

Maintaining financial stability: Possible policy options

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Introduction

Instability in the financial system can have profound and long-lasting effects on the real economy. This means that there is an in principle case for public policy to react to events

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that pose a threat to the stability of the financial system. At the practical level, this raises three issues. First, how do policymakers assess the risks of financial instability? Second, what tools do policymakers have at their disposal? And third, how and when should these tools be used?

This note briefly addresses these issues. It argues that while the measurement of systemic risk is fundamentally difficult, it is not impossible. In particular, it argues that economies experiencing rapid credit growth, large increases in property prices and a construction (or investment) boom tend to be characterised by a higher than normal level of risk. In such circumstances, there may be a case for policymakers to use public commentary, supervisory instruments and/or monetary policy to contain these risks. Policymakers will find it easier to use these instruments if they have already conditioned the public to the view that both supervisory and monetary policies have a role to play in containing excesses in the financial system. In this respect, a flexible, rather than rigid, inflation-targeting regime is helpful, as would be a strengthening of the systemic risk aspect of bank supervision.

The views expressed are those of the author and should not be attributed to the Bank for International Settlements, BIS. Some of the ideas in this note are drawn from Borio, Furfine and Lowe (2001), "Procyclicality of the Financial System and Financial Stability: Issues and Policy Options", in *Marrying the Micro- and Macro-prudential Dimensions of Financial Stability*, BIS Papers, No 1.

A bubble?

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Banking system crises are usually preceded by a bubble in asset markets. The problem is that the bubble is only clearly identifiable after it has burst. We simply do not have the tools to make definitive ex ante judgements about whether a particular asset price has deviated substantially from its fundamental values. Our models are subject to too many assumptions and to many qualifications to provide definitive judgements.

One of difficulties is that bubbles typically don't occur out of thin air. Instead they are themselves the product of an improvement in economic fundamentals, and this improvement does justify an increase in asset prices. The difficulty is in telling how important and long lasting the change in the economic fundamentals is likely to be, and thus what effect it should have on asset prices. For example, economic deregulation or an improvement in technology might be expected to increase the fundamental value of particular assets, but the size of this increase is typically not well pinned down as it depends on expectations of future events over which opinions can reasonably differ. Notwithstanding this, history suggests that periods of above average growth tend to generate excess optimism about the future, and that this provides fertile ground for the development of bubbles in asset and credit markets. The difficulty is that the excess optimism is only confirmed ex post, and it is problematic for policymakers to argue that the private sector's expectations about the future are wrong.

A useful question to ask is whether current developments pose increased risks to the economy and the financial system.

Here, by risks I mean whether current developments increase the variance of possible future outcomes. In focussing on the variance on possible future outcomes, the need to make judgements about the appropriate level of asset prices is somewhat reduced.

Focusing on the variance of possible future outcomes is crucial to good policy making in a world of uncertainty.

Thus, rather than trying to directly answer the question of whether or not we have a bubble, a more useful question to ask is whether current developments pose increased risks to the economy and the financial system.

Focusing on the variance of possible future outcomes is crucial to good policy making in a world of uncertainty. For instance, often discussions of monetary policy focus as much on the various risks to activity and inflation



as they do on the central projections. Balancing these various risks can be as important in the policy-making process as ensuring that the point forecast for inflation is on target. The same type of thinking is relevant for financial stability. While policymakers need to have central projections about likely future movements in asset prices (and the implications of those movements for activity and inflation), they also need to worry about what happens if those central projections are wrong. In some cases, policy makers may wish to respond to developments that increase uncertainty about the future, even if those developments do not change the central projections. So a useful question to ask is whether current developments in asset and credit markets increase the range of possible future outcomes for the economy.

Again, unfortunately, there is no formal way of answering this question. But what we have seen over recent years is an increased analysis of macroprudential indicators and econometric studies of banking crises, with the aim of providing a greater understanding of financial vulnerabilities.

This work has been very useful from a number of respects, however to date it has provided few real insights for policymakers in industrialised countries. The econometric studies of banking crises are, on the whole, rather backward looking and the answers that they have provided largely just reinforce common sense (for instance a recession or very high real interest rates increase the probability of bank failures). Moreover, no one has found a way of turning macroprudential indicators into a reliable numerical measure of vulnerability that can play a useful role in the policy process, nor I suspect will they.


The study of financial crises and the experience of recent decades do, however, provide some useful lessons. One of the most important, is what I refer to as the existence of the “troublesome threesome”. And this threesome is:

- rapid increases in the ratio of credit to GDP;
- rapid increases in commercial property prices; and
- large increase in the ratio of construction (and perhaps) investments to GDP.

Time and time again the simultaneous occurrence of these three factors has sown the seeds for stresses in the financial system. Thus if one observes these three developments, then it is a reasonable conclusion that

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the range of possible outcomes for the economy has increased. While strong gains in assets prices, investment and debt *might* indicate a new era of strong sustainable growth, history also teaches us that they *might* also cause financial and macroeconomic instability. Although policymakers might not be prepared to say unequivocally that these developments constitute a bubble, they may be prepared to say that, given the historical experience, these developments change the balance of risks for the economy. If this is the case a policy response may be warranted.

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The reason that developments in property prices (and in particular commercial property prices) are crucial is that property often forms the collateral for the most risky forms of bank lending. That is not to say that equity and other asset prices don't also matter, for indeed they do. A crash in the equity markets can cause strains in payments systems and have macroeconomic effects that ultimately may harm the banking system. Banks may also be adversely affected by a fall in equity prices if equity is a major source of loan collateral. However in most banking systems, real estate has a special role as the major form of loan collateral, and crashes in real estate markets have been associated with most banking system problems in developed economies. So developments in real estate markets matter a lot to assessments of financial stability.

