has gone wrong, what can we do to prevent it, what should we do to cure it? My book on the lessons of the 1980s concluded that the reasons for bank failure were so complex and so country-specific that it was impossible to generalise a solution (Sheng, 1996).

Given the complexity, bank restructuring is a process that encompasses the following:

- *diagnosis* – the need to understand the sources of bank losses and the dynamics between bank losses and real sector losses;

- *damage control* – the need to stop the bleeding. Having identified the “stock” of non-performing loans, it is important to prevent the “flow” of losses from escalating;
- *loss allocation* – the political economy of determining “who bears the losses”, with the need to ensure that the method does not engender moral hazard; and finally
- *rebuilding the incentive structure* – the need to ensure that the incentive structure will avoid the repetition of past mistakes, so that the banking system will develop the right credit culture for a healthy, stable and competitive financial sector.

The US banking supervisors, who helped advise the banking reforms in Russia and Eastern Europe, found it useful to present these policy and institutional issues as set out in Box 2.

#### Box 2

### Assessing the risk of bank failure

The diagnostic process begins with a review of the policy and institutional environment in which banks operate:

#### *Policy environment*

- Is there significant financial repression?
- Does the state own a large stake in the financial sector?
- Is there liberal entry into the financial sector?
- Is there a non-bank financial sector that is growing rapidly without supervision?
- Are credit allocation and forced lending policies hurting banks' autonomy in credit decisions?
- Are banks being taxed considerably higher than non-banks?
- Do large enterprise groups substantially own banks?

#### *Institutional environment*

- Are the legal framework and judicial processes conducive to enforcement of debt recovery?
- Do domestic accounting and auditing standards meet internationally accepted accounting standards?
- Is information on credit and borrower performance available and transparent?
- Is there good bank supervisory capacity?
- Do supervisory authorities fully understand the problems facing the banking system?
- Are sufficiently trained bank management staff in place, for example, in foreign branches?
- Do bankers have a good understanding of the costs of intermediation and the sources of their profits and losses?

Sources: Federal Reserve Board, Federal Deposit Insurance Corporation and US Comptroller of the Currency 1992.

But the Asian financial crisis has demonstrated that global contagion and capital flight have severe systemic implications for bank supervisors, so that we cannot look simply at the domestic sector, but must also examine carefully the external environment. We therefore need a much wider framework to examine financial stability. A national risk management framework needs to be fitted into the global context, with important implications for international regulatory cooperation, policy coordination and information exchange.

The key questions, therefore, that financial supervisors need to ask are:

- Do banks have the necessary information and incentives to manage their risks at the micro and macro level?
- Are they managing these risks, and if not, why not?

To answer these questions, we need to rethink the structure of financial markets. Globalisation was the result of three key factors: technology, deregulation and emergence of large savings in search of higher returns. First, technological advances in computerisation and telecommunications created the power and ability of markets to transact large values on a 24-hour basis globally.

Secondly, financial liberalisation, especially the opening-up of the capital account and the deregulation of the financial sector, has greatly opened up competition and forced not just the financial sector, but, more important, also the real sector to adjust (Crockett, 1997).

Thirdly, as the population aged in the developed markets, there emerged the growth of large asset funds, especially insurance, retirement and mutual funds and, more recently, hedge funds that began to diversify globally in search of higher returns. These funds are now larger than the banking system in terms of assets.

The reason why banking systems play such an important role is that they form the heart of the global financial markets by being:

- custodians of the liquid savings of the public;
- lenders of these resources to their borrowers to facilitate economic activity, such as investment, consumption or risk management;
- operators of the payment system, across which property rights are traded, cleared and settled; and
- highly leveraged institutions with roughly 12 times leverage (8% capital base).

Financial markets are best seen as networks across which information and financial transactions are transmitted and contracted between

different network participants. As we all know, networks have positive externalities, since participants benefit from wider networks. Unfortunately, these networks are also the channels of transmission of contagion when participants fail to settle their contractual obligations. In other words, financial markets help allocate resources and manage risks. But at the same time, they are the channels through which losses (real or financial) are allocated in the economy.

