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Abstract

The history of banking around the world has been punctuated by frequent systemic crises. As with Tolstoy's 'unhappy families,' not all crises are the same; distinct roles have been played at different times by mismanagement, government interference and macroeconomic shocks. This review identifies common features of crises in recent decades and describes how costly they have been in terms of their fiscal burden and the impact on macroeconomic growth. It proceeds to outline the conceptual issues identified by theoreticians and considers appropriate policy responses. A lull in the new millennium led to optimism that banking crises might be a thing of the past, but the events of 2007-8 have shown such optimism, often characteristic of previous macro upswings, to be unwarranted.

1. Introduction

The history of banking around the world has been punctuated at relatively frequent intervals by episodes of crisis. Failures of banks have often been sudden – with depositors scrambling to withdraw their funds or refusing to renew their maturing deposits. They have been costly, both in direct cash costs to bank creditors or to the governments who have bailed them out and indirectly in the associated spillover effects on economic activity including that caused by reduced access to credit.

Although some financial crises have had their focus elsewhere, as in government debt, exchange rate and stock market crises, banks have typically played a central or

¹ Forthcoming in Allan Berger, Philip Molyneux and John Wilson, eds., *The Oxford Handbook of Banking*, Oxford University Press, 2009. The authors are, respectively, Professor of Economics and Chair of the Center for Development Economics at Williams College, and Professor of International Financial Economics and Development, Trinity College, Dublin. They would like to thank Thorsten Beck, Roger Bolton, Stijn Claessens, Asli Demirguc-Kunt, James Hanson, Luc Laeven, Philip Lane, Millard Long, Peter Montiel, Steven Nafziger, Sergio Schmukler, and Andrew Sheng for comments. Nonetheless, the responsibility for any errors and omissions lies with the authors.

important supporting role.

Although bank solvency is often the victim of adverse shocks arising elsewhere in the economy, and while panic can result in unnecessarily large and damaging depositor withdrawals, this chapter argues that the most damaging of systemic banking crises have ultimately involved or were significantly exacerbated by what we call bad banking and bad policies – those that permitted or encouraged bad banking. Following each crisis there is an inevitable chorus of calls for more official prudential regulation and supervision to prevent a recurrence. However, the cross-country empirical evidence suggests that policy is best directed towards ensuring a degree of market discipline on the behavior of bankers, as well as paying great attention to the incentives in the financial system.

Section 2 briefly sketches the historical background, noting the ‘boom in busts’ of the post-Bretton Woods period following a thirty year lull. Not all crises are the same and Section 3 highlights the distinct role of mismanagement, government interference and macroeconomic shocks. Section 4 reviews the aspects of crises which have received attention from economic theoreticians seeking to understand their recurrence and severity. Section 5 discusses the costs of crises. The size of these explains the importance of prevention and corrective policy and these are discussed in Section 6. In conclusion, Section 7 suggests that, despite a reduction in their frequency in the early years of the new millennium, it would be premature to suppose that the history of banking crises is at an end.

2. Early history

It is no exaggeration to say that banking crises – for now, the widespread insolvency

of banks leading to closures, mergers, takeovers, or injections of government resources – are virtually as old as banking. When modern banking emerged as a development of money changing in 13th Century Europe, bankers faced information problems more severe than in the least developed countries today. Clients' trade was subjected to a variety of shocks – wars, plague, shortage of coins, losses in trade (e.g. ships sinking or being plundered), defalcation by borrowers, etc. – that made lending hazardous. And depositors faced the risk that their bankers would not survive these shocks, or would themselves abscond with funds. Repeated failures led to some drastic remedies: a Barcelonan banker was executed in front of his failed bank in 1360 – a far cry from the limited liability that protected bank owners in later times (Kohn, forthcoming, Chap 8). Sovereigns were less likely to incur such extreme sanctions when they were the source of the problem, and bankers often succumbed to the temptation or were required (literally for their survival) to lend to the monarch. Such famous early Italian banking houses as the Riccardi of Lucca, the Bardi, the Peruzzi and even the illustrious Medici of Florence, owed their banking downfall in whole or large part to kings and princes that would not or could not repay. Financing the loser in a war was a sure route to failure, but even winners reneged, leading to a higher interest rate spread on loans to kings and princes than to the more business-minded town governments (Homer and Sylla, 1996, p. 94).

That bank failures have come in waves is suggested by the list assembled by Kindleberger (1978, and with Aliber, 2005) and covering mostly the more advanced economies since the 17th century, and which displays for example the rather regular 10-yearly recurrence of crises through most of the 19th Century (with perhaps a lull in the fourth quarter) and through to the second World War. Emerging economies experienced a higher frequency of crises in the interwar period (Bordo et al., 2001).