Policy responses

If policymakers are to respond to developments that pose a threat to the stability of the financial system, what degree of certainty is needed?

The answer depends upon at least two general factors:

- the nature of the policy instrument; and
- the nature of the policy framework, and the public's understanding of that framework.

The various policy instruments that can be changed through time in response to changes in system wide risk can be grouped under three broad headings: public commentary, regulatory and supervisory policies and monetary policy.

PUBLIC COMMENTARY

The easiest to deal with is public commentary. Here what I have in mind is the type of commentary that the Riksbank includes in its *Financial Stability Report* and



the type of warnings that you periodically see from central banks and supervisors about lending standards. The hurdle, in terms of the degree of certainty, for this type of policy response is relatively low. Public commentary

The main problem with the public commentary approach is that it may have little, or no, impact on private sector decisions.

does not directly impact on private sector decisions, with the private sector being free to ignore the comments of the central bank/supervisor. The main danger is that the reputation of the authorities will be harmed if it is perceived that they have made poor assessments. This danger, however, is probably relatively low provided that the authorities are not too strident in their views and that their assessments are well argued. The main problem with this general approach is that it may have little, or no, impact on private sector decisions.

REGULATORY AND SUPERVISORY POLICIES


The second type of policy response is to use regulatory or supervisory policies. For example, in a situation in which the authorities became concerned that current developments in credit and asset markets were leading to an increase in overall risk they might consider increasing regulatory capital ratios or required provisioning rates, or they may impose some form of loan-to-value rule on property lending. Such responses could be justified in terms of taking the heat out of the boom and providing an increased buffer in case things do go wrong.

The burden of proof for these types of policy responses should be quite high, but not so high that it can never be met. These responses involve the public sector directly

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interfering with private sector decisions in an effort to contain cyclical developments. If policymakers are to behave in this way, they need to be reasonable sure that the private sector decisions are delivering outcomes that are socially suboptimal. In general, this is a difficult, although not impossible, hurdle to jump.

One reason that the hurdle is currently so high is that the prevailing wisdom is that regulatory instruments should not be used in this way. At the moment, bank regulation is typically seen to be primarily about protecting depositors in individual institutions. While more general financial stability concerns are also important, they typically are not the most important consideration. An alternative framework for thinking about bank regulation is that it is primarily about protecting the macroeconomy from costs imposed by financial disturbances. Under this framework, one might see people taking more seriously the idea of linking regulatory instruments to macroeconomic developments. Conceivably



one might also see regulatory capital requirements linked to the size or importance of an institution, or to overall correlations between the riskiness of different institutions.

Whatever the merits of these ideas they would be difficult to implement and explain to the public, given the prevailing orthodoxy. The important point to stress here is that the way that people think about policy, and the way in which it is explained to the public, conditions the types of policy responses that are conceivable. It would be easier to move regulatory instruments in response to systemic risk if we thought about bank regulation slightly differently. This means that if regulatory policy really is a useful, but under-utilised, tool for dealing with systemic risk and credit booms, then policymakers should be trying to alter the current conception of the regulatory framework by discussing with the public the links between systemic risk and bank regulation.

The evolution in the public's understanding of inflation targeting has given inflation targeting regimes increased flexibility to deal with various shocks.

An analogy with monetary policy might be useful here. As inflation-targeting regimes have evolved, the public discussion of these regimes has changed; for instance there is now much less talk about rigid bands and penalties than there once was. To a large extent, this evolution in the public's understanding of inflation targeting has been promoted by the analysis and discussion provided by central banks themselves. Arguably, this has given inflation targeting regimes increased flexibility to deal with various shocks. The point to emphasis is that the evolution in the public's understanding of the inflation targeting framework has arguably altered the way that central banks respond to certain events. The same could be true with regulatory policy. By discussing more actively the possible links between bank regulation and systemic risk, the orthodox view may gradually evolve, ultimately lowering the hurdle for action.

MONETARY POLICY

The third option is to use monetary policy. One could envisage a central bank increasing interest rates in an effort to contain a credit boom and increases in property prices even if there was no immediate threat to goods and services price inflation. The rationale for doing so might be that by containing the financial imbalances, the central bank could reduce the probability of the extremely bad outcomes that are associated with financial instability.

The burden of proof for such a policy response is probably quite high. But again, the height of the hurdle is conditioned by the public's understanding of the



policy framework. If one has a rigid inflation target band and the policy rule is to adjust interest rates until the two-year inflation forecast is at the target, there is little room to move. In this type of regime the public expects the central bank's inflation forecast to be at the target and may well be intolerant of deviations from this policy rule.

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In contrast, in a more flexible inflation targeting regime the central bank is more likely to have room to manoeuvre, and correspondingly the hurdle for responding to financial stability concerns is somewhat lower (although still quite high). In a situation in which credit growth is rapid, but goods and services price inflation is low, this more flexible approach allows interest rates to be higher than would be justified by the short-term inflation outlook. In such a situation any criticism of the central bank for undershooting its inflation target is likely to be muted since, as argued above, the events that underlie the strong credit growth, also generate strong economic growth.

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The point to stress is that in a flexible inflation targeting regime the burden of proof for deviating, on financial stability grounds, from the interest rate that has the two-year inflation forecast at the target is not extremely high, provided that the deviation is not too large. The burden is lower still if the central bank has already communicated publicly a policy framework where the focus is on medium term price stability, and where monetary policy is seen to have a role in avoiding the build up of excesses in the financial system.

