

Resolution of banking crises: a review

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Late last year, the Bank of England's Centre for Central Banking Studies hosted a research workshop for officials from a number of developed and emerging-market economies on banking crisis resolution. This article, which draws on the information provided in the workshop is based on a paper presented at its concluding conference. It describes some of the principles that authorities should and do consider when resolving banking crises, and possible resolution options¹. It also assesses the resolution practice in recent systemic banking crises.

¹ The paper was also used as background material for this year's Central Bank Governors' Symposium on 'The role of central banks in preventing and dealing with financial crises'.

OVER THE PAST QUARTER of a century, unlike the preceding twenty five years, there have been many large bank failures around the world. Caprio and Klingebiel (2003), for example, documents 117 episodes of systemic crises and 51 cases of borderline or non-systemic crises in developed and emerging market countries since the late 1970s². Moreover, cross-country estimates suggest that output losses during banking crises have been, on average, large – over 10% of annual GDP³ – and that bank lending and profitability have often remained subdued for years afterwards. This article reviews the merits of the various techniques used by authorities when resolving individual or widespread bank failures⁴.

Faced with a banking crisis the authorities clearly need to take some remedial action but they must also consider how their intervention affects the future behaviour of the private sector. One goal of crisis resolution is to reduce the disruption to the payments system and damage to confidence in the financial system as a whole. Authorities could also be concerned with the knock-on effects on the supply of credit to the private sector. The potential systemic threat to the economy of bank failures will vary with the size of bank intermediation in the economy and whether borrowers have other sources of credit.

But actions to deal with these aspects can clearly lead to future moral hazard. If any protection provided to banks in a crisis is greater than they expected, this could increase their risk-taking in the future. In a widespread crisis the authorities are therefore likely to face a trade-off between maintaining financial stability today – through offering protection to failing banks – and jeopardising future financial stability through increasing moral hazard. Later on, if today's actions make future assistance appear more likely. As Bagehot put it, “any aid to a present bad bank is the surest mode of preventing the establishment of a future good bank”⁵.

Governments also wish to limit the fiscal costs of crisis resolution. Although these costs might simply be a

transfer of income from current and future taxpayers to bank ‘stakeholders’, particularly depositors, raising (non-lump sum) taxes can have a large distortionary impact on economic welfare.

The next section considers various measures of reducing the net costs of crisis resolution and of reducing the probability of future crises. Then alternative resolution strategies that can be adopted during a crisis are assessed followed by how these resolution options are affected by the type of crisis. The penultimate section assesses the evidence of how systemic crises have been resolved in practice. The final section draws conclusions.

Measures affecting the costs and benefits of crisis resolution

No two countries are exactly alike in their financial or legal framework. Nor will their methods of safeguarding financial stability be quite the same. Nonetheless, the following elements in a crisis resolution strategy appear to have general application, as ways of limiting the immediate costs to the economy and to the taxpayer while also limiting future moral hazard.

Private sector solutions

Private crisis management solutions are clearly preferable to public sector solutions. They are likely to place existing capital holders in a first loss position, and impose no direct costs on the taxpayer. Where a bank is, or is close to, insolvent, existing shareholders or creditors could be asked by the supervisor to provide the capital shortfall. This has the advantage of attempting to keep the bank alive as a going concern, while levying a charge on those that have most to gain from the bank's survival.

If a failing bank is taken over by another stronger bank this usually has the advantage of penalising incumbent managers and shareholders. The senior managers are likely to be replaced while existing shareholders would lose all, or part, of their investments.

Loss imposition

Should the public sector become involved, moral hazard and the resolution costs can still be limited, by ensuring that bank ‘stakeholders’ – shareholders, managers, depositors and other creditors – share at least some of the losses.

² Systemic is defined here as pertaining to cases where all or most of the capital in the banking system has been exhausted.

³ See for example IMF (1998), Bordo, Eichengreen, Klingebiel and Martinez-Peria (2001) and Hoggarth and Saporta (2001).

⁴ See also BIS (2002) on resolving individual banking problems, and Hoelscher and Quintyn (2003) on resolving recent systemic crises.

⁵ There is an analogy here with lending by the IMF in sovereign crises which may affect the risk-taking incentives of creditors and debtors (see Haldane and Taylor (2003)).

Following a bank failure, existing *shareholders'* capital is typically written down or wiped out. Equity holders should be aware of the risk that its value could decline, or even disappear in the most adverse conditions.

Managers should, and often do, lose their jobs and suffer reputational damage in the case of bank failure, if the cause of the problem is due to poor management rather than bad luck. However, the character of remuneration, in practice, presents the bank's senior management with asymmetric incentives. They stand to gain from the bank's success, for example through profit-linked bonuses. But if the bank fails, what both they, and their shareholders, may lose is limited. To address this moral hazard problem the severity of the penalties on the senior management could be linked in some way to the magnitude of losses. For example, in extreme cases, directors could perhaps become liable to bans on service as directors of any public company, cancellation of severance compensation clauses in their contracts, and fines.

Imposing losses on uninsured *creditors* in the event of bank failure will improve subsequent market discipline and thus help to reduce the likelihood of future crises. It should also lower the fiscal costs of resolving individual bank failures.

The design of deposit protection schemes can also have an impact on behaviour. Moral hazard can be reduced through the adoption of schemes with a limited coverage so that depositors face some risk of losses. These limits may relate to the maximum value insured, the types of depositors included in the scheme or some form of co-insurance⁶. It may be especially important to impose losses on large depositors, such as other banks or non-bank companies, since they may be better able to monitor banks' behaviour.

Recent studies suggest that the design features of deposit insurance affect financial stability. Demirgüç-Kunt and Detragiache (2000) find, in a sample of 61 countries over the 1980-97 period, that, in the absence of an effective system of prudential regulation and supervision, the likelihood of crises increases with the

coverage ratio (the coverage ceiling of the issuance scheme relative to GDP per head), and declines if there is co-insurance. Hoggarth, Jackson and Nier (2003) find that schemes with unlimited coverage or no coinsurance are more likely to be associated with crises than those with limited schemes. Barth, Caprio and Levine (2001) also find that more generous deposit insurance greatly increases the probability of future crises.

Faced with a *systemic* crisis, however (and in some cases even where explicit schemes have been in place), authorities have often introduced temporary blanket insurance protection for all depositors (and other creditors) to maintain or restore confidence. Since these crises have reflected fundamental insolvency problems, not just insufficient liquidity, the credibility of any guarantee will depend on the government's ability to pay.

While temporary blanket insurance may be appropriate after the event, once a systemic emergency has arisen, a general expectation it would be provided could only make future emergencies more probable. One response to their dilemma is to make the authorities' role in crisis transparent.

Transparency and disclosure

Clarity and transparency over restructuring programmes in general, and not just over the provision of deposit insurance, may speed up the resolution process and reduce both present costs and future risks. The various authorities involved in crisis management – the central bank, regulatory body (where separate) and the Treasury (Ministry of Finance) – should each have well defined responsibilities in a crisis situation but also processes in place to coordinate policy action. In the UK this has been set out in the Memorandum of Understanding (1997) between the Bank of England, the FSA and HM Treasury.