The post-WWII era saw a period of exceptional quiescence that lasted through the early 1970s. Against the background of a relatively benign macroeconomic environment, regulations that restricted banking competition and product innovation, including cross-border activities, likely contributed to this stability. Gradually, however, these regulations became unsustainable as communications technology and financial innovation (including the emergence of nearbank competitors) led to evasion.

Liberalization of banking and of capital flows, together with increasingly volatile macroeconomic conditions (themselves associated with weakened fiscal discipline, the abandonment of the Bretton Woods exchange rate pegs and surges in inflation rates) were followed by a return to banking crises at a frequency comparable to what had been experienced before. Already by 1997, over three out of every five member states of the IMF had experienced banking problems severe enough to be regarded as systemic or at least borderline systemic (Lindgren et al. 1996, Caprio et al. 2005). But the etiology of these crises varied.

3. Diverse origins: management, government, macroeconomics in recent crises

Many of the most spectacular systemic banking crises of recent decades have been inextricably linked with macroeconomic crises in a way that makes the direction of causality hard to unravel. However, it is important not to neglect the role of fraud and mismanagement, on the one hand, and government interference, on the other. Indeed, one or other of these two – bad banking and bad policies² – has been at the root of

² We use ‘bad banking’ to embrace a range of management practice from fraud, to miscalculations of risk, to deliberate exploitation of the put option inherent in deposit insurance, that heightens the likelihood of bank failure. Of course all banking involves risk,

quite a number of systemic banking crises, especially in the developing world (Honohan, 1997, Caprio and Honohan, 2005).

Two very large bank failures in the Caribbean area can be taken as classic examples where *fraud or mismanagement* were at the root of the problem, namely that in Venezuela (1994) and the Dominican Republic (2003). Both appear to be cases of the diverted deposits fraud, in which some of the deposits accepted by the bank are not recorded as liabilities and the corresponding resources are looted by insiders even though the bank still appears solvent on paper and even though its recorded assets may be properly performing. In each of these cases, the bank involved was of systemic importance³ and the sums were so large that the loans that eventually were made by the central bank to enable the bank to make the depositors whole, destabilized the macroeconomy. And in Venezuela, high deposit rates in the rogue bank forced up rates, and risk taking, at other banks. Another very large failure in which the diverted deposits fraud appears to have been present was that of the international group BCCI. This group, headquartered in Luxembourg and London, was operating in about 70 countries and its failure was of systemic importance in some African countries where it had attained a sizable market share (cf. Herring, 2005). The diverted deposits fraud typically involves the acquiescence of audit professionals; the official supervisor can then be hard-pressed to detect such frauds because of the complexity of the false accounting structures that are created.

not least because of the ever-present information problems of adverse selection and moral hazard, but these are managed and adequately priced in normal banking operation. Pressure of circumstances can turn good bankers into bad bankers, as is graphically characterized by de Juan (2002).

³ The payments system creates a strong short-term interdependency of banks, so that the failure of one major bank could disrupt the entire system of payments and short-term credit on which much of day-to-day economic activity depends. For this reason, some banks of systemic importance are perceived as being “too big to fail”, and requiring official support for their continued operation even if they are insolvent.

Inadequate management of rogue traders has caused several sizable bank failures, most famously that of Barings Bank in 1995, but although the losses involved in some of these cases have run into ten figures, no known cases have been of systemic importance. In January 2008 Société Générale reported the largest single bank loss (over US\$ 7 billion) ever attributed to fraud by a lone rogue trader.

Typically, the fraud was uncovered in a period of asset market decline following a long-run of over-optimism. Other forms of mismanagement weakness can be cited, none larger than the case of Credit Lyonnais in the 1990s, where grandiosity and exaggerated ambition in lending policy led to the largest single bank loss in the industrial world: without the French government's bailout, CL would have proved insolvent. Lack of management capacity on the part of new controlling insiders also brought insolvency in 1995 to the long-established Meridien-BIAO bank in Western and Central Africa—although that bank had already been severely weakened by the effects of government intervention.

While the Mexican Tequila crisis (1994-5) crystallized around a currency collapse, which hit the banks because of speculative derivative contracts that gave them a *de facto* long position on local currency, the underlying weakness of the banks was subsequently traced to insider lending and a long period of evasion of minimum capitalization requirements dating back to their privatization. With little shareholder equity at stake, banks were free to move out on the risk frontier and lend to the few sectors with the highest return, as confirmed by Caprio and Wilson (2000), Haber (2005) and Wilson, Saunders, and Caprio (2000).