None of this is to say that the central bank can easily engage in *large* increases in interest rates, designed specifically to bring an end to a bubble. Such a policy is bound to cause political problems for the central bank, and may not even be justifiable on the basis of an evaluation of the balance of risks. If the policy is successful, and the bubble is burst, the economy will be labouring not only under the collapse of the bubble, but also under the lagged effect of the high interest rates. In this situation, interest rates would need to be reduced quickly. If this were not possible this type of policy would need to pass a very high hurdle.

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One final consideration that applies to all three forms of policy response is the potential creation of moral hazard. If it were to become widely believed that the authorities had adopted a regime in which policy instruments were adjusted

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creation of moral hazard raises the hurdle for action a little higher than would otherwise be the case. It suggests that supervisory instruments and monetary policy should be used to address the build-up of risk in a credit cycle only very occasionally. Making continuous adjustments to these instruments on financial stability grounds is unlikely to be desirable.

in a discretionary fashion based on their own assessments of financial system risk, the public might become less careful about their own risk assessments. This might ultimately make the financial system more risky. The possible

Final remarks

The liberalisation of financial systems and changes in monetary policy frameworks have increased the potential for financial instability.

and to generate costly financial instability. In today's liberalised environment waves of excess optimism can more easily generate large financial cycles than was the case in earlier decades. Addressing the problems created by these cycles poses a difficult, yet increasingly important, challenge for both central banks and supervisors.

The liberalisation of financial systems and changes in monetary policy frameworks over the past two decades have increased the potential for developments in the financial system to amplify swings in the real economy

The authorities need to think about how the financial system and the macroeconomy can be made more robust to cycles.

robust to these cycles. In this regard, the rules regarding bank capital, provisioning for bad loans, disclosure and collateral valuation deserve particular examination.

In designing policy responses, the authorities need to not only think about how they might react once financial excesses are identified, but also about how the financial system and the macroeconomy can be made more

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For example, in many countries prudential supervision is undertaken outside the monetary authority, and accounting and disclosure rules are set by still other policymakers. Further, not all these policymakers have financial instability as a

Finally, there is an important need for co-ordination amongst the various authorities. Typically, the instruments discussed above are not under the control of a single institu-



core objective, and where they do so, they have other objectives as well. This means that it is unlikely that any single authority is in the position to trade off the benefits and costs of all the various options. Thus without co-ordination there is a danger that appropriate policy responses will not be forthcoming, with each policymaker leaving it to others to respond. Such an outcome would clearly be undesirable.



Dealing with financial instability: The central bank's tool kit

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Introduction

This note identifies a dozen tools available to central banks for dealing with financial instability.

This note identifies a dozen tools available to central banks for dealing with financial instability. These tools are grouped into three categories: targeted actions, generalized actions, and informational tools. Targeted actions are aimed at individual institutions or small groups of institutions. Generalized tools have effects that work through the whole economy. Informational tools are based on the transfer of information: either collection of intelligence by the central bank or dissemination of information by the central bank in the form of public communication. Each individual tool is discussed in the next section.

We then consider issues of central bank credibility and public confidence. If the central bank wants to use moral suasion – a minimalist tool – how can it ensure that it will be effective? The key is credibility. If the central bank has several potentially conflicting objectives, how can it communicate the reasons for its actions? Here the keys are both credibility and transparency.

Finally, the last section takes a look at the use of the tools in practice. We examine twenty cases since 1965 in which central banks have used the dozen tools to deal with problems that had possible systemic implications. Which tools were used in each case? Which tools were most popular? Were the results satisfactory? Did credibility and public confidence hold up?

The central bank's tool kit

This section describes a dozen tools available to central banks for dealing with crises that have the potential to cause systemic disruptions. The list is probably



not exhaustive, but hopefully touches on the principal elements in the central bank's tool kit. The list is divided into three sections, corresponding to tools that are targeted at individual institutions, aimed at the market in general, and based on the transfer of information.

TARGETED TOOLS

These tools are aimed at dealing with individual institutions. If systemic problems are driven by a few important institutions, or if a generalized problem affects many individual institutions, targeted tools may be very helpful in containing the effects of the problems. A list of some of these targeted tools follows.

Targeted tools may be very helpful in containing the effects of the problems.

Bank supervision. Traditionally, bank supervision has been one of the main tasks under the purview of central banks. Today, however, in a large and increasing number of countries, the central bank is not the entity primarily responsible for bank supervision. Supervision is included in this survey, however, because in most jurisdictions central banks remain involved in supervisory issues, if not in direct supervision. Bank supervision is targeted at individual institutions, even though many of the concerns associated with supervision are systemic in nature. For example, one goal of supervision may be to avoid large-scale disruptions to the credit system. To accomplish that goal, however, supervisory agencies take a detailed look at particular institutions that may trigger or exacerbate such an event.

Legal action. In many cases, it is difficult to determine the exact boundary between bank supervision and legal action. Supervisory agencies, including some central banks, have a series of enforcement actions at their disposal, many of them involving judicial proceedings. For the present purposes, legal action is considered as an extreme measure in which an institution is brought by the supervisory authority before the judicial system.