Market participants obey the right incentives when they observe one basic rule in the financial markets: they must be solvent institutions with positive capital, i.e. gross assets exceed their liabilities. However, the incentive structure could be distorted by three key problems:

- the information which market participants use to make their financial decisions is not reliable, timely or accessible;
- the incentives for market participants are distorted by tax, regulations or implicit or explicit guarantees that engender moral hazard; and
- some market participants are insolvent.

If information is unreliable, with bad accounting standards, and the incentives to use available information is distorted, then markets will behave with higher volatility and uncertainty, with possible herding or panic characteristics.

As we have learnt at great cost, if market participants are insolvent, their behaviour changes from risk aversion to risk taking, since they gain at social cost. Under certain conditions, private losses are socialised. Bank failure is another way of redistributing private losses.

In other words, markets behave “normally” as long as private participants are solvent and the incentive structure is not distorted by moral hazard or other factors. Since private agents maximise returns by using leverage, at certain levels of high leverage the market participant crosses the risk/return frontier, and its losses are socialised.

It is no coincidence that bank distress is closely associated with both speculative behaviour and asset bubbles. Asset bubbles occur because the public believes, through incomplete information and distorted incentives (e.g. crony capitalism, supply constraints, etc.), that asset prices<sup>1</sup>

<sup>1</sup> The price of an asset  $P$  (equity or real property) is equal to the discounted present value of the asset's expected earnings ( $E$ ). The discount factor most commonly used is the yield on a risk-free asset ( $r$ ), adjusted for the expected growth in earnings ( $g$ ), taxes ( $t$ ) and a risk premium factor ( $\sigma$ ). As presented by Kahkonen (1995):

$$P = E/(r - g + t + \sigma).$$

### The fiscal impact of bank losses

Since bank losses are quasi-fiscal deficits, the cumulative losses in the banking system are equivalent to an internal debt of the state. The long-term consequences of running such internal debt can be projected using the following equation: the change in the government debt/GNP ratio ( $d$ ) is equal to the primary (or non-interest) deficit of the public sector, less what is financed by seigniorage, plus the current debt ratio ( $d$ ) times the average real interest rate on the debt minus the growth rate of GNP:

Change in  $d$  = (primary deficit/GNP) – (seigniorage/GNP) +  $d$  (real interest rate – growth rate)

The quasi-fiscal deficit due to bank losses tends to increase the primary deficit. To the extent that the central bank is already financing bank losses through liquidity creation, the revenue that can be obtained from seigniorage is correspondingly reduced. The change in the overall debt ratio  $d$  will increase with the primary deficit or if the real interest rate exceeds the domestic growth rate. On the other hand,  $d$  will decline with inflation or high GNP growth.

The equation above helps explain the varying success of bank restructuring programmes. In countries with high growth or low real interest rates,  $d$  may be declining over time.

On the other hand, countries with large primary deficits and excessive real interest rates allow their debt ratios to become unsustainably large, so much so that the debt can only be reduced through higher and higher inflation. This category includes Argentina, Chile in the early 1980s, and Yugoslavia. The growth of the domestic debt also rose sharply because of excessive real interest rates, reaching as high as 40% a year.

How  $d$  will perform depends on whether bank losses continue to flow or converge towards zero, provided the bank restructuring exercise has stemmed all future losses. If the bank restructuring fails to stem losses, then even the fiscal deficit becomes unsustainable.

Source: Fischer and Easterly, 1990.

will continually rise above the cost of funds. They may not have priced in interest rate or exchange rate shocks or credit withdrawals in their expectations.

Once actual returns fall short of expectations on new information, then the vicious circle of asset sales, higher real interest rates, capital flight and credit withdrawal deflates the asset bubble, causing huge wealth losses. Overleveraged borrowers become insolvent and pass their losses on to the banks through rising non-performing loans.

If bank shareholders are unable to raise new capital to recapitalise the bank, then through the implicit bank deposit guarantee or explicit bank deposit schemes, *bank losses become quasi-fiscal losses*. In effect, the political economy of bank losses means that wealth losses in the economy become partly vested in the banking system. And since the

government is usually unwilling for policy reasons to pass the bank losses on to the depositors, *ultimately the government bears the losses through either public bank recapitalisation or monetary creation*. The fiscal implications of bank losses are considered in Box 3.