Significant regime changes in the economy often devalue both the financial and skills portfolio of banks, sharply increasing the risk of a banking crisis. The introduction of new instruments or opportunities for risk taking often leads some to

take on new risks without adequate attention to their downside potential. Likewise, liberalization of economic policies has definitely been associated with a surge of bank failures in countries with weaker information and governance institutions (Demirgüç-Kunt and Detragiache, 1999). Liberalization of entry into banking increased competitive pressures for banks, liberalization of interest rates heightened repayment and market risks, and liberalization of other aspects of economic policy impacted on the creditworthiness of borrowers in ways that were not always easy to perceive, often entailing large changes in relative prices. And to the extent that pre-liberalization portfolios were controlled, the lifting of controls often led banks to expand simultaneously. However, simultaneous portfolio shifts by the banking sector can move asset prices, making the shift look like a safe proposition, as in the case of the Malaysian property boom of the late 1970s and early 80s, which led to a mid-1980s crisis. In addition to a skewed portfolio, liberalized banks inherit a staff that is short on banking skills, unfortunately just at the moment when they are greatly needed, just as the government begins with bank supervisors skilled only in checking that banks are complying with various government commands and not at all trained in modern risk-based bank supervision. Although even the best bankers and supervisors would be challenged during liberalization, those with weak skills are even more likely to fail.

In particular, the process of economic transition from socialist or planned economies proved fertile in banking crises, many of which can be attributed to inexperienced or reckless management. Although the first wave of post-transition inflation wiped out much of the real value of their pre-existing deposits, and reduced the debt burden of their borrowers, many Transition economy banks – especially in Eastern Europe – misjudged the difficulty of credit appraisal especially in the fluid conditions of the transition. As a result many made a new round of poor or self-

servicing loans, which soon fell into non-performing status.

Even where Transition was managed without a surge of high inflation, as in China and Vietnam, large banking losses were socialized. Indeed, in China, cumulative injections of government funds into the four main government-owned banks alone 1998-2006 amounted to over 350 billion dollars, or about 30 per cent of 2001 GDP, with further injections still considered necessary to restore full capitalization on a realistic evaluation of the recoverability of the loan portfolio (see Barth and Caprio, 2007; Honohan, 2008). This, the largest banking bailout in history, was accomplished without loss of depositor confidence, reflecting the ability and undisputed willingness of the State to ensure that depositors at its banks would not suffer. Indeed, expressed as a percentage of GDP, bank deposits in China have been higher than almost anywhere else in the Developing World, aside from offshore financial centers. These growing funds were effectively applied up to the mid-1990s as a transitional and partial substitute for the former budgetary allocations made under the planned system to key unprofitable state-owned enterprises (Lardy, 1998). Made as loans, these could never have been fully serviced, as was gradually recognized through the various bank restructuring measures adopted from 1998 on. The Chinese case, then, provides a conspicuous example of how government policy – specifically government-directed lending policy – has led to loan losses large enough to erode the banks' capital many times over.

Many of the poorest developing country economies that were not subject to a centrally planned regime also experienced explicit or implicit government policies of directed credit. When these were enforced by statist regimes without regard to the viability of the lending banks the result was losses, erosion of capital and a weakening of financial autonomy and motivation of bank managers often resulting in insolvency.

The true financial condition of state-owned or heavily controlled banks of this sort was often acknowledged only at a time of regime change or a sizable policy reform. Even in non-socialist economies government influence has often had similar effects. A good example comes from Francophone West Africa where the banks in several countries made what proved to be unrecoverable loans to parastatals and government suppliers, unwisely taking comfort in the fact that these loans were being rediscounted by the regional central banks. A similar problem arises with provincial governments relying on the national authorities to bail out failing provincial banks. This “tragedy of the commons” pattern was observed in Brazil where loan-losses at several large provincial (state) banks imposed heavy costs on the central government before they were privatized.

Banks have always been dependent to a degree on the willingness of the state to allow them to function profitably. Even where directed credit is not an issue, quasi-fiscal impositions such as unremunerated reserve requirements have weakened bank profitability. Arbitrary exchange rate and exchange control regulations also have a tax-like effect. The most dramatic example of this was the forced conversion to local currency of foreign currency deposits and loans at Argentine banks in late 2001. Because the conversion was not at market rates and furthermore was asymmetric, with a much larger effective write-down of bank loans than of bank deposits, this arbitrary measure created systemic bank insolvency at a stroke.

Although the roles of management and government are never irrelevant in a banking crisis, what has dominated many of the larger episodes of systemic crisis is a dynamic instability in widely-held expectations about macroeconomic and business prospects generally. A wave of *over-optimism* about economic growth, often manifested in a real estate price boom, results in expansion of credit by most banks,

especially to the sectors specifically favored by the optimism. The resulting increase in leverage often is fuelled in part by capital inflows – as in Mexico and East Asia in the 1990s, but also in the recent U.S. ‘subprime’ crisis. Because of the optimism, loan-loss provisioning is lower than will prove necessary, and this for a time is justified by low delinquencies as the overall economic boom financed by credit expansion makes it easy for borrowers to service their debt. This could explain by itself why rapid credit expansion is a predictor of crises. In addition, of course, rapid credit expansion places stresses on credit appraisal capacity and results in errors even conditional on the overall optimism. Various forms of contagion or herd effect come into play. Even banks whose managers do not share the optimism feel pressure to relax credit approval standards for fear of losing market share. The formation of banker expectations can be influenced by peer observation, magnifying and generalizing emerging overconfidence. As a latecomer to the South Sea Bubble (John Martin, of Martin’s Bank) said, ‘...when the rest of the world are mad we must imitate them in some measure (Dale, 2004, p. 113).’