Discount window lending. The primary purpose of discount window lending and similar facilities is to deal with short-term liquidity problems. For various reasons, a bank or other financial institution may find itself hard-pressed to finance its ongoing operations, and the central bank may step in with an offer of discount window credit. In general, this action follows an assessment of the borrowing institution by the central bank, in which the bank is deemed to be solvent and

therefore capable of repaying the loan. Improper credit controls in discount window lending may create a moral hazard problem.

Recapitalization of institution. Recapitalization is a much more extreme measure than discount window lending. In this case, the institution in need of financing is assessed to be either insolvent or so poorly capitalized that it cannot sustain itself without an infusion of external capital. Clearly, moral hazard is more of a problem in this case, and as a consequence, recapitalization is a tool that tends to be used very sparingly in actual practice.

Deposit insurance. Deposit insurance is generally not a function of the central bank per se. It is included here, however, for two reasons. First, when the central bank is the supervisory authority, it must act very closely with the deposit insurer in dealing with financial crises. Second, even if the central bank is not the supervisor, it may rely explicitly or implicitly on deposit insurance as a backstop in case of an unavoidable crisis. As in the cases of discount lending and recapitalization, there are well-known moral hazard issues with deposit insurance.

GENERALIZED TOOLS

Generalized tools may be extremely helpful when quick action is needed.

In contrast to the targeted tools, generalized tools have wide-ranging effects across the financial markets. They may not be useful in dealing with a problem affecting only a few institutions, but may be extremely helpful when quick action is needed with regard to many institutions at once.

Open market operation. Through open market operations, the central bank can inject liquidity into financial markets, particular at the short end of the maturity spectrum. The effects of such injections can eventually be felt in most sectors of the financial markets, and even in the real economy. However, it is almost impossible for the central bank to direct such effects at particular targets.

Foreign exchange intervention. Intervention in the foreign exchange markets, like open market operations, is designed to affect markets, not institutions. In fact, the effects of foreign exchange intervention can be so diffuse that it has been questioned whether they are material at all. This is particularly the case with sterilized intervention, in which domestic market operations are undertaken to undo effects on the domestic economy. Nevertheless, it is possible that foreign exchange



intervention by the central bank may minimize the consequences of short-term disruptions in the market.

Payments system action. Banks and other financial institutions are not only credit intermediaries, but also have a key role in the payments system. A disruption to any institution that plays a large role in payments, or to many small institutions, has the potential to paralyze the system, with disastrous consequences. The central bank may deal with such disruptions by monitoring the system, trying to ease bottlenecks, and by managing large payments crises directly.


INFORMATIONAL TOOLS

These tools can be grouped according to the direction of the flow of information. In some cases, information flows to the central bank, helping the bank to deal with problem situations. In other cases, information is shared among agencies that have the capacity to deal with a crisis. Finally, the central bank can help disseminate information that may ease market pressures or lead market participants to take welfare-enhancing steps.

Information may ease market pressures or lead market participants to take welfare-enhancing steps.

Market monitoring. To perform its various tasks, the central bank must monitor markets. Indeed, it must collect market intelligence even in markets in which it does not have a direct supervisory or regulatory mandate. This principle applies whether or not the central bank has explicit supervisory authority over the banking system. This type of market monitoring can provide early warnings of systemic problems, can generate useful information when the central bank needs to take specific steps to deal with a crisis, and can help determine whether a crisis has subsided once actions are taken. Market monitoring may focus, for example, on the performance of individual institutions, on the performance of a sector as a whole, and on movements in prices in various financial markets.

Interagency cooperation. Cooperation among official agencies is of the utmost importance in the resolution of financial crises. A central bank may need to collaborate with a deposit insurer, with the bank supervisory authority (if different from the central bank), or with other financial regulators such as those overseeing the securities markets. In some cases, cooperation between national and local authorities is called for.



International cooperation. A similar principle applies to collaboration between central banks across national boundaries. In a world of global institutions and markets, it is frequently impossible for a central bank to deal single-handedly with a large systemic problem. Spillovers into other national markets are not uncommon, necessitating international cooperation among central banks.

Public communication. In some cases, a mere statement from the central bank can be a very powerful tool for dealing with a crisis. A statement of fact can help alleviate fears in the marketplace, especially fears fueled by incorrect or incomplete information. All crisis management involves an element of public relations in this sense. More challenging are cases in which the central bank urges private-sector institutions to follow a course of action that may have been overlooked or more typically is not pursued spontaneously for lack of confidence in the reactions of other institutions, including the central bank. This type of public exhortation is sometimes known as “jaw-boning” or “moral suasion” by the central bank. Public communication is generally a low-cost strategy. The principal risk is a weakening of credibility if information turns out to be inaccurate or if the central bank is forced to back away from a suggested strategy.

Credibility and public confidence

A lack of credibility or a loss in public confidence can easily undermine a central bank’s best efforts to lead a financial system through a crisis. This section discusses briefly why credibility and public confidence are important in dealing with crises and how the central bank can achieve them.

CREDIBILITY AND MORAL SUASION

To obtain credibility the central bank must have a distinguished track record and must be in a position to make authoritative public announcements in times of stress.

Credibility is essential to the central bank in all of its functions, but it is particularly necessary when the central bank tries to convince private-sector institutions to do what they would not have done of their accord. “Moral suasion” or “jaw-boning” can be very powerful and cost-effective tools for the central bank, but they have very little likelihood of success if they are not backed by central bank credibility. In most cases, the actions proposed by the central bank to the private sector do not come as a surprise to market participants. The value of central bank suasion is that it provides greater assurance to the private institutions that they will not individually go out



on a limb: the “system” will go along with them. In this sense, they have less to fear from predatory competitors and from adverse future actions by the central bank. It is clear, however, that if the central bank lacks credibility, it will be impossible to get the necessary core of the private sector to go along with a plan. To obtain credibility, in turn, the central bank must have a distinguished track record and must be in a position to make authoritative public announcements in times of stress.