### **Towards national and sectoral risk management**

The financial sector is supposed to help the real economy allocate resources and manage risks. Unfortunately, as we have discovered, the financial sector itself can be a major source of new risks. Thus, a review of the risks of the economy as a whole requires an understanding of the way growth has been financed in each sector, and the inter-relationships between the sectors. If domestic financial systems are inefficient, the private sector or even the public sector may resort to external financing, thus exposing the economy to the volatility of capital flows. Such flows are not in themselves the causes of economic or financial problems, but are the effects of distortive incentives in the market, possibly a combination of policy mistakes and weaknesses in economic fundamentals.

Given the larger risks in open financial markets that can feed back into shocks on the real sector and vice versa, central banks must focus on national risk management. To withstand greater shocks, an economy requires a combination of credible policies, sound fundamentals, good supervision, robust infrastructure and a non-distortive incentive structure.<sup>2</sup>

The following pre-conditions appear to be necessary for a stable financial system:

- *Credible policies* demand monetary and fiscal policies that are consistent with each other, and are applied consistently.
- *Sound fundamentals* include a high domestic savings rate, sustainable balance-of-payments position, high foreign exchange reserves and prudent debt management.
- *Good supervision* involves the maintenance of solid capital adequacy and liquidity requirements for the financial sector, as well as regular

<sup>2</sup> See Joseph Yam, "International Capital Flows: Opportunity or Threat? View from Hong Kong", Bank for International Settlements, June 1995.

examination and monitoring of financial institutions. The banking system must have the capacity to avoid excessive credit concentrations and risks, and to manage market risks well.

- A *robust financial infrastructure* would encompass an efficient payment and settlements system for domestic and international transactions.
- A *non-distortive incentive structure*, such as taxation or regulatory restrictions that would not encourage risk concentrations or excessive leverage in any economic sectors. Examples of distortive structures are property development tax incentives that led to excessive commercial real estate lending in the US in the 1980s, or land restrictions that fuelled the Japanese property bubble. Moral hazard distorts risk management.

The Fund had a mantra on the above (Lindgren, 1996): *private governance, market discipline and official oversight*, with the notable omission of a robust infrastructure.

### **Asian crisis post-mortem**

The lessons from the last 20 months in Asia have demonstrated to me that the above mantra is incomplete. Before the crisis, most Asian economies, at least at the superficial level, appeared to have very sound fundamentals and reasonably good supervision by emerging market standards. What was not apparent was the degree of contagion and panic that the crisis brought about. What macro and micro issues are therefore missing from the above list of pre-conditions for national risk management?

I would list essentially five inter-related areas that need to be addressed:

- incomplete information;
- unequal leverage;
- incomplete contracts or rules of the game;
- lack of sound corporate governance; and
- adjustment asymmetry.

The *incomplete information* question has been extensively studied, notably by the Group of 22 Working Party on Transparency and Accountability, whose report was published in October 1998. I would

summarise the information question as “Bad accounting = bad information = poor decision making = bad risk management = financial crisis”.

But the problem was due to more than simply gaps in information or gaps in incentives to use information. In my view, the under-explored issue in the Asian crisis was the gap in the *capacity to use information*. Recent debate over the record of the Fund in managing the Asian crisis accused it of not understanding the implications of globalisation and banking crisis. To be fair to the Fund, the difficulties of managing asset bubbles in an open economy with large capital flows are now not unique to emerging markets.

Two simple examples demonstrate what I mean. First, never in its wildest prudent corporate risk management dreams could an Indonesian corporation foresee that the rupiah would fall from 2,500 to 17,000 to the US dollar. Thus, any prudent corporation that borrowed 10% of its capital in foreign currency would have become insolvent. Secondly, financial systems are not normally designed to absorb volatilities in the two key currencies in the region (dollar and yen) that are as large as those in the equity markets. The 8% capital adequacy requirement, with inadequate loan classification standards, meant that many Asian banks simply did not have a large enough capital cushion to withstand these credit and market shocks to their borrowers and themselves.<sup>3</sup>

The second asymmetry is *leverage asymmetry*, which I consider to be the real Achilles heel of financial systems. The greater the degree of leverage, the greater volatility in asset prices and the greater the *volatility in duration*. In a society with high savings and strong credit discipline, leverage would tend to be low. Present supervisory systems simply do not have sufficient information on the different degrees of leverage in the economy. Some sectors of the economy could be becoming too highly leveraged, resulting in concentration risks and potential systemic risks.

