

MANAGING CRISES IN THE EMERGING FINANCIAL LANDSCAPE

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CONTENTS

Introduction	56
I. What makes financial markets prone to crisis?	57
II. Financial market trends and vulnerability to systemic crises	64
III. Systemic safeguards	71
Bibliography	77

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INTRODUCTION

National and international financial systems have been undergoing rapid change over the last twenty years. By the early 1980s, the eurocurrency market – an intensely competitive global banking market based on managed liabilities and variable interest rate lending – had come to dominate financial activity in international markets and, where exchange controls were dismantled, an increasing number of national markets had become closely integrated with it. Since then, the process of market integration has continued and broadened, so that not only have national markets become increasingly integrated into a global market, but also the functional roles of bank lending and securities activities are becoming indistinguishable. At the same time, once-specialized institutions in a number of national markets have penetrated one another's traditional markets. The result is markets that are more competitive and more closely integrated within countries as well as internationally'.

Some further trends have also become clearly visible more recently – notably those towards securitization of financial activity and a proliferation of specialized financial instruments. As a result of these innovations, international securities markets today provide a degree of flexibility in meeting the individual needs of major borrowers which matches or surpasses that once provided by the most innovative bank lenders. A range of features can be combined in a securities offering, an issue can be carried out quickly, and the use of swaps has expanded the range of markets to which a borrower can effectively obtain access. The emergence of more extensive and more versatile securities activities appears to be partly a response to stresses that had developed in deposit-based finance – notably an overhang of problem loans to troubled countries and sectors, which has weakened portfolios of many banks. But it reflects also the restless search for new, more profitable activities in an increasingly competitive environment, together with eroding regulatory constraints, owing partly to more liberal regulatory attitudes and partly to a weakening of effective control over financial activities as they have become more international².

Deregulation and innovation have prompted a measure of concern that the financial system may be becoming more fragile, and that the machinery for managing crises may no longer be appropriate to the kinds of problems that could emerge. Most observers would agree that the global financial system has become more fragile in this decade than in the earlier postwar period because of the amount of substandard credits exposed by the worldwide process of disinflation, although additions to capital and reserves are slowly restoring the health of depository institutions. The specific problems that are a heritage of the past cycle of inflation and disinflation are not the focus of this paper; rather it is to assess the vulnerability of the emerging financial structure over the longer term, and to examine what machinery might be needed to contain problems – in particular, what call might be made on a lender of last resort.

The paper first develops a view on what makes financial markets prone to crises. It then examines how the broad changes that are occurring are likely to alter the probability of crises and the forms they might take. Finally some implications are drawn for lender-of-last-resort activities and other systemic safeguards. The broad conclusion is that the emerging financial system seems less vulnerable than the systems of the past to the kind of financial crises that the lender of last resort is meant to deal with –namely, a threat of widespread illiquidity among solvent depository institutions. Nevertheless, the financial system remains vulnerable to certain types of crises, and perhaps more so than in the past. This conclusion points to the need for policies to reduce tendencies for stress to build up in the financial system – that is, policies must be geared to prevention. Stronger authority for supervisors to step in at an early stage may also be needed if isolated problems are to be kept from building into systemic ones.

I. WHAT MAKES FINANCIAL MARKETS PRONE TO CRISES?

The proximate causes of financial crisis have taken a fascinating variety of forms through history. They have almost always been preceded by a period which, at least in retrospect, can be recognized as having been one of increasing vulnerability. Kindleberger (1978) is instructive on the way many past crises have unfolded. Despite the wide range of developments which have culminated in crises, the underlying features of financial markets that interact to generate processes of

increasing distress and ultimate crisis seem to be small in number. One of these is the *uncertainty* of the future course of events. This is inherent in human affairs, but is especially important in financial markets, which by their nature are focused on the future. Closely linked to uncertainty, and a central element in virtually all financial transactions is confidence. A loss of confidence is the essence of a crisis. A third feature, which has been important in most crises, is the vulnerability to runs of depository institutions – that is, their susceptibility to loss of liquidity. Fourth, systemic crises have arisen often because financial systems were or became segmented. Funds flowed out from one financial market and could not be attracted back to it.