MULTIPLE OBJECTIVES AND PUBLIC CONFIDENCE

What happens when the actions dictated by the central bank’s role as a systemic crisis manager conflict with other central bank goals? The classic case is probably the onset

The public should understand the policy goals and how much weight is being assigned to them.

of a systemic crisis that dictates an infusion of liquidity at a time when the central bank is actively fighting inflation. If liquidity is injected, inflationary expectations and subsequent inflation may rise, affecting not only the macroeconomy, but possibly undermining confidence in the central bank’s inflation-fighting resolve. If liquidity is not injected, the crisis may escalate and lead to the failure of both solvent and insolvent institutions. In such instances, it is essential that the central bank’s actions be transparent: the public should understand exactly what all the policy goals are and how much weight is being assigned to them on an ongoing basis. A shift away from inflation-fighting that is perceived as temporary and well-reasoned may not undermine confidence in the central bank. The horizons involved in such instances may be helpful. For example, the control of inflation is usually a medium- to long-term goal, whereas the management of a crisis may have a much shorter-term horizon. Thus, the policy may be reversible in time to address longer-term goals.

MORAL HAZARD

Moral hazard, like central bank credibility and public confidence, depends on expectations of how the central bank will act in a crisis. In addition, moral hazard involves expectations of how other institutions will act, specifically to take opportunistic advantage of expected central bank actions. For instance, a large institution may think that it is too big to be allowed to fail and that the central bank will come to its rescue regardless of how risky it becomes. Another classic example is deposit insurance. Banks with the ability to put losses to the insurer may generate cheap

The existence of moral hazard makes it much more difficult and sensitive to apply some of the tools discussed.

insured deposits and invest them in risky ventures, since the insurer bears the ultimate cost of risk. The existence of moral hazard makes it much more difficult and sensitive to apply some of the tools discussed before. This is particularly true of discount window lending, recapitalization, and deposit insurance.

Actual use of tools to deal with past systemic problems

This section provides a very brief synopsis of twenty crisis situations since 1965 that had the potential to lead to systemic problems. The information is drawn mostly from internal and external documents from the U.S. Federal Reserve System.¹ Although the sample includes cases from various countries, there is an emphasis on U.S. cases.


The analysis indicates that targeted tools have been the most frequently employed by central banks and are probably the most effective.

The analysis of this sample of crises (albeit not scientifically selected) indicates that targeted tools have been the most frequently employed by central banks and are probably the most effective. Bank supervision played a role in nearly all the crises, and discount window lending was used in half the cases. Deposit insurance was helpful, in dealing with the aftermath of about a third of the crises. In contrast, generalized measures, such as domestic and foreign market operations, were much less frequently employed. Informational tools were used in about one-third of the cases.

Each episode below is viewed from the perspective of a specific central bank. The individual titles indicate the country whose central bank's perspective is taken and the year in which the incident originated. A table summarizing the information in this section is included at the end.

Yamaichi, Japan, 1965. In 1965, the Bank of Japan helped prevent the collapse of Yamaichi Securities, one of the largest securities firms in the country. Stock market losses beginning in 1961 had weakened the firm substantially. Furthermore, market monitoring indicated that the Japanese banking system had significant exposure to Yamaichi. In consultation with the Ministry of Finance, the

¹ The documents are not classified as confidential, but some may not be readily available. Accessible documents include: Testimony of Chairman Alan Greenspan before the Committee on Banking and Financial Services, U.S. House of Representatives, October 1, 1998 (from www.federalreserve.gov); Statement by William J. McDonough, President, Federal Reserve Bank of New York, before the Committee on Banking and Financial Services, U.S. House of Representatives, October 1, 1998 (from www.ny.frb.org); Supervisory Lessons to be Drawn from the Asian Crisis, Basel Committee on Banking Supervision Working Papers no. 2, June 1999 (from www.bis.org).




Bank of Japan put together in 1965 a rescue plan that included loans equivalent to more than \$93 million (in 1965 values). In the end, Yamaichi pulled through the crisis to remain one of the top Japanese firms.

Secondary banks, United Kingdom, 1973. Secondary banks in the United Kingdom developed outside the traditional banking sector beginning in the late 1950s, without a requirement for an operating license and with very little regulation. In 1973, following concern about the quality of their assets, secondary banks began to face heavy deposit withdrawals, and market monitoring indicated that they were having difficulties in rolling over their short-term funds. The Bank of England led a rescue effort that included both moral suasion and direct lending to the institutions. The Bank's initial response was to ask the clearing banks to contribute to a rescue package of loans, with a small central bank participation. Subsequently, some secondary banks received direct credit assistance from the central bank. Finally, the Bank of England arranged for many of the troubled banks to be acquired by healthy institutions.

Bankhaus Herstatt, Germany, 1974. Herstatt was a medium-sized commercial bank located in Cologne. It had a sizable foreign exchange portfolio that became much riskier with the advent of the floating exchange rate regime in 1973. In June of 1974, the Bundesaufsichtsamt für das Kreditwesen determined that Herstatt was insolvent and that its licence should be revoked and a liquidator appointed. The Bundesaufsichtsamt made this public at approximately 4:00 p.m. local time on June 26, and the Bundesbank ceased clearing for Herstatt's account. The time of the announcement was the end of the day in Germany, but only mid-morning in New York. Thus, although the deutsche mark legs of transactions had gone through, the dollar legs in New York had not. As a result, some counterparties receiving dollars from Herstatt suffered losses, and others paying dollars decided not to honor transactions involving the German bank. Gridlock ensued in the international payments system until a few days later, when New York clearing house banks instituted a special procedure to facilitate international payments. The full tangle took several months to unravel. In the meantime, a consortium of private German banks provided full compensation to Herstatt depositors with accounts under the equivalent of \$7,500 (in 1974 values).