It is important to have a clear resolution strategy in advance, and there are advantages in disclosing at least the principles of this strategy. Absence of such a strategy could lead to forbearance. It may also transfer losses from shareholders to taxpayers and discourage new private sector recapitalisation. For example, in the mid-1990s Mexican crisis, non-performing loans were purchased by the government at their book value, not at an estimate of their market value. This greatly increased the cost to taxpayers without preventing many bank

⁶ Co-insurance is an arrangement whereby depositors are only insured for a pre-specified portion of their deposits. For example, in the UK, aside from the first £2,000, which is paid in full, depositors are insured for 90% up to a ceiling of £35,000.

problems from recurring (De Luna-Martinez (2000)). And in Japan, public disclosure of non performing loans over the past decade has been piecemeal, with estimates frequently revised upwards. This has undermined the credibility of the disclosed figures and since banks' capital ratios were understated bank restructuring was delayed (Nakaso (2001)).

International evidence shows that governments face strong political pressure to rescue failing banks. Once a government has provided such support any claim that owners, managers and creditors of banks that fail in future cannot expect to be assisted from public funds is hard to make credible. Although in the long run it may be beneficial for the authorities not to bail out banks, and thus not to encourage excessive risk taking, when a crisis occurs there are economic and political advantages to them from providing support "on this one occasion". This time-consistency problem provides a case for clear rules, violations of which are obvious to the private sector and carry some political cost.

Speed of resolution

Delaying bank restructuring while allowing forbearance may permit a continuous flow of credit to the economy and give time to assemble information on a bank's financial position and to devise a well thought through strategy. However, if the conditions of financial institutions deteriorate further this may increase the final costs of resolution. There is also a risk that banks will gamble for resurrection – that is, take a big risk that will save the bank if it comes off, and just add to other people's difficulties if it does not. This happened, to an extent, in the S&Ls crisis in the United States during the 1980s (FDIC (1997)). Although rapid resolution may result in a bigger short-term fall in output due to the closure of unviable banks and their insolvent corporate borrowers, longer-term performance should improve if as a result a properly functioning banking system is restored earlier.

Case study evidence suggests that prompt intervention reduces the costs of intervention and promotes efficiency (OECD (2002a)). Dziobek and Pazarbasioglu (1997) found, in a sample of 24 systemic crises, that most progress in restoring the banking system's financial strength and its intermediation role – each proxied by 6 (equally-weighted) indicators – occurred for countries that took action within one year of problems emerging.

Where banks are liquidated, it is important that the bankruptcy procedures allow insured depositors and other creditors prompt access to the funds due to them. In practice, court proceedings can sometimes take years to resolve, thus delaying pay outs to creditors. Further, in a worldwide survey of deposit insurance schemes, Garcia (2000) finds that many funds take months to repay insured depositors.

Choice of resolution strategies

Notwithstanding the above desirable features to minimise the net costs of resolution, in practice the choice of strategy is circumscribed. A clear legal framework can have an important bearing on both the range and effectiveness of the policy options in resolving crises. For example, in some countries the supervisory agency may lack the power to write down capital, force a merger or close an institution; and if it does, may face prosecution by creditors and owners for damages. In other countries the authorities have the full range of options – they can replace managers and the board of directors, close a bank, inject capital and nationalise. Bankruptcy procedures also vary but have a large bearing on resolution. If they are slow, they can seriously delay the resolution process. The political and social context may also influence the options in practice.

There is a range of options for resolving insolvent banks. At one extreme, a bank can be kept open through an injection of capital. At the other extreme, a bank can be closed with its assets sold and depositors and possibly other creditors paid off. Between these extremes, a bank's licence may be removed but with the bank sold off to another bank, in full or part, to preserve the bank's activities. The extent of involvement of the authorities may also vary. It may be limited to encouraging or organising private sector support, or extended to official financial support, in the limit through government takeover.

When a bank is financially distressed there should be a preference, first, to encourage a private sector solution. If an unassisted private sector solution cannot be found, a decision would next be made about whether to liquidate the bank or provide some form of government assistance (see Diagram 1). In exceptional circumstances, if there were a systemic threat, governments might consider a takeover or guarantee to a failed bank, as an interim measure.

These options are reviewed below in turn.

Unassisted resolutions

Bank status unchanged

When a bank supervisor discovers that a bank is at, or close to, the point of insolvency, the first response is to see whether the bank can be rehabilitated without government assistance. There are often several steps here. The bank can be instructed to curtail lending, either in a specific line of business or across the board. A request (demand) for additional capital from existing shareholders or other interested parties is often issued; management changes can be required; and operational changes are almost always undertaken.

Bank status changed - private sector merger

If a capital infusion from existing shareholders or other interested parties is not available, an unassisted merger with another healthy financial institution is usually the next course of action. For an unassisted merger to occur, the extent of losses must be transparent to the prospective acquirer. Therefore, supervisors should examine the troubled bank to determine the size of losses to ensure that the acquiring institution has sufficient capital to absorb potential losses in the failing institution.

A number of factors may affect the likelihood of a private sector merger or takeover. As financial systems have become more competitive, the willingness of a group of banks to organise a rescue so as to preserve the stability of the industry as a whole may have diminished, so a bank may involve itself in rescuing another bank only if it is demonstrably in its own self interest to do so. The size of the firm (relative to the financial system of a whole) may also affect the ability to achieve a private sector solution. The failure of a large financial institution may have a large adverse impact on other firms either through direct exposures or the impact on asset prices of unwinding its positions. So some institutions may be 'too big to fail' for the private sector. The rescue of LTCM may be a case in point (see Herring (2002))⁷. It is also easier to co-ordinate a rescue with fewer

counterparties. On the other hand, in a financial system that is already highly concentrated, the authorities may be reluctant to allow further consolidation for competition reasons.

Liquidation

If an unassisted private sector merger is not possible, a decision is often made to liquidate the bank. In a liquidation, the bank is declared insolvent, closed, and depositors paid off. The restructuring authority then liquidates all assets. In most cases uninsured depositors and other creditors are only covered if sufficient funds are available after liquidation. Liquidation exerts a strong financial discipline on the various stakeholders. But when a liquidation occurs it may affect other banks through direct exposures or changes in financial market prices.

Moreover, as discussed earlier, reimbursing depositor and creditor claims, from the sale of the failed bank's assets, can be a long and disruptive process that locks-up people's wealth for months or even years and has knock-on effects throughout the economy.

Assisted resolutions

If some form of government intervention is considered, various forms are available.

Bank status unchanged

Lender of last resort (LOLR). Central banks usually only provide emergency liquidity assistance in potentially systemic situations and only for a limited period. Liquidity support to individual institutions can buy time to assess the underlying solvency position and to assess alternative resolution strategies⁸. Although LOLR is intended for illiquid but fundamentally solvent banks, in practice it may be difficult, in the time available, to distinguish between a liquidity and a solvency problem. Mechanisms should be put in place to ensure that such lending is time-limited and conditional, and that the central bank protects itself from incurring losses, in particular through taking collateral (see George (1994)