Whereas experienced bankers are normally alert to isolated indications of unsound practices among their peers, in contrast, during the euphoria of the boom phase, they are unlikely to detect even fatal weaknesses. These waves of over-optimism are sufficiently rare in any one country for learning to be imperfect. Disaster myopia prevails, with decision makers disregarding the relevance of historical experience at home and abroad (Guttentag and Herring, 1986). Eventually, however, the unsustainability of the fundamentals on which the credit expansion was predicated becomes evident and the process goes into reverse. Sharp falls in property prices reveal the unrecoverability of property-related loans and erode the value of collateral, currency depreciation creates insolvency among unhedged borrowers, asset

sales by distressed borrowers seeking liquidity drive down the prices of other securities too, and the resulting economic disruption also undermines the solvency of borrowers in unrelated sectors.

Examples of the boom-and-bust syndrome are provided by the correlated crises in Scandinavia around 1990, as well as the East Asian crisis of 1997-98, in which extensive failure of banking systems especially in Thailand, Indonesia and Korea were associated with currency collapse and a sharp – albeit transitory – contraction of economic activity following a long period of rapid growth and capital inflows. The sudden withdrawal of what had previously been readily available foreign funds was an aggravating factor in several other crises, notably Chile, 1982. Exchange rate collapse too has been a feature in many episodes; indeed, anticipations of currency movements during crises can result in sizable depositor withdrawals exacerbating bank liquidity problems. To be sure, in all of these cases, connected lending and excessive risk taking were a good part of the story, as they often are in large crises (The World Bank, 2001, and Harvey and Roper, 1999).

It is sometimes possible to point to a specific date at which a systemic crisis has crystallized, whether because a depositor run on banks resulted in the suspension of normal bank operations, or a currency peg is abandoned, or the assumption of management control of failing banks by a government agency. Nevertheless, the true underlying solvency of the banks has generally been deteriorating for many months before any such crystallization. If intervention is long-deferred, bank insiders who find themselves to be operating an insolvent institution will be tempted to gamble the remaining resources on recklessly risky ventures that might just restore the bank's solvency. More likely, insiders left in charge will choose to loot an insolvent bank by covertly diverting as much of its remaining assets to their personal benefit, as appears

to have been the case for a sizable number of US thrifts in that country's crisis that peaked in 1988-91.

Even after the existence of a bank solvency crisis has been publicly acknowledged, the scale of the crisis is rarely evident at first. Bank insiders have many reasons to conceal weaknesses as long as possible. Almost all recent systemic crises have involved several waves of intervention, generally spread over a period of months or even years.

4. Panic and contagion: explaining sudden and fast-moving banking crises

A sudden and irresistible depositor run, the classic form in which systemic crises have been seen as crystallizing, and which dominates the theoretical literature, has actually only featured in a minority of recent cases. Even in Argentina, 1995, the response of depositors to fears of a spillover from Mexico's 1994 Tequila event, aggregate depositor withdrawals from the system were little more than 20 per cent, spread over several months. In this case the early depositor movements were from local banks to foreign banks; it was only when depositor concerns shifted from the health of the banks per se to the prospects for the currency peg that they exited the system altogether. This pattern was repeated in 2001, only then depositors were justified in that the government did subsequently abandon the currency peg.

But even if depositor runs are not as common as a reading of textbooks would suggest, the sudden onset of correlated bank failure that have characterized some systemic banking crisis with widespread consequences for economic activity raises the question of what is special about banks that might make banking systems prone to such dramatic collapses.

Five distinctive and interrelated features of banking stand out as contributing factors to this vulnerability. First, the highly leveraged nature of modern banks; second, the degree of maturity transformation (or liquidity creation) with which they are associated; third, the demandable or very short-term nature of the bulk of their liabilities; fourth, the opaque nature of bank assets; and fifth, the fact that the bulk of their assets and liabilities are denominated in fiat currency. Of course, each of these features represents a key contribution of banking to the economy, which is likely part of the explanation as to why authorities have not adopted proposals for narrow banking – few are disposed to give up these benefits.