New York City fiscal crisis, United States, 1974. Starting in the early 1960s, the New York City government experienced a series of budget deficits, which were financed with short-term debt. By 1974, the city's short-term debt




had grown to such proportions that it encountered serious problems in issuing new debt instruments. In December of that year, a consortium of commercial and investment banks absorbed a \$50 million loss on the city's debentures, and the city's A rating was withdrawn by Standard & Poor's. In 1975, the city was unable to raise several billion dollars that it needed to roll over its maturing debt. The Federal Reserve collaborated with other official agencies in the design of a plan for the city to put its finances in order. Bank supervisors helped assess the extent to which some banks could assist the city, and they also identified some banks, typically smaller, that were in danger of failure as a result of large exposures to the city government.

Silver market crisis, United States, 1980. In the mid-to-late 1970s, the Hunt brothers amassed a very large position in silver, to a large extent by taking possession of the settlement amounts of futures contracts at the New York Commodity Exchange and at the Chicago Board of Trade. In 1980, higher silver prices attracted unexpected supply to the market, and the futures exchanges implemented new requirements intended to control price manipulation. As a result, the Hunts' financial position deteriorated markedly, with negative implications for both the silver market and for the Hunts' creditors. The Federal Reserve stepped up its examinations of banks' positions with regard to the Hunts to assess the magnitude of the problem. A consortium of banks eventually provided a consolidation loan to the Hunts' interests to avoid further market disruptions. Most of the banks in the consortium borrowed from the Federal Reserve's discount window during this period, although the level of their borrowing was not considered unusual.

Schröder, Munchmeyer, Hengst, Germany, 1983. Schröder, Munchmeyer, Hengst, a German bank, faced collapse in November 1983. A large share of its lending was to IBH Holdings of Luxembourg, one of Europe's largest construction equipment companies. When the loans to IBH went into default in November, Schröder, Munchmeyer, Hengst was in danger of losing a very large proportion of its assets. Apparently at the urging of the Bundesbank, a consortium of German banks provided Schröder, Munchmeyer, Hengst with stable funding, possibly staving off a breakdown in interbank lending in Germany.


Continental Illinois, United States, 1984. As part of a strategy adopted in 1973 to make Continental one of the top lenders in the United States, the bank purchased between 1978 and 1982 a large number of oil-related credits from



Penn Square Bank, which failed in mid-1982. This portfolio of loans suffered heavy losses, leading Continental to make extraordinary loss provisions by end-1982. These troubles made it difficult for the bank to obtain funds in the U.S. market, and Continental turned increasingly to the European interbank market for funds. In early 1984, the bank's situation became precarious, leading the Federal Reserve to step up its monitoring of the institution. Rumors of an impending failure started circulating worldwide. The dollar fell sharply and the Federal Reserve intervened to stabilize the foreign exchange market. By May, the firm had obtained discount window assistance from the Federal Reserve, in consultation with the Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation (FDIC). Later that year, the FDIC produced an open assistance package that included discount window borrowing as well as equity funds. As of the end of the 1980s, the loans had been repaid and the FDIC had liquidated its investment through a series of sales.

Johnson Matthey, United Kingdom, 1984. In 1984, Johnson Matthey Bankers was the banking, gold bullion, and commodity trading subsidiary of the Johnson Matthey Group. It had an important position, particularly in the bullion market, since it was one of only a handful of officially recognized gold dealers in London. As a result of diminished trading in the bullion markets, Johnson Matthey turned to other business lines, such as commercial lending and trade finance. Its exposure to a small number of firms grew rapidly, to the extent that it faced a serious concentration problem. In August 1984, the firm's auditors determined that it was insolvent. Shortly afterwards, the Bank of England stepped forward with a rescue operation that included a recapitalization, mostly with Bank of England resources, and the appointment of new directors, management team, and auditors. In April 1986, the Bank sold the bulk of its interest in Johnson Matthey.

Bank of New York glitch, United States, 1985. As a result of a simple bug in a computer program, Bank of New York found itself on November 21, 1985, unable to deliver securities to its customers. It received during the day a large volume of securities that were to be transferred to other customers, but the computer glitch made those latter transfers impossible. The Federal Reserve kept the payments system operating until late evening, but it became clear that the problem would not be resolved that day. Since Bank of New York could not complete the transactions and did not have the cash to finance the securities, the discount window advanced to Bank of New York \$22.6 billion of overnight funds. The existing




supervisory relationship between the Federal Reserve and Bank of New York helped accelerate the loan evaluation process.

Ohio S&Ls, United States, 1985. In 1985, about 70 state-chartered banking institutions in Ohio were members of a private deposit insurer. When it became known that the largest member of the private insurance fund was close to failure, all members began to experience runs on their deposits and a loss of public confidence. The crisis threatened not only the largest member, but the viability of the insurer and all the other members as well. The Federal Reserve intervened in various capacities. As supervisor, it evaluated the financial condition of affected institutions. As discount window lender, it provided funds to solvent institutions. Finally, as manager of the payments system, it provided for the continued flow of payments involving the members of the private insurer. In some cases of bank failure, the FDIC assisted institutions that qualified for federal insurance coverage.