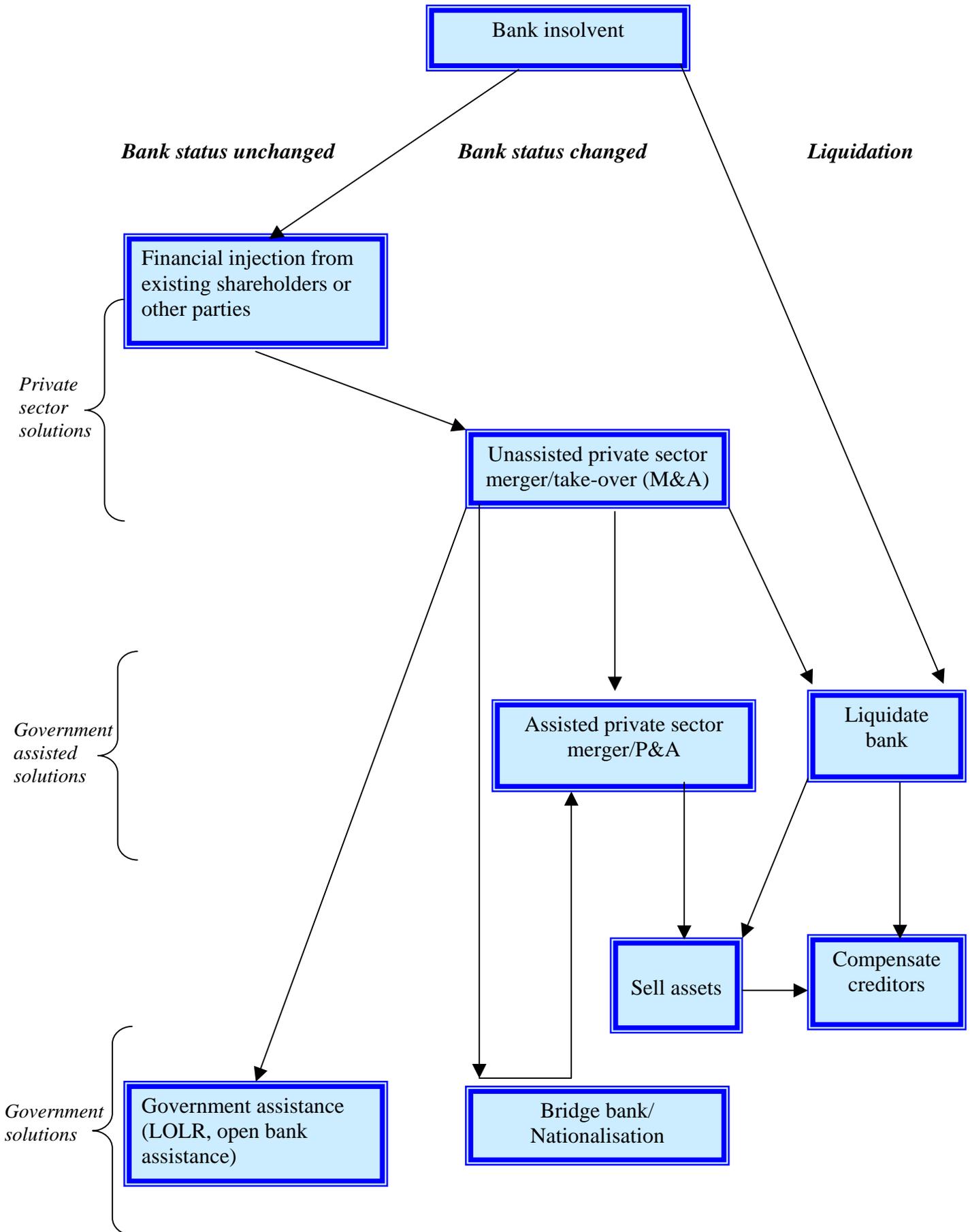
⁷ In the case of LTCM 14 of its largest creditors injected \$3.6bn. If LTCM had been allowed to fail this would have automatically triggered the closeout of netting arrangements. The major creditors feared that an unwinding of LTCM's positions might have resulted in a marked decline in asset prices. This, in turn, may have resulted in losses for these counterparties (and others) that held similar positions.

⁸ Liquidity assistance discussed here refers to lending to individual institutions rather than in the Bagehot sense of lending to the banking system as a whole. For a review of the literature on LOLR see Freixas, Giannini, Hoggarth and Soussa (1999) and Wood (2000).

for the principles underlying the provision of LOLR in the UK).

Open bank assistance occurs when the government provides financial assistance to a distressed bank without taking the bank over or eliminating the current stockholders' position entirely. The assistance can be in the form of the provision of capital or through purchasing non-performing assets from the bank. This allows the operations of the bank to continue uninterrupted. However, there are potential weaknesses with open bank resolutions. Most important, if the bank's management is left in place, and the existing shareholders' investment protected, this will seriously increase moral hazard. Making government support conditional can reduce this problem, for example, through replacing management,

Diagram 1:
Decision tree in crisis resolution



eliminating or downgrading existing shareholders' interests, or mandating an infusion of private sector capital. Open bank assistance has often required repeated capital injections before problems have been solved, resulting in large fiscal costs of resolution.

Bank status changed

Resolution of a bank failure often involves an *assisted merger or acquisition*. The transaction can be completed with another bank or, if permitted by law, another type of institution. A merger provides business continuity for both borrowers and depositors. It can be structured in many different ways, depending on the size and complexity of the distressed bank, the funding constraints of the resolution authority, and the amount of time until failure. Banks can also be split up, with the deposits, branches and assets sold off separately.

Assisted mergers are sometimes accomplished using purchase and assumption transactions (P&A). In an assisted P&A the acquirer *purchases* the assets and *assumes* the liabilities, in whole or part, of the failed bank, with the resolution authority compensating for the difference. Here, existing shareholders lose all of their investments. Uninsured creditors, too, may lose part of their investment if the P&A is only partial.

Bridge banks are a form of *temporary* government ownership. A number of industrialised countries with systemic crises, such as Finland and Sweden, have assumed temporary ownership of troubled large banks, to permit restructuring and subsequent sale to a private institution. Bridge banks offer a holding period so that a final resolution strategy can be effected. While the government can maintain the business operation of the bank, the set time period forces the resolution authority to focus on cleaning up the bank's balance sheet in preparation for selling it⁹.

Outright government ownership (where allowed) has typically occurred when a very large bank fails. The government authorities take over the bank by nationalising it, usually eliminating the stockholders' interest but protecting depositors and other creditors.

⁹ To limit moral hazard Mayes, Halme and Liuksila (2001) suggest that the government should impose the same losses on shareholders and uninsured creditors that they would have faced had the bank been immediately liquidated. Such a scheme, however, could still induce contagion. As banks with large deposits at the failed bank may face substantial losses, it may result in a disruption to financial markets and payments system more generally and it could trigger creditor runs at other banks.

One problem with outright nationalisation, however, is that government managers do not have the same incentives as private bank managers. In market economies, private sector banks are essential for efficiently allocating credit. Evidence suggests that countries with higher shares of state-owned banks tend, on average, to have a higher share of non-performing loans and higher operating costs (Goldstein and Turner (1996))¹⁰.

Estimating the loss in a distressed bank is a key step in a bank resolution. One technique used to determine whether it is better to liquidate a bank or keep it alive with some official assistance, is to estimate the liquidation value of the bank's assets, the total value of the insured liability holders' claims and the related administrative expenses involved. These costs of liquidation can then be compared to the subsidy required to assist in a takeover or a P&A by another bank, to determine the 'least cost' solution. The higher the value of the bank as a going concern relative to its break up value, the greater the case for providing official support rather than liquidating the bank. But if a large part of the bank's liabilities are uninsured, liquidation might be cheaper, at least from the viewpoint of the deposit insurer.

However, such cost comparisons only consider the *direct* financial costs of different resolution strategies to the deposit insurer. This calculation may understate the cost of liquidation in systemic crises, as it ignores any knock-on effects on the rest of the financial system. On the other hand, the cost of official support to the economy may be understated to the extent that bank restructuring protects the investments of uninsured depositors and other creditors and thus potentially increases moral hazard¹¹.

It is particularly important that the way a current crisis is resolved should not make banks, and their creditors, raise their estimate of the chance of bail-out in future crises. That would make future crises more frequent. Furthermore, the calculation of benefits and costs should allow for the fact that any budgetary costs are financed, sooner or later, from distortionary taxation.

¹⁰ But causation here could also run in the opposite direction.