That high leverage has a role seems obvious: it is why much policy effort focuses on limiting leverage through capital adequacy regulation (even though the risk-reducing goal of such regulation can often be nullified by bankers' offsetting assumption of higher risks in unregulated dimensions). Opacity also matters: just as banks are at an informational disadvantage vis-à-vis borrowers, so too are depositors and other creditors (as well as supervisors) in relation to banks. Much recent theory has developed around the second and third of these features (Allen and Gale, 2007). It is not just the liquidity problems that can arise if depositors wish to withdraw more than expected from a bank that has committed its resources to loans that can be liquidated early only at a loss. There is the consideration that even depositors who have no immediate need to withdraw might do so if they foresee a bank failure. The possibility of self-fulfilling depositor panics not based on any fundamental change in the bank's asset portfolio or any special liquidity shock to its depositors has been known to theoreticians for decades, though the real-world relevance of self-fulfilling panics unwarranted by weak fundamentals has been much debated. From this theoretical perspective, there is no difference between the visible retail depositor run

and the ‘silent run’ of the bank’s wholesale creditors, including other banks through the interbank market. Indeed, in practice it is often the better-informed wholesale market that undermines a failing bank’s liquidity and, as in the case of Northern Rock in 2007, leads to a run in the retail market. Better-informed wholesale market participants might have reason to suspect that the bank’s problem is less liquidity and more solvency. In theory liquidity runs can lead to insolvency by forcing a ‘fire sale’ of assets at unfavorable prices, but in practice it is difficult to distinguish this case from insolvency due to excessive risk taking.

One structural feature of banking implicated in panics is the demandable nature of deposit liabilities, which has the effect of encouraging early withdrawals (Calomiris and Kahn, 1991). It is “first come-first served” for bank depositors (known as “sequential service” in the theoretical literature). Until an insolvent bank closes its doors, early-withdrawing depositors will receive their full deposit, paid out of the bank’s liquid assets; while those that arrive too late will bear between them the full capital deficiency. Even a small overall initial deficiency could result in the remaining depositors suffering severe losses if enough others have withdrawn before the bank is closed. Awareness of this risk makes astute depositors alert to signs of trouble and indeed serves to ensure that there will be an incentive for large depositors to monitor the performance of the bank managers. As is confirmed by well-documented cases such as that of Continental Illinois bank (Stern and Feldman, 2004), as well as from less precise information from the changing size distribution of deposits in crises in developing countries (Schmukler and Halac, 2005), it is wholesale depositors and interbank lenders who have been the first to withdraw.

Some system-wide bank failures may be simply due to numerous banks being hit by a common shock external to the banking system. But the speed with which

several very large systemic crises have emerged without apparent warning and the depth of the ensuing financial and economic crisis has suggested a contagious transmission and amplification of the problems of one bank to others. Furthermore, even if the failure of a number of banks is attributable to an exogenous macroeconomic shock, the consequences of that failure on aggregate credit availability and on the value of asset prices may in turn amplify the macroeconomic downturn feeding back again into the banking system.

Models of contagion focus on different aspects. Contagion can occur through depositor panic, as the failure of one bank causes a reassessment by depositors' of the default risks associated with other banks, and the loss of liquidity from one bank failure may cause depositors to withdraw from other banks in the system. At the broader national level, both such factors seem to have been at work in the international crises of 1997-98 and in the liquidity and credit crunch of 2007. On the asset side too, bank distress can be transmitted through the system. If it forecloses on some of its borrowers or is unable to extend credit, a bank's distress will be spread to the customers of those borrowers in turn worsening the loan-loss experience of other banks. The weakening of asset portfolios will become general if there is a scramble for liquidity in asset markets, which drives down prices including of assets used as collateral. Pure informational cascades, where pessimistic opinions of the part of some bankers or investors become generalized, have also been studied as channels of contagion. The use by banks of the same or similar mechanical risk assessment technologies could have the unfortunate effect of coordinating banks' responses to shocks, thereby amplifying their effect (IMF, 2007).

Models of such feedback can exhibit multiple equilibria: a good equilibrium in which investors' confidence is validated by high asset prices boosting the

creditworthiness of borrowers with productive and profitable investments, and a bad equilibrium where investors' skepticism is justified by low asset prices, a lack of creditworthiness, weak aggregate demand and business and bank insolvency. The equilibrium value of the nominal or real exchange rate is at the heart of several of these models, reflecting the central role of currency collapses in some of the largest crises. If there are multiple equilibria, the occurrence of a crisis can be considered a coordination failure (Diamond and Dybvig, 1983; Allen and Gale, 2007).