Economic uncertainty, as distinct from risk, was identified as a central aspect of economic life by Knight (1921). Meltzer (1981) has revived the concept and drawn on parallel analysis in Keynes (1921 and 1936) to point out the importance of uncertainty for understanding financial crises. Two elements are particularly relevant for considering how changing financial structures might affect their vulnerability to crises. First, uncertainty, on Knight's definition, pertains to future events that are not susceptible to being reduced to objective probabilities. Second, it is uncertainty that provides opportunities for profits in a competitive market.

As for the first consideration, uncertainty deals with aspects of economic decision-making and the behaviour of economic systems that are excluded from rational expectations models of decision-making and optimal diversification of risks. These models have been the focus of extensive research over the past fifteen years. This research has greatly improved our understanding of how the process of applying probabilities derived from past experience to forward-looking economic decisions may shape the behaviour of financial systems. And rational expectations theorising has provided insights into the relationships among macroeconomic variables such as price inflation, rates of wage increase, interest rates and money supply growth. But it has not provided a basis for making reliable predictions concerning the behaviour of macroeconomic financial prices such as exchange rates, nor has it provided convincing explanations of financial crises, although some useful insights concerning these can be drawn from rational expectations analysis.

Uncertainty reflects the ever-changing nature of the economic environment – in technical terms, the random element in economic affairs does not seem to be adequately represented by stationary probability distributions, as assumed in rational expectations models. This means that not only is the future not precisely knowable, but also that the laws of probability that apply do not seem to be reliably inferable from data on the past. Uncertainty attaches, also, to events whose implications, if not their probability of occurrence, resist purely objective analysis – events such as major wars, radical political change or, for that matter, major

financial crises and their economic aftermath. Such events pervasively alter the economic environment in ways that are unknowable in advance. Moreover, an active participant in economic life simply cannot fully diversify or hedge against them. In this latter respect, but not in others, they are akin to "systemic risks" in quantitative financial theory.

A recent example that illustrates these aspects of uncertainty is provided by the debt crises of the Latin American countries. Although there was a clearly recognized element of risk in the lending that banks undertook to developing countries, the events which led to widespread debt problems in 1982 were not clearly foreseeable, even to the extent of assigning objective probabilities to them. Nothing in the record of the preceding 50 years would have led one to predict the high level of real interest rates and protracted period of weakness in the markets for these countries' exports, which contributed to the crisis and the difficulty of resolving it (Saunders and Dean, 1986).

Parallels might have been found in the early 1930s, but the structural changes in the world economy and financial systems since then and differences in the way economic policies were conducted after the Second World War made it reasonable to discount this history. Moreover, adverse global macroeconomic developments could reasonably have been expected to lead to the most acute problems surfacing elsewhere. Indeed, it is not clear even now whether **loss** ratios on loans to developing countries will prove larger than those on at least some other kinds of lending. Banks could and did diversify their portfolios to reduce risks of loss from developments in specific areas, but to the extent that they pursued profits in their main line of business, that of lending, they could not insulate themselves from the systemic risk of such macroeconomic developments.

There is no well-established theory of how economic decisions are made under uncertainty in this sense of the word. Some uncertainty is undoubtedly simply ignored in day-to-day economic decision-making – especially those involving low probability events. More generally, and especially when the stakes are high, uncertainty may be dealt with by applying subjective probabilities or making a rough *ad hoc* allowance in the form of a risk premium for unspecified, adverse events. In either case, introspection and casual observation suggest that, when the objective basis for making decisions is thin, most people watch closely what others are doing, and they tend not to deviate widely from the norm in what they take into consideration and with what weight. This course is attractive, not only because there may be no more solid basis for decisions, but also because the managerial and social penalties of being wrong are likely to be less severe when most others are wrong too. This seems a plausible explanation for aggregate market behaviour that often appears to reflect a higher degree of implicit consensus about the future than

seems warranted given the uncertainties. With hindsight, the crowd will be shown either to have been right or wrong. When it is wrong, there may be the makings of a financial crisis, as with the build-up of debt to Latin American countries in the late 1970s and early 1980s. But no **objective** basis exists before such an event to establish **convincingly** that the crowd will be proven wrong, as there was not such a basis with respect to Latin American debt.