Maryland and North Carolina S&Ls, United States, 1985. In the aftermath of the Ohio crisis of 1985, member banks of private insurers in the states of Maryland and North Carolina underwent a very similar experience. The closure of the Ohio insurer created strong concerns about its counterparts in these states, and a similar crisis ensued. The pattern of this crisis was very similar to that in Ohio, and the steps taken by the central bank were essentially the same.

Western banks, Canada, 1985. Following an oil-led boom in the economy of western Canada in the early 1980s, the region went through a sharp economic downturn. As a result, a number of regional banking institutions had serious financial difficulties, which became quite clear in 1985. The Bank of Canada, in consultation with the Canadian Deposit Insurance Corporation and the Province of Alberta, initially extended liquidity to the troubled banks. The package assembled by the Bank of Canada included funds from the then “big six” Canadian banks. When a closer examination of the banks showed that two were actually insolvent, loans to these two banks were suspended and the banks were closed.


Stock market crash, United States, 1987. In October 1987, the U.S. stock market experienced a drop of previously unseen proportions, which spread internationally. The proximate cause of the drop was not clear, but the practice of “portfolio insurance” by large institutional investors was widely blamed for the magnitude of the drop. The crash caused the failure of a number of small securi-



ties firms and precipitated a liquidity crisis among the large securities firms. Some of these firms advanced margin payments to exchanges on behalf of customers, who were unable to come up with liquidity at a moment's notice. The Federal Reserve took several immediate steps to contain the spread of the crisis. It announced that it stood ready to provide liquidity to the banking system and engaged banks in an effort to support liquidity in the securities markets. As part of these measures, the Federal Reserve injected liquidity into the system through open market operations in the aftermath of the crash. The Federal Reserve also contacted other central banks, which together put in motion a worldwide network of market monitoring. Domestically, the Federal Reserve worked with the Treasury Department and with other regulators to keep track of the problems. Through its bank supervisory functions, the Federal Reserve kept track of the exposures of commercial banks to the securities industry and of the severity of liquidity and solvency problems in the banking and securities sectors.

Highly leveraged transactions, United States, 1989. In the 1980s, banks were aggressive participants in the financing of highly leveraged transaction in the United States. Toward the end of the decade, the failure of some of these ventures was a major cause of concern about the health of the banking system. Traditional bank reporting and examination procedures did not allow for the clear identification of the extent to which banks were exposed to these problems. Therefore, the Federal Reserve instituted new reporting guidelines and conducted an effort to gauge the exact exposure of the institutions under its supervision, particularly the consolidated exposure of bank holding companies.

New England Banks, United States, 1990. In the late 1980s and early 1990s, the New England economy experienced a pronounced regional downturn. This slowdown anticipated a nationwide recession in 1990-91. As a result of the regional economic problems, many banks in New England became financially troubled, including the large Bank of New England. By 1990, Federal Reserve supervisors had determined that the crisis was severe and that it would affect a large number of banks, the regional economy, and even the payments system. For instance, public concern about the banks' health led to deposit runs, which necessitated that the central bank step up its cash processing operations. In a number of cases, including that of Bank of New England, the discount window provided funds in an effort to stem the crisis by restoring liquidity. Eventually, the Bank of New England and others were deemed insolvent and were closed down. The




FDIC and the Office of the Comptroller of the Currency effected the closures, and the FDIC assumed responsibility for covered deposits.

Drexel, United States, 1990. Drexel Burnham Lambert was the acknowledged leader in the junk or high-yield bond market in the 1980s. The market experienced unforeseen problems in 1989 and, by January 1990, unsecured lenders were starting to pull away from Drexel, creating serious funding problems. By February, the problem was so severe that a liquidation of Drexel seemed unavoidable. An orderly liquidation was expected to lead to only minor losses to counterparties. However, because Drexel had so many counterparties and complex relationships, an abrupt liquidation could lead to serious systemic losses. The Federal Reserve monitored the exposure of the banking system to Drexel, gathered intelligence through its open market desk, and monitored the payments system for potential bottlenecks throughout the liquidation process. The Federal Reserve also worked closely with the Securities and Exchange Commission, the New York Stock Exchange, the Treasury Department, and other regulatory agencies. In addition, it made an effort to keep central banks abroad informed about progress in the liquidation of the Drexel positions. The Bank of England intervened as a facilitator and put in place a settlement facility, which remained open for a full week after the onset of the problem.

BCCI, United States, 1991. When the Bank of Credit and Commerce International (BCCI) failed in 1991, it left behind a complex international network of transactions, exposures, and even fraud. To untangle this mess, the Federal Reserve had to work with many official agencies, domestic and foreign. As early as May 1987, the Federal Reserve had made a referral to the U.S. Department of Justice, because it suspected BCCI of engaging in money laundering activities in the United States. Since BCCI had several banking operations in the United States, the Federal Reserve was officially responsible for the supervision of some of the affiliates. Beyond the usual supervisory actions and remedies, the Federal Reserve took a very active role in the judicial cases related to BCCI throughout the period leading to the bank's closure.