¹¹ This risk of moral hazard can be eliminated by forcing uninsured depositors and other creditors to take the same "haircut" in an assisted sale as they would in a liquidation.

**Table 1[031]:
Alternative resolution strategies for failed banks: who bears the losses?**

	Shareholders (lose money)	Managers (lose job)	Creditors (lose money)	Employees (lose jobs)
<u>Bank status unchanged</u>				
Shareholders capital injection	No	No	No	No
Government injection ^(a)	Probably, partly	Probably	Possibly, partly	Probably
<u>Bank status changed</u>				
Merger and acquisition ^(b)	Probably, partly	Possibly	Possibly, partly	Possibly
Purchase and assumption ^(b)	Yes	Possibly	Yes if P&A partial	Possibly
Nationalisation/bridge bank ^(c)	Yes, partly	Probably	Possibly	No
<u>Liquidation</u>	Yes	Yes	Yes, uninsured	Yes

(a) Government injection is usually conditional on changes in senior management; some losses to shareholders and restructuring often results in job losses. It may also be preceded by financial restructuring whereby uninsured creditors accept some losses.

(b) A private sector M&A would typically replace managers if there are large business overlaps between the acquirer and the acquired. A write-down of existing shareholders' capital is likely beforehand and there may be some losses to uninsured creditors. In a P&A, existing shareholders will be wiped out and uninsured creditors will make losses if the acquirer assumes only some of the original banks' liabilities. Mergers often result in the consolidation of bank operations that result in staff reductions.

(c) Nationalisation usually wipes out the stockholders, however there are cases where stockholders are left with a subordinated residual claim.

Type of shock and resolution technique

The policy options available in a banking crisis are sensitive to the type and size of shock affecting the financial system, in particular whether failures are thought systemic.

If the situation is non-systemic, the focus of the resolution is on the individual failed bank's balance sheet. In this case the failed bank will either be merged with a healthy bank or liquidated. In a systemic situation, however, the immediate aim of the authorities is usually to restore financial stability of the system as a whole, restore public confidence and avoid bank runs. Here guarantees are likely to be given to liability holders at the failed bank(s), and perhaps to the financial system as a whole to avoid or reduce panic. So the aim is first to stabilise the liabilities of the banking system, before restructuring the assets of the failing banks.

Systemic crises can be analysed on two dimensions: (i) the breadth of the shock that hits the financial system (for example, is the impact of the initial shock confined to one or two banks only or does it affect many banks?); and (ii) the extent to which the initial bank failure(s) then affects the rest of the financial system. Such contagion or spillover effects could reduce the

value of other banks' assets through direct exposures to the failed bank or indirectly through the impact of the failing bank's reaction to the shock, for example, through depressing the price of marketable assets held by other banks. Also, on the liability side, an initial bank failure could trigger a withdrawal of deposits from other banks thought to face problems similar to the failed bank.

A stylised representation of these two dimensions is shown in Diagram 2.

Quadrant A consists of an idiosyncratic shock to one bank where the contagion effects for the system are thought to be small, such as the failure of a small or medium-sized bank because of management failure or fraud (eg Barings). Quadrant B shows where there are common shocks hitting a number of banks, but where the spillover effects are likely to be small. This would apply when a group of banks have limited interlinkages with the rest of the financial system, such as a specific shock to a region (New England in the early 1990s) or sector (the US savings and loans crisis in the 1980s). Quadrant C shows where the shock is specific but the linkages are thought to be strong. This would normally involve a so-called large complex financial institution (LCFI). Quadrant D depicts a situation where several banks suffer a common shock that could affect the

whole system. There is of course a continuum between these polar cases. If the region or sector is large enough then B and D would merge, as would C and D if one bank dominated the financial system.

If an idiosyncratic shock causes the failure of a small or medium-sized bank – quadrant A – the policy response itself, or the bank's reaction to the policy action, should have a minimal direct short-term impact on the rest of the financial system. Its borrowers, for example, should be able to switch to other lenders. Other similar banks thought to be weak would lose deposits but there would be a flight to quality *within* the financial system rather than a reduction in the aggregate deposits of the system. The picture changes if one very large bank fails (quadrant C), or a number of banks fail at the same time (quadrant D). If the LCFI failure is due to a purely specific factor, such as fraud, the systemic threat will depend on the size and type of direct linkages that the failed bank has with the rest of the financial system. But a more general shock could threaten unconnected banks.

In case C – the failure of one large bank – the focus is to maintain the activities of the problem bank or, failing this, to unwind it in an orderly fashion, so as to limit the impact on other financial institutions and markets¹².

In case D – a system-wide crisis – the key immediate aim of authorities is usually to stabilise the financial system as a whole (at minimum fiscal and moral hazard cost) and only then to focus on restructuring the failed banks. Most recent systemic crises have typically been caused by an adverse macroeconomic shock weakening the whole financial system, rather than resulting from the impact of contagion following the failure of just one individual bank (see Borio (2003)).

This has restricted the available policy options. In a systemic crisis, no well-capitalised domestic private banks may be found to buy the failed banks, leaving takeovers by foreign banks or the government as the only option. In recent systemic crises, some countries have relaxed rules on foreign entry to allow takeovers by foreign banks – such as in Finland and Mexico – while others have relied more on government ownership. For example, following the banking crisis in Norway, and more recently in South Korea, the

government became owner of more than half of the banking system.

It may also be more difficult to penalise some stakeholders. In principle, existing shareholders' capital can, and should, still be written down during system-wide crises. However, evaluating the underlying value of impaired assets may be harder than during normal market conditions. Estimates of cash flows, interest rates and underlying business conditions will be uncertain, as will the value of collateral. This may lead to an understatement of losses, thus imposing costs on taxpayers rather than on existing shareholders. Such understatement occurred recently in Mexico and Indonesia.

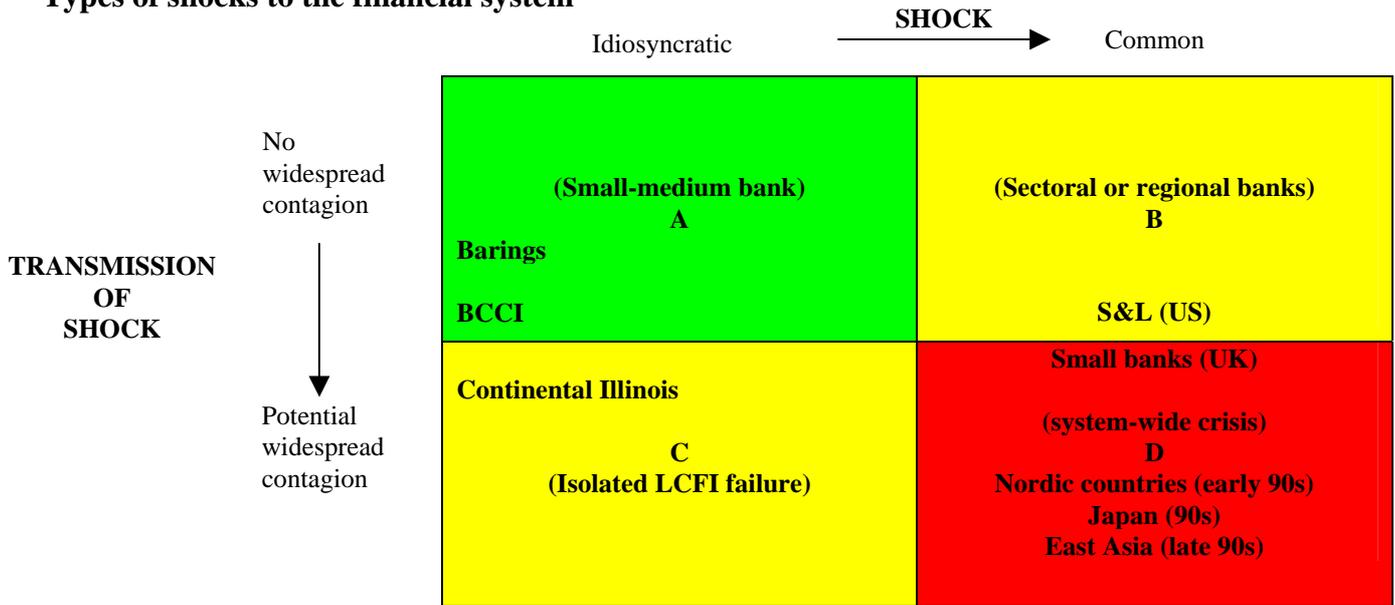
With a non-systemic bank failure, the existing safety net will apply, so only insured depositors will be protected and access to central bank finance is on normal terms. But in extensive crises, imposing losses on uninsured depositors or other creditors could exacerbate the liquidity crisis. Often the central bank provides emergency liquidity and the government may provide a temporary blanket government guarantees to depositors and other creditors to maintain confidence. Liquidations have rarely been used immediately in system-wide crises because of the enhanced risk of bank runs. However, in highly dollarised banking systems, LOLR is limited by the level of international reserves and offering guarantees to holders of foreign currency deposits may not be credible. More generally, the credibility of a blanket guarantee may be undermined if the government has a large debt burden¹³.