5. Costs of crises

Two approaches have been adopted to calculating the cost of banking crises. The first approach focuses narrowly on the revealed capital deficiency of the banks and specifically on the fiscal and quasi-fiscal costs incurred by efforts to indemnify depositors of failing institutions. The other approach has sought to calculate system-wide economic costs of the failure. The two approaches have generated rather different figures for specific events, though on average across countries they come up with roughly similar total costs, expressed as a percentage of GDP. Thus, taking 39 systemic crises for which both economic costs and fiscal costs have been calculated, the fiscal costs—ranging up to 55 per cent of GDP (Argentina, 1982)—averaged 12.5 per cent, whereas the estimated economic costs—ranging up to 65 per cent of GDP (Colombia, 1982)—averaged 14.6 per cent. The correlation between the two sets of costs was only 0.43, however (Hoggarth et al., 2002; Honohan and Klingebiel, 2003).

Neither approach to measuring costs is wholly satisfactory. The fiscal costs approach refers to what in principle is a concrete concept, though changing prices, exchange rates and asset values in the months and years following the crisis greatly

complicate the calculation. For example, favorable property price movements in Norway and Sweden allowed the authorities to recover most if not all of the outlays they had initially made in respect of failing banks. To the extent that the sums expended by the authorities are to fill resource gaps resulting from loss-making economic activity by borrowers, the fiscal costs can be considered as an estimate of true economic costs. But since some of the fiscal outlays simply go to compensate depositors for resources that were diverted to others, and as such represent a transfer, this would overstate true economic costs. On the other hand, the distortions created by poor banking practice will have affected decision-making more widely, resulting in losses and missed opportunities that are not captured in the fiscal costs.

Attempts to measure true economic costs from analysis of a dip in growth rates around the time of the crisis lack credibility to the extent that the economic downturn (which exposed the bank insolvencies) may have been triggered by unrelated factors. To attribute all of the downturn to the banking problems likely overstates the costs. On the other hand, some episodes have not been followed by an economic downturn. These include cases where the impact on economic growth was spread over a long number of years. Thus, the calculations are sensitive to the conjectural nature of the counterfactual macroeconomic growth path against which the actual is compared. Many crises are preceded by an economic boom, part of which was attributed to the excess optimism in banking and in other sectors. Since some part of the boom might have had sound foundations, backing out the sustainable path is no simple exercise.

Even if it is hard to get a precise estimate, it is clear that the aggregate costs of banking crises around the world have been very substantial indeed. Total fiscal costs of crises in developing countries since the 1970s exceeds USD 1 trillion – a sum far in

excess of all development aid provided by the advanced economies. The economic costs of crises have been felt across the income spectrum with sharp increases in the fraction of the population below the poverty line (Honohan, 2005; World Bank, 2001). Notwithstanding these costs, some countries – Chile, and Korea, for example – have seen their financial system recover nicely from even large crises. Unfortunately other countries, notably Argentina, have had numerous crises in the last 150 years, pointing to a sizable, even critical, benefit from the application of good policies of prevention, containment and resolution.

6. **Crisis response and prevention**

An ounce of prevention

The design of regulatory policy and practice that could most effectively reduce the risk of banking crises is controversial. The Basel Committee on Bank Supervision, established in 1974, has emerged as a standard setter for bank regulation and supervision. In the Basel II Revised Capital Accord, to be implemented in 2008 and beyond in many countries, the Committee's approach to prudential regulation involves three pillars: capital, supervision and disclosure. The first pillar defines a minimum amount of capital to be held by banks in relation to the risks that they have assumed; the second pillar is a supervisory regime to ensure compliance with this capital minimum and generally discourage excessive risk-taking; the third pillar mandates disclosure of relevant accounting information.

Unfortunately, Basel 2's approach to setting required capital is highly controversial (Keating et al., 2001) not only because of the difficulty of measuring the underlying risks, but because reliance on the mandated approaches could exacerbate

herding to the extent that banks adopt similar approaches to modeling risk. Furthermore, cross-country empirical evidence casts considerable doubt on the merits of relying on discretionary action by official supervisors to limit banking failure. Specifically, Barth et al (2006) shows that this approach does not seem to help prevent banking crises. Using their database on bank regulation and supervision around the world, this study compiled indexes that represented the extent of capital regulation, supervisory powers, market monitoring (effectively, the three pillars of Basel II) and other regulatory variables, and related them to the development, efficiency, vulnerability, integrity (lack of corruption) and governance of the banking system, after controlling for other determinants of the latter variables and also dealing with concerns about endogeneity. On vulnerability, they found that none of the three pillars explained the probability of a banking crisis (though private monitoring helped explain the other endogenous variables of interest). Instead, this research indicates that authorities concerned with reducing the likelihood of a crisis should either not adopt or greatly circumscribe deposit insurance, and should encourage banks to diversify both their activities and their geographic and sectoral exposure. Lack of such diversification helps explain the large number of failures in the U.S (roughly 15000 bank failures in the period 1920-1933), compared with Canada (just 1 in the period). Although this research is by no means the last word on banking crisis, it highlights an approach to regulation that in effect tries to work with market forces, rather than supplant them.