Southeast Banking Corporation, United States, 1991. Southeast Banking Corporation, based in Miami, was one of the most aggressive real estate lenders in Florida. When Florida real estate prices fell in the late 1980s and early 1990s, Southeast suffered serious losses. The Federal Reserve and the OCC were aware in 1990-91 that the company was in serious trouble, but under then-cur-



rent law were unable to close the institution, which still had some equity capital. Through 1991, the condition of the company deteriorated further. The FDIC asked the Federal Reserve to extend to Southeast discount window credit, on the expectation that it would reduce the FDIC's ultimate losses. In September 1991, the discount window loans were called and the OCC closed the bank with the FDIC acting as receiver.

Asian crisis, United States, 1997. The extraordinary economic performance of many East Asian countries in the mid-1990s (for example China, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand) attracted a large amount of capital from abroad. To a large extent, the capital was denominated in foreign currencies and was short-term. These foreign investments began to unravel in early 1997 with the bankruptcy of several Korean conglomerates, and by the fall of 1997 spillover effects were being felt in Europe and the United States. The large volume of the debt, together with the need to roll over short-term funds, made it difficult for the Asian countries to deal with the crisis. In the United States, the Federal Reserve kept a watchful eye on the exposures of U.S. banks to the Asian countries. To improve conditions in Korea, the Federal Reserve worked with other central banks to convince commercial banks to create a coordinated program to lengthen the maturity of Korea's outstanding obligations. Market conditions were closely monitored, and open market operations were directed at alleviating short-term liquidity conditions, rather than focusing narrowly on inflation expectations. Other central banks in countries affected by the crisis took steps of their own.

LTCM, United States, 1998. The hedge fund Long-Term Capital Management had attracted a very large amount of capital from its investors. This capital was levered dramatically through complex financial transactions with many counterparties, to the extent that the gross size of the investments reached a very large multiple of capital. Under these conditions, several positions taken by the hedge fund with regard to credit spreads began to experience severe losses in 1998. The Federal Reserve became aware of these problems and began active monitoring of markets and of supervised banking institutions in order to obtain a clear picture of the severity of the problem. Concerned about potential adverse effects on capital markets of the meltdown of such a large and complex portfolio, the Federal Reserve facilitated discussions among major private-sector creditors of LTCM to wind down the portfolio and liquidate the firm. On September 22, a consortium of private-sector firms agreed to recapitalize LTCM in order to facili-

tate the orderly liquidation of the firm. LTCM was ultimately liquidated without losses to the consortium.

Conclusions

In examining twenty financial crises, we can infer that flexibility and creativity are important.

Dealing with financial instability is a difficult and delicate task for a central bank, especially when mistakes can lead to serious systemic repercussions. In examining a dozen tools applied by central banks in twenty financial crises, we can infer that flexibility and creativity are important, and that there is no magic formula that will work in all cases all of the time.

Bank supervision played a role in almost all of the cases.

Of the tools examined here, targeted tools were used more often than generalized or informational tools. One targeted tool in particular, bank supervision, played a role in almost all of the cases. This preponderance suggests that, whether or not bank supervision is carried out by the central bank, it is important that central banks and supervisory authorities collaborate closely in the resolution of financial crises.

Generalized and informational tools, though used less frequently, were nevertheless of pivotal importance in some instances. The provision of liquidity to the market during the 1987 stock market crash and the use of public communication in the case of Schröder, Munchmeyer, Hengst are but two examples of effective tactical use of these types of tools.

We find that success stories predominate for each of the tools examined.

Thus, though generalizations are difficult to formulate, the extensive tool kit at the disposal of central banks has proven successful in many cases in the past. Of course, not every tool was successful in every instance, and the resolutions of some crises may not have been altogether satisfactory. Nevertheless, we find that success stories predominate, not only overall, but for each of the tools examined.



Summary table. Use of various tools by central banks to deal with systematic problems, 1965–98

Problem, central bank	Year	Targeted tools					Generalized tools			Informational tools			
		Sup	Legl	Disc	Rcap	DI	Omo	FX	Pmt	Mkt	Iag	Int'l	PC
Yamaichi, Japan	1965			✓						✓	✓		
Secondary banks, U.K.	1973	✓		✓						✓			✓
Bankhaus Herstatt, Germany	1974	✓				✓							
New York City fiscal crisis, U.S.	1974	✓									✓		
Silver market crisis, U.S.	1980	✓		✓									
Schröder, Munchmeyer, Hengst, Germany	1983												✓
Continental Illinois, U.S.	1984	✓		✓	✓	✓		✓					
Johnson Matthey, U.K.	1984	✓			✓								
Bank of New York glitch, U.S.	1985	✓		✓					✓				
Ohio S&Ls, U.S.	1985	✓		✓		✓			✓				
Maryland, No. Carolina S&Ls, U.S.	1985	✓		✓		✓			✓				
Western banks, Canada	1985	✓		✓		✓					✓		✓
Stock market crash, U.S.	1987	✓					✓			✓	✓	✓	✓
Highly leveraged transactions, U.S.	1989	✓											
New England Banks, U.S.	1990	✓		✓		✓			✓				
Drexel, U.S.	1990	✓							✓	✓	✓	✓	
BCCI, U.S.	1991	✓	✓								✓	✓	
Southeast Banking Corporation, U.S.	1991	✓		✓		✓							
Asian crisis, U.S.	1997	✓					✓			✓		✓	✓
LTCM, U.S.	1998	✓								✓			✓

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Sup	Bank supervision	DI	Deposit insurance	Mkt	Market monitoring
Legl	Legal action	Omo	Open market operations	Iag	Interagency cooperation
Disc	Discount window lending	FX	Foreign exchange intervention	Int'l	International cooperation
Rcap	Recapitalization of institution	Pmt	Payments system action	PC	Public communication