Often a system-wide banking crisis is accompanied by a currency crisis. This may increase banking system losses if banks, or their customers, have large net foreign currency exposures. If the government assumes banks' bad debts, the currency crisis could deepen further, opening up a vicious circle that appears to have characterised many of the difficulties recently faced in the east Asian crisis. In a currency crisis the authorities may respond by *increasing* interest rates to defend the exchange rate, rather than by *reducing* rates to help alleviate pressure on the banking system.

¹² In the United States, for example, the FDIC would probably set up a bridge bank immediately following the failure of a (deposit-taking) LCFI (see Bovenzi (2002)).

¹³ See Hoelscher and Quintyn (2003) for a discussion of resolution policies in economies with highly dollarised banking systems and large government debt burdens.

**Diagram 2:
Types of shocks to the financial system**



Evidence on crisis resolution

Short run impact

Based on responses to a questionnaire, the OECD (2002a) recently compared the techniques and practices used in member countries faced with large bank failures. In addressing problems, the central bank or government agency typically intervened soon after the onset of the crisis to supply liquidity. In most cases this helped to avert a panic by liability holders. Most governments protected depositors, in whole or part, up to the statutory minimum. Liquidations were used only occasionally and typically only for smaller institutions or where only a small part of the banking system was impaired. When large commercial banks have been in trouble, problems have usually been resolved through mergers and some mix of government capital injection and increased government control. Existing shareholders' capital has been written down¹⁴. In most countries, government ownership only lasts for a short period until a private buyer is found. But after some episodes, such as in Norway, banks remained nationalised for years.

In most systemic banking crises during the 1990s, the central bank has provided liquidity support to problem banks, to offset withdrawals by depositors and other creditors. Central banks have often made losses on this lending for the banks that turned out to be insolvent. Blanket guarantees to depositors and other creditors

have also been provided, albeit sometimes temporarily. Confidence in the banking system has usually revived quickly. However, in the more recent Argentinian crisis (2001-2002) a blanket guarantee to liability holders was not given. Such guarantees would not have been credible given that the source of the crisis was the unsustainability of the fiscal position. Instead, to prevent bank runs, a temporary deposit freeze was imposed.

In a study of the recent crises in east Asia, Lindgren *et al* (1999) found that the announcement of temporary blanket guarantees to all depositors and other creditors succeeded in stopping runs by domestic depositors although not in securing rollover of foreign liabilities. De Luna-Martinez (2000) found no cases of depositor bank runs during the Korean and Mexican crises once blanket guarantees were provided to depositors and other creditors, and central bank liquidity was provided for a short period. So blanket guarantees, usually provided in systemic crises, could have stopped banking system runs. But an alternative view is that broad guarantees were not needed, and depositors would in any case have simply shifted from banks seen as weak to strong ones. At first blush, the recent Indonesian situation appears to provide evidence for the first interpretation. It was only after its central bank shifted from a limited to a full guarantee that liquidity runs

¹⁴ In some countries, shareholders have been left with nominal amounts because of legal restrictions on full write downs or to avoid costly legal challenges by existing shareholders.

Table 2[027]:**Liquidity support, depositor guarantees, fiscal costs and the output losses of banking resolution in thirty three systemic banking crises 1977-2002^(a)**

	Number of crises	Length of crisis (years), average	Non-performing loans (per cent of total loans) ^(b) , average	Bank credit/annual GDP (per cent) ^(c) , average	GNP per head (US\$ 000s, PPP basis) at the start of the crisis, average	Cumulative fiscal costs of banking resolution (per cent of GDP) ^(d) , average	Output losses 1 ^(e) (per cent of GDP), median	Output losses 2 ^(e) (per cent of GDP), median
All countries	33	4.3	26.7	44.2	6.6	15.0	7.1	23.1
LOLR (open ended)^(f)								
– Yes	21	4.8	31.1	47.1	6.7	17.3	13.9	37.0
– No	12	3.4	19.3	39.1	6.4	10.9	3.8	9.1
Blanket deposit guarantee^(f)								
– Yes	22	4.3	29.3	47.8	7.9	16.6	9.8	28.7
– No	11	4.3	17.3	37.0	4.0	11.8	5.0	15.7
Banking crisis alone	10	4.6	23.7	44.9	7.3	7.8	2.4	15.7
Banking and currency crisis^(g) of which:	23	4.2	28.2	43.9	6.3	17.4	11.6	32.2
– with LOLR	16	4.5	32.9	45.1	5.9	18.9	17.0	43.9
– without LOLR	7	3.4	17.5	41.3	7.3	14.1	4.8	13.2
of which:								
– with blanket deposit guarantee	16	3.9	29.7	46.9	7.5	19.4	17.0	37.2
– without blanket deposit guarantee	7	4.9	19.5	37.1	3.6	12.8	4.8	24.7

Sources: Caprio and Klingebiel (2003), Hoelscher and Quintyn (2003), Hoggarth and Saporta (2001), Honohan and Klingebiel (2003), OECD (2002), IMF, World Bank and Bank calculations.

(a) A systemic crisis is defined as when all, or nearly all, the capital in the banking system is eroded. The crises are Finland (1991–93), Japan (1992–), Norway (1988–92), South Korea (1997–2000), Spain (1977–85), Sweden (1991), Argentina (1980–82), Argentina (1995), Brazil (1994–96), Bulgaria (1996–97), Chile (1981–83), Colombia (1982–87), Côte d'Ivoire (1998–91), Czech Republic (1989–91), Ecuador (1996–2001), Ghana (1982–89), Hungary (1991–95), Indonesia (1997–), Malaysia (1997–2000), Mexico (1994–95), Paraguay (1995–99), Philippines (1981–87), Philippines (1998–2000), Poland (1992–95), Senegal (1988–91), Slovenia (1992–94), Sri Lanka (1989–93), Thailand (1983–87), Thailand (1997–2000), Turkey (1982–85), Turkey (2000–), Uruguay (1981–84), Venezuela (1994–95).

(b) Estimated at peak. Data available for 19 countries only. Comparisons should be treated with caution since measures are dependent on country specific definition of non-performing loans and often non-performing loans are under-recorded.