Prevention would be easier if the onset of crises could be predicted, but models are better at showing fragility than predicting timing (Demirgüç-Kunt and Detragiache, 2005). With no effective forecasting system, good containment and resolution policies are also needed to deal with the next crisis when it comes.

A pound of cure

When a crisis hits, government has two key roles: as the lender of last resort (LOLR), and as organizer or party in the restructuring of troubled entities. The threat of contagion among banks has led many policy makers to intervene to stop a run before healthy banks and borrowers are impaired. Central banks have accepted the role as LOLR since the early nineteenth century, though not uniformly or without contention (Wood, 2003). The advice from Bagehot, that the LOLR should lend freely but at a penalty rate and only to solvent institutions with good collateral, has become conventional wisdom, if not always followed, and his additional lessons – lend quickly before a run takes off, and only use the LOLR rarely to avoid moral hazard – also are regularly quoted by central bankers. This seemingly straightforward advice is notoriously difficult to apply in practice, as it involves judgments on collateral, solvency, and speed.⁴

Longer term restructuring and rehabilitation of banks raises issues that go beyond the scope of this paper (Honohan and Laeven, 2005, and World Bank, 2001). In the spirit of Bagehot, it is worth noting that once authorities decide to intervene, it is important that their intervention be comprehensive, dealing with all potential

⁴ LOLR actions need an effective communications strategy if they are to be successful in restoring depositors' confidence. When the UK mid-sized mortgage lender Northern Rock in 2007 had difficulty in refinancing its mortgage portfolio in the wholesale markets and was given exceptional liquidity support by the Bank of England (eventually amounting to the equivalent of about US\$ 50 billion, the largest such loan in history), the tone of the accompanying statements seems to have triggered a retail depositor run so unnerving that the authorities issued a temporary open-ended depositor guarantee. It is too soon to know if Northern Rock was solvent at the time of its first request. If it were, the authorities initial hesitation to assist may have been inconsistent with Bagehot's rule; if not, it demonstrates the difficulty for the LOLR when insolvent banks are not promptly closed before a run begins. This recent case also illustrates the importance of encouraging banks to manage carefully their risks, including liquidity positions, which frequent LOLR support will undermine.

problem banks especially where depositors fear that they will suffer from bank closures. The failure of the initial policy 1997 bank restructuring package in Indonesia (according to the announcement of which only 16 banks would be closed – both a much smaller number than had been expected by business opinion and than subsequently proved necessary) has been attributed to its less-than-comprehensive nature. Soon all of the private banks were run, with depositors putting their funds in what they assumed were safe public banks. The central bank then extended liquidity support to the private banks, who appear to have used the funds to buy foreign exchange, exacerbating the decline of the currency (an chronology of the events by the IMF experts involved is in Enoch et al., 2001). In several crises in Argentina, the public would run to public sector and foreign banks, from the domestic private banks.

In almost all crises, a sizable fraction of the banking system has survived, remaining solvent and liquid (Caprio and Honohan, 2005). An exception: all but one of the seven banks in Guinea, accounting for 98 percent of the banking assets in the country were deemed insolvent and closed following massive frauds. Interestingly, the one bank left open failed several years later. Although luck can play a part in survival, that some banks survive points to the potential for well-managed banks to cope with severe shocks, and to the importance of maintaining an incentive structure that encourages safe-and-sound banking. But the survivors may not be easily able or willing to expand to fill the gap that would be created if the failed banks are removed from the system and often become more conservative in their lending decisions. Indeed, post crisis credit crunches are significant contributors to the macroeconomic dips noted earlier, which was one of the reasons for the exhortations of Bagehot.

7. Banking crises: the end of history?

The early years of the new millennium saw a drop in the frequency of banking crises both in developing and high-income economies. Several factors were advanced to account for the new stability and some wondered whether banking crises were becoming a thing of the past. First, real interest rates in industrial economies fell to historically low levels, following the bursting of the tech bubble and the slowdown in economic growth in 2001-02. As in the late-1970s, when real interest rates were negative, this led to a flow of capital to developing countries. Second, some argued that, as part of the so-called “great moderation”, macroeconomic policies improved in many developing economies with steadier growth and lower inflation widespread. Third and less plausibly, the expansion of deposit insurance to more than 80 countries was suggested as a stabilizing factor, though the insurance is typically limited to relatively small retail deposits and as such cannot insulate against wholesale runs. Fourth, the counterpart of large U.S. current account deficits was an accumulation of official foreign exchange reserves in many developing countries, contributing to their ability to withstand any sudden stop in capital inflows. Fifth, banking systems appeared relatively well capitalized and robust, attributable perhaps to the 1988 Basel I Accord but also an expected response to prior losses and market pressures. The attention focused on risk management since the early 1980s was also cited as a decided advantage. Lastly, and perhaps most significantly, the rapid expansion of derivatives and securitization led some to believe that the financial system had been able to parcel out risk to those who could bear it best.