There is also a highly distortive element in different leverage in different markets. For example, the average margin in stock markets is 50%, while that for index futures is 8–12%. Leverage in the OTC

<sup>3</sup> The average Asian debt/GDP ratio was 130%, of which foreign currency liability was 30%. Thus, an average 30% devaluation would cause foreign currency losses alone of 9% of GDP. Since bank assets/GDP in East Asia was roughly 100% of GDP, the foreign exchange losses alone overwhelmed bank capital, leaving aside credit and other market risks.

markets, such as those for foreign exchange, options and warrants, could be significantly higher. Such leverage in OTC markets (especially in below-the-line derivative obligations) is simply opaque to many market participants and the regulators. The result is that these derivatives may be totally wrongly priced in terms of risk. That was what happened when LTCM appeared to be “too big to fail”.

Thirdly, *incomplete contracts* or rules of the game are now better understood after the Asian crisis. Most economies realise that they must have better market competition and operation rules, such as clear rules of entry and exit. These would include bankruptcy rules and a fair and transparent legal framework that can enforce contracts equitably and efficiently.

Related to the question of incomplete contracts is the problem of *corporate governance* or the incentive structure. Corporate (including bank) management must be rewarded or punished according to a balanced incentive structure. There must be not only internal controls and checks and balances, but also the absence of distortive incentives such as tax incentives and implicit state guarantees that encourage moral hazard.

Indisputably, the most vexing question in most Asian economies currently is how to ensure that corporate governance is soundly based. Even if the government is determined to recapitalise the banking system and make the necessary reforms, if corporate governance is weak the mistakes of the past will be repeated.

Finally, we have to recognise the reality of *size asymmetry* and the different pace of adjustment between economies and between the real sector and the financial sector. Because we live in an interdependent world, and an increasingly integrated world, domestic economic problems are compounded by the policy mistakes of others, especially the larger economies. Small open economies that thought they were adequately prepared for reasonable-sized external shocks today discover that international prices, such as exchange rates of G10 economies, can fluctuate by 10–20% in a few days. Through flexible exchange rates, internal losses can be passed externally to others through both the trade and capital accounts.

We also need to recognise that financial markets adjust faster than the real sector. The incentive structure, information gaps, and the institutional and legal framework all take time to change. The Asian

### Lessons of the 1980s for bank restructuring in the 1990s

Financial stability rests on the government's ability to maintain a stable currency.  
 Banks fail because of losses in the real sector, compounded by poor risk management and fraud.  
 Liberalisation programmes often fail to take into account the wealth effects of relative price changes, and inadequate supervision creates further losses.  
 Bank losses ultimately become quasi-fiscal deficits.  
 Failure recognition is important because a banking crisis is a solvency problem, not a liquidity issue.  
 Stopping the flow of future losses is critical.  
 The method of loss allocation determines the success of the restructuring programme.  
 Success depends on generating sufficient real sector resources to pay off losses, adequate financial sector reforms to intermediate resources efficiently and safely, and the budget's ability to tax "winners" and wind down "losers" without disturbing monetary stability.  
 Rebuilding a safe and profitable banking system requires good policies, reliable management and a strong institutional framework.

crisis demonstrated that the market is quick to punish even the slightest policy mistakes. It is easily said that we should all have sound fundamentals, and that prevention is better than cure. However, it is also a fact of life that we all make mistakes.

Thus, the only consistent lesson that we can draw is that financial supervision or national risk management is a continuing process of vigilance. Given relentless competition and change, financial supervisors cannot assume that they can prevent the market from making mistakes, nor can they minimise the costs of learning without moral hazard. These are a natural part of the learning process.

In other words, increasing market transparency, creating a level playing field and removing incentive distortions through sound policies and a flexible institutional framework, including robust infrastructure, would help make the market work better.

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