(c) At the beginning of the crisis. Credit to the private sector from deposit money banks (IFS code 22d) as a share of annual nominal GDP (IFS code 99b).

(d) Bank recapitalisation, government payouts to liability holders and public sector purchases of non-performing loans.

(e) Output losses 1 is the cumulative deviation in the *growth* of output during the crisis period from its pre-crisis ten-year trend. Crisis ends when GDP growth returns to pre-crisis trend or if not occurred estimated up until 2002. Output losses 2 is the cumulative deviation in the *level* of output during the crisis from its ten-year pre-crisis trend. Crisis end based on qualitative judgement of country experts, see Hoggarth and Saporta (2001). Data exclude Côte d'Ivoire. Because of data limitations, a three-year and six-year pre-crisis trend was used for Czech Republic and Slovenia respectively.

(f) Open-ended LOLR is where central bank liquidity support is given for more than one year that is greater than the aggregate capital of the banking system. Blanket government guarantee is either explicit or where state banks account for 75% or more of banking system assets.

(g) A currency crisis is defined, as in Frankel and Rose (1996), as a nominal depreciation in the domestic currency (against the US dollar) of 25% combined with a 10% increase in the rate of depreciation in any year of the banking crisis period. The latter condition is designed to exclude from currency crises high inflation countries with large *trend* rates of depreciation.

were stemmed¹⁵. However, Goldstein (2000) argues that a limited deposit insurance scheme could have avoided a bank run had the public been convinced at

the time that all, not just a few, of the system's insolvent banks were being closed. More generally, Demirgüç-Kunt, Detragiache and Gupta (2000) found, in a sample of 36 developed and emerging-country banking crises, that at the outset of crises, deposits in the banking system *as a whole* did not decline. Direct cross-country evidence on official support suggests that open-ended liquidity support and blanket

¹⁵ According to Lindgren *et al* (1999) the run occurred because depositors thought they would only receive limited protection (up to the equivalent of US\$2,000) as was announced for the first round of 16 banks that were initially liquidated in November 1997.

guarantees have been associated with higher fiscal costs of crisis resolution (Table 2)¹⁶. However, this does not necessarily imply causation. Fiscal costs are likely to be higher, the larger the adverse shock to the banking system. But in the face of such a potential systemic threat it is more likely that the authorities would also provide liquidity support and guarantees to liability holders. Yet fiscal costs still appear higher after allowing for quantifiable proxies for the size of the shock to the banking system. Honohan and Klingebiel (2003) find that, after controlling for other factors that are likely to impact on resolution costs in a sample of 40 developed country and emerging market crises, open-ended liquidity support and blanket guarantees increase the direct fiscal costs of crisis resolution¹⁷.

But any fiscal outlays arising from widening the safety net need to be weighed against the *potential* benefits to the economy as a whole from avoiding more widespread bank failures. For example, in the United States' banking crisis in the early 1930s, the absence of depositor guarantees and liquidity support kept the fiscal costs low, but the adverse consequences to the broader economy were severe with output falling by some 30% from peak to trough.

Charts 1 and 2 suggest that controlling for the importance of bank intermediation in the economy (measured by bank credit/GDP), open-ended liquidity support is associated with *larger* declines in output during a banking crisis¹⁸. This still appears true after allowing for other factors that may affect output losses such as whether a currency crisis also occurs (Table 3 equation 1). But there is no evidence, either positive or negative, of association between deposit guarantees and the output losses of crises (Table 3 equation 2 and Charts 3 and 4).

Bordo *et al* (2001) also found, in a sample of 29 countries over the 1973–97 period, that banking crises were associated with much bigger output losses when open-ended liquidity support was provided (but blanket depositor guarantees had no effect either positive or negative). They argue that the provision of open-ended liquidity support may testify to some countries' reluctance to allow banks to fail. Support was in some cases given to insolvent banks, not just those that were fundamentally sound but illiquid. This may have increased moral hazard, enabled some banks to gamble for resurrection, and facilitated continuing financing for loss-making borrowers.

¹⁶ Open-ended liquidity support is defined as liquidity support provided for more than twelve months which is greater than the aggregate capital of the financial system. Blanket guarantees are either explicit government guarantees or implicit ones proxied by where state banks account for more than 75% of the banking system's assets, source Honohan and Klingebiel (2003).

¹⁷ Fiscal costs reflect the various direct types of expenditure involved in rehabilitating the financial system, including liquidity support, purchases of non-performing loans, bank recapitalisation and payments made to depositors and other creditors, either implicitly or explicitly through government-backed deposit insurance schemes. These estimates may not be strictly comparable across countries. They also exclude, for example, any widening in bank spreads faced by depositors and borrowers and more generally any impact on inflation and output.

¹⁸ Output losses are measured as either the sum of growth rates (output losses 1) or output levels (output losses 2) during the banking crisis from the pre-crisis ten-year trend. For a discussion of the issues in measuring the output costs of banking crises see Hoggarth and Saporta (2001).

**Table 3[032]:
Impact of liquidity support and government guarantees on output losses**

1. YLOSSES1^(a)

	A. Liquidity support (LOLR)		B. Blanket guarantee (GUAR)	
		(1)		(2)
LOLR^(b)	4.5	(1.2)		
GUAR^(c)			0.7	(0.2)
CRGDP^(d)	0.34	(5.6)	0.35	(5.6)
CUR^(e)	9.4	(2.3)	10.5	(2.6)
R²	0.56		0.54	
DW	2.0		1.9	
Number of observations	32		32	

2. YLOSSES2^(f)

	A. Liquidity support (LOLR)		B. Blanket guarantee (GUAR)	
		(1)		(2)
LOLR^(b)	28.2	(1.9)		
GUAR^(c)			-12.4	(0.8)
CRGDP^(d)	0.99	(4.3)	1.1	(4.5)
R²	0.42		0.36	
DW	2.7		2.4	
Number of observations	32		32	

Sources: Honohan and Klingebiel (2003), IMF and Bank calculations.

t-statistics in parentheses.

(a) YLOSSES1: Cumulative deviation in the *growth* of output during the crisis period from its ten-year pre-crisis trend.

(b) LOLR: one where liquidity support provided for more than twelve months that is greater than the aggregate capital of the banking system, 0 otherwise.

(c) GUAR: one where explicit government guarantee or implicit one (where state banks account for 75% or more of banking system assets), 0 otherwise.

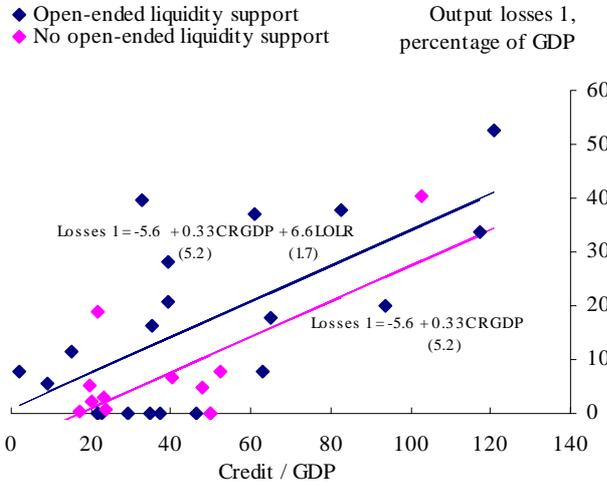
(d) CRGDP: Bank credit to the private sector/annual GDP (%) at the outset of the crisis.