Though some of these factors may help explain the lull in banking crises, several constants of finance are worth recalling. The benign macro environment, as Rogoff (2006) reminds us, accounted for part of the success in achieving low inflation, and cannot be counted on to continue -- as oil price behavior in 2007

demonstrates. Low interest rates make many debtors look good, but their subsequent rise regularly reveals ‘surprises.’ Although a number of developing countries have made significant policy changes, not all of these have been positive (Barth, Caprio, and Levine, 2007). Research cited there and elsewhere, for example, shows that deposit insurance increases risk taking. The large current account imbalances contain their own risks, not the least of which is a slowdown of growth in China and/or a decrease in the desire to hold U.S. dollar assets in portfolios around the world.

Beyond these arguments, the financial world received a rude awakening with the interbank liquidity crisis and associated ‘credit crunch’ of 2007. At first this event was seen as a new type of crisis, because of the role of derivative securities, but in fact it displays many familiar features (cf. Reinhart and Rogoff, 2008). In particular, it exhibits both a wave of over-optimism and unsound management and regulatory responses to financial innovation. At its center were the growing market in US-originated mortgage-backed securities and the boom in housing prices in many industrial countries. Provided by Basel I with a clear incentive to reduce required capital by shifting loans off their balance sheet, banks in the US and other countries had increasingly turned to an ‘originate and distribute’ model, in which standardized loans, mostly mortgages, could be bundled and sold as securities, thereby leaving the originating bank free to use its capital elsewhere.⁵ Non-depository financial intermediaries jumped into the same business, given the ability to earn fees and yet not retain credit risk. By careful structuring of these securities and in particular their priority in receiving cash flow from the servicing of the original portfolios, favorable credit ratings were obtained for most of the securities sold, overcoming (it seemed)

⁵ According to the Basel system, various loans and other assets were assigned different risk weights, thereby leading to the incentive to shed assets with a higher risk charge.

the adverse selection problem that had hitherto prevented such loan sales (buyers assumption that sellers would only part with their worst loans). However, knowing that the loans they originated would be sold to others reduced the incentive to make careful credit assessment. Indeed, U.S. banks and finance companies originated a large number of high-risk mortgages (e.g. no money down, interest only or less as the initial payment, with no documentation on borrowers' capacity to pay and initial 'teaser' interest rates that would adjust upwards even if market rates remained constant). Rating agencies seemed to become the partners of those doing the securitization, rather than serving as unbiased arbiters of credit quality. As the U.S. housing market cooled and rates adjusted (from teaser levels, and then with the tightening of monetary policy), defaults spread, inducing several of the leading international banks to sell equity to strengthen their capital ratios. Thanks to securitization, U.S. banks only held a fraction of the mortgage risk. Instead, the first bank failures from the US subprime mortgages were German banks which had taken unwarranted risks in this market. In sum, as with many past crises, a period of low interest rates led investors, some intermediaries, and other players to venture further out on the risk frontier than was prudent, and the eventual reassessment – the market could not keep growing or rising – led to a flight to quality. Given the opacity of banking, it remained uncertain in early 2008 how far the problem would spread, and how deep it would prove to be.

Thus, although the financial system clearly has been able to parcel out risk, it remains true that people are prone to waves of enthusiasm and/or deliberate risk taking – bubbles, perhaps – in which they buy assets but appear not to understand them, are myopic in their risk assessment, or believe that they can get out (sell to a 'greater fool') before the market collapses. Securitization doubtlessly facilitates risk

transfer, but also reduces transparency, making it more difficult to track risk. If market participants do not know which of their counterparties is holding suspect assets (those whose prices are under downward pressure), the consequent flight to quality can be more pronounced, as seemed evident in 2007. Such a response could make it more difficult for central banks to ‘ring fence’ a solvency problem and thereby restore order in financial markets. The emergence of large, complex financial intermediaries further complicates the jobs of official supervisor and market monitor. The constant factor is the presence of information problems in finance, coupled with the regular tendency of investors to venture further out on the risk frontier when real returns on safe assets fall.

Perhaps the best indicator of what is to come in banking is clarified by Kindleberger and Aliber’s (2005) listing of crises of the last several centuries: they keep recurring. One can easily imagine earlier generations thinking that surely the lessons of costly crises must have been learned, only for them or their descendants to see a recurrence. Financial innovation, changing regulation and regulatory avoidance are certain to continue, so future crises might appear different from their antecedents. Although depositor panics might continue to be rare – when truly systemic, they usually involve a bet of a currency devaluation – credit squeezes appear to be far more regular a feature of the financial landscape, regardless of the technology involved, with the inevitable role played by information problems that have been and remain endemic to finance.

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