(e) CUR: one where currency crisis, 0 otherwise. Currency crisis is a nominal depreciation (against the US dollar) of 25% combined with a 10% increase in the rate of depreciation in any year of the banking crisis period.

(f) YLOSSES2: Cumulative deviation in the *level* of output during the crisis period from its ten year pre-crisis trend.

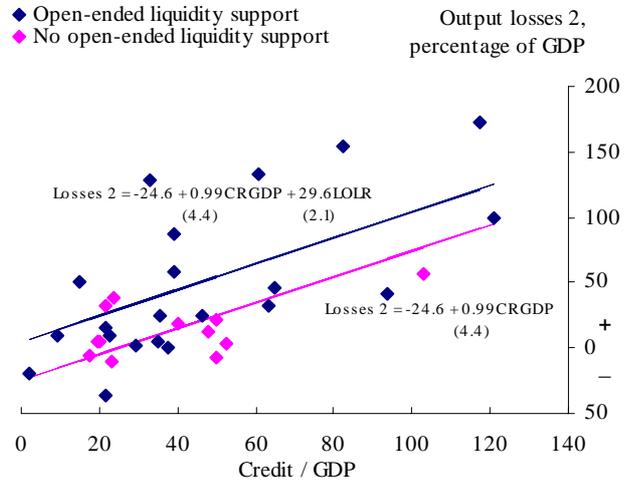
Types of official intervention and output losses during recent systemic banking crises 1977–2002

Chart 1[017]:
Output losses 1 and credit/GDP: liquidity support



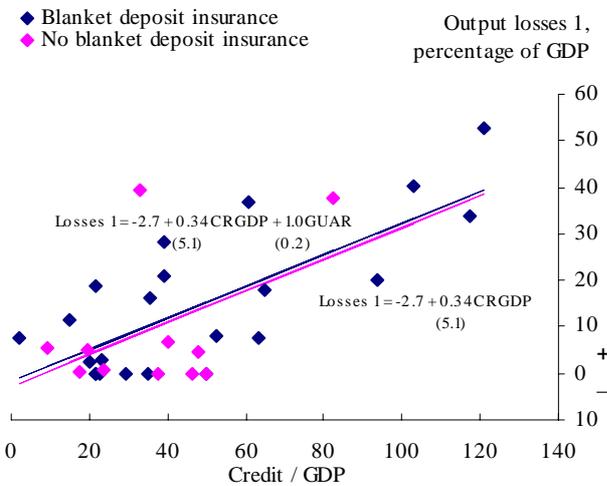
Sources: IMF, Honohan and Klingebiel (2003) and Bank calculations. t-statistics in parentheses

Chart 2[018]:
Output losses 2 and credit/GDP: liquidity support



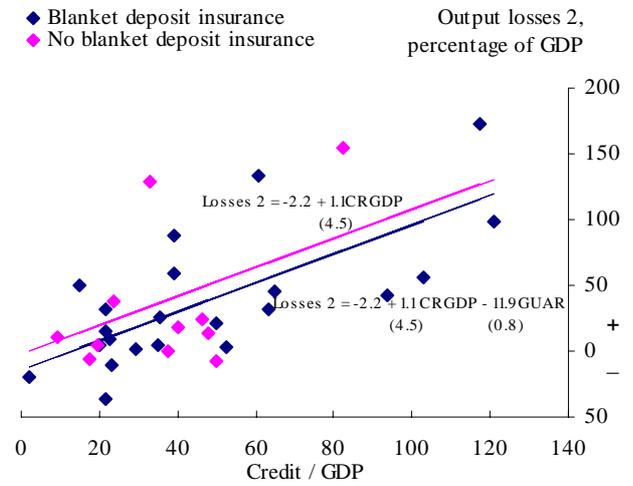
Sources: IMF, Honohan and Klingebiel (2003) and Bank calculations. t-statistics in parentheses

Chart 3[019]:
Output losses 1 and credit/GDP: blanket deposit insurance



Sources: IMF, Honohan and Klingebiel (2003) and Bank calculations. t-statistics in parentheses

Chart 4[020]:
Output losses 2 and credit/GDP: blanket deposit insurance



Sources: IMF, Honohan and Klingebiel (2003) and Bank calculations. t-statistics in parentheses

Longer run impact

Have crisis resolution strategies been effective in getting banks to reintermediate again, and to return to profitability after a crisis? In a sample of 24 systemic banking crises, Dziobek and Pazarbasioglu (1997) found that resolution measures were more successful in improving the banking system’s balance sheet (stock) positions than their profit (flow) performance. An injection of equity or swapping bonds for bad loans (financial restructuring) can improve balance sheets,

but improving profitability is harder, as it needs policies that include restructuring the financial and operating position of bank borrowers.

Demirgüç-Kunt, Detragiache and Gupta (2000) also find that real bank credit fell markedly in the first three years after crisis, despite some recovery in real output, as banks switched their portfolio into other assets. This highlights the difficulty of getting banks to intermediate again in the aftermath of a crisis, partly reflecting the persistence of low borrower credit worthiness and lack

of good collateral¹⁹. Some banks may also have switched their portfolio into more liquid and safer assets. In many cases, liquidity was needed to stem runs by foreign depositors, while government bonds helped banks with depleted capital to meet their minimum required capital ratios since these carried a lower regulatory risk weight than loans. In Indonesia, for example, at end-2002 loans still accounted for less than 30% of total banking system assets, while government recapitalisation bonds represented 45% of assets.

Caution is needed in interpreting credit data during crises²⁰. Nonetheless, in the aftermath of the most recent systemic crises, bank lending remained depressed for years (Charts 5–8). At the end of 2002, for example, real bank lending in Finland and Mexico was still 10% and 55% respectively below pre-crisis levels. Mexico's lack of creditor rights, and weak bankruptcy laws, have deterred its banks from lending. Interestingly, lending held up most in Norway and South Korea – two countries that initially used nationalisation as a resolution method. In most banking crises, profits, too, have remained negative for years (Charts 9–10).

Conclusion

As evidence from the Great Depression shows, banking crises can have a dramatic adverse impact on the economy, in the absence of intervention²¹. But keeping the fiscal costs low, and avoiding moral hazard in the future, are also prime factors in determining the appropriate scale and character of intervention.

With individual bank failures, the authorities usually first seek a private sector solution. Any losses are first passed to existing shareholders, managers and, in some cases, uninsured creditors; and not to taxpayers. Restructuring policies are transparent with only viable institutions kept open while unviable ones are liquidated.

In system-wide crises, however, policy options are more limited. Finding a domestic private sector solution is hard. So there has been more reliance on foreign takeovers and government intervention. *Temporary* government assistance is often preferred to liquidation, to avoid selling bank assets at “fire sale” prices. Also, because of concerns of widespread liquidity runs, blanket guarantees are usually given early to *all* bank creditors.

In most recent systemic crises the central bank or government agency has intervened early on, to provide liquidity to failing banks and blanket guarantees to depositors. In nearly all cases investor panics have been quelled but at a cost to the budget and from greater moral hazard in the future. It seems that open-ended liquidity support has prolonged banking crises, thus increasing not reducing the output costs to the economy. Restructuring has usually occurred through mergers, often government assisted, and some government injections of capital or increase in control. Shareholders have usually lost their capital and senior managers their jobs, but creditors, including uninsured ones, have rarely made losses. Liquidations have been used only occasionally, and typically for smaller institutions.

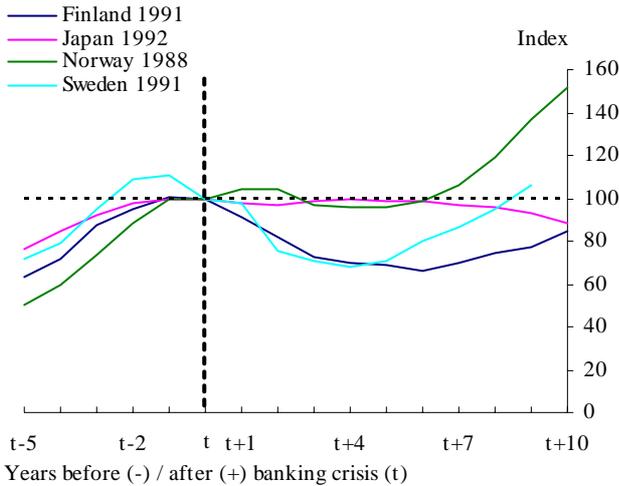
In recent systemic crises, resolution measures have been more successful in improving banks' balance sheet positions than in restoring their profits or credit to the private sector. In many cases, bank lending remained subdued for years after a banking crisis. However banking crises are handled, the adverse effects on the economy are likely to be large. This indicates that ensuring that the financial system is robust in the face of even substantial shocks should be a key objective of financial stability policy.

¹⁹ There is a difficult identification problem of knowing the extent to which the decline in the amount of credit and its share of total assets reflects either (i) a desire for banks to reduce lending, (ii) a constraint, such as insufficient capital, on the ability of banks to lend, or (iii) a fall in loan demand by banks' customers.

²⁰ One problem in interpretation is that credit data include write-offs of bad loans.

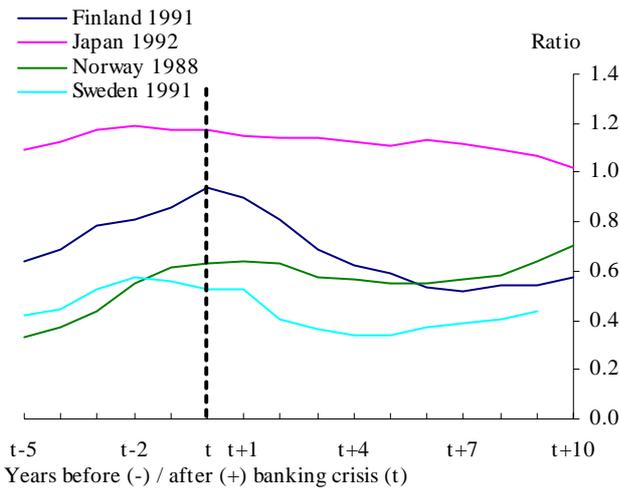
²¹ See, for example, Friedman and Schwartz (1963).

Chart 5[021]:
Developed countries: Early 1990s
Real bank credit (t = 100)



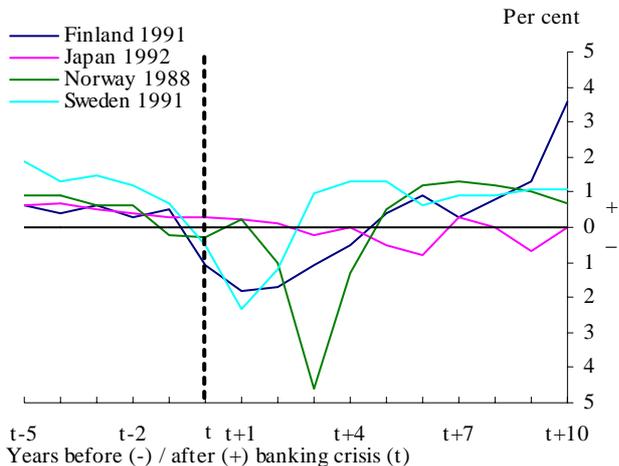
Sources: IMF and Thomson Financial Datastream.

Chart 7[022]:
Developed countries: Early 1990s
Bank credit/GDP ratio



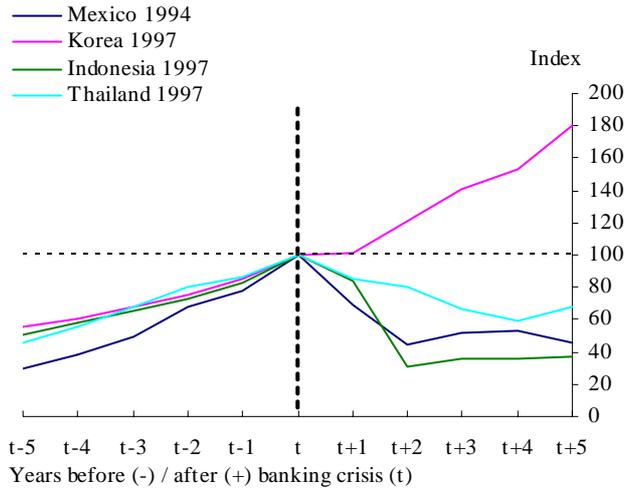
Sources IMF and Thomson Financial Datastream.

Chart 9[023]:
Developed countries: Early 1990s
Commercial banks' profits before tax –% of total assets



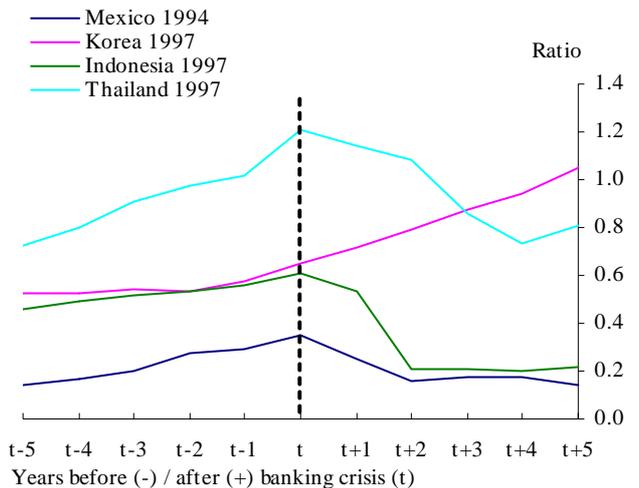
Sources: OECD and Drees and Pazarbasioglu (1998).

Chart 6[024]:
Emerging-market countries: Mid-late 1990s
Real bank credit (t = 100)



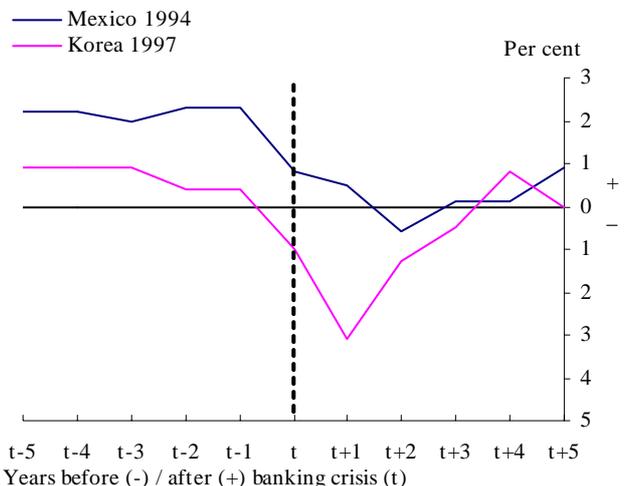
Sources: IMF and Thomson Financial Datastream.

Chart 8[025]:
Emerging-market countries: Mid-late 1990s
Bank credit/GDP ratio



Sources: IMF and Thomson Financial Datastream.

Chart 10[026]:
Emerging-market countries: Mid-late 1990s
Commercial banks' profits before tax –% of total assets



Source: OECD.

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