As for the second observation, Knight argued that uncertainty rooted in change is the source of economic profits in competitive markets. If all probabilities could be calculated and all risks could be optimally diversified, profits would be bid away by competition. Only by ceaselessly looking for new opportunities where information is unevenly distributed and uncertainty is great, can a flow of profits above a safe return on capital be sustained in the face of unrestrained competition. Hence the drive for profits, together with competition, produces innovation followed by emulation of successful innovations and the erosion of profits from them.

This is essentially the process of "creative destruction" that Schumpeter (1942) identified as the driving force of a capitalist economy. Such a process seems increasingly to characterize financial markets. Recognition of this has led some to question whether such a process can be permitted in financial markets without leading to recurring crisis. The answer depends on what form the "destruction" takes. If it is a matter of innovatorstaking market shares from those who lag behind, then it would not entail financial crisis. On the other hand, if the "destruction" were of the quality of balance sheets, it could. But the latter would follow more directly from the process of creative destruction among industrial borrowers from banks than from competition within financial markets.

The more important question would seem to be how the process affects uncertainty. As compared with heavily regulated markets, with profits generated by protected monopolistic positions, unregulated financial markets are likely to involve greater uncertainty. When uncertainty is reduced in one area and profits disappear, market participants will seek new profit opportunities through innovations, thereby exposing the markets to new uncertainties. While it is not possible to take a firm view on whether or not the systemic uncertainty that results from such a process is a socially optimal price to pay for more adaptable and innovative financial markets without, at least, going much deeper into the processes of innovation and competition, it is possible to ask whether it could be tempered within a competitive market environment. This question will be taken up in the last section of this article.

Confidence is recognized by market participants as the fundamental basis of financial activity. Yet it is an elusive concept for economic theorists. This gulf

between the two cultures may be bridgeable by recognizing that confidence is an essentially intuitive concept: it is clearly recognizable in a world of uncertainty, but plays no dynamic role in a stationary model of risk with calculable probabilities. Having confidence in a financial institution, an investment or a financial system means presuming the best about a lot of matters because, as a practical matter, it is impossible to know everything that may be relevant or to take account of all of such information in making business decisions even if it were available.

While there may be uncalculable uncertainties concerning a particular investment and the financial environment in general, it is usually possible to calculate some of the risks associated with investments. Decision-makers tend to concentrate on controlling these latter risks since ignoring them will be penalized in a competitive market. Thus, for example, individuals may bank with a particular institution in which they have confidence, taking no account, or only rough and ready account, of the possibility that it might fail, while at the same time systematically comparing the interest rate risk and return features of deposits of different maturities. In this way of thinking, the degree of confidence involved in financial activities can be thought of as a sort of summary of willingness to make an investment, even though all of the possibilities are not meticulously thought through. It seems to be those adverse events whose probabilities are both very small and very difficult to quantify objectively, that are regarded – even defined – as matters of confidence.

What are matters of uncertainty and confidence for one set of players in the market may be matters for risk assessment by others. For example, individuals may deal with a single bank on the basis of confidence. Banks, by contrast, generally set credit limits for other banks based on some analysis of their relative strength and of the reduction in risk that might be obtained by diversification. Whether such calculations are made depends on the cost of information and of analysing it relative to the degree of exposure. At any given time, most competitors are likely to have similar boundaries between calculable risks on the one hand and uncertainties that are treated as matters of confidence on the other hand.

While there may be a degree of commonality about where the boundaries between risks and uncertainties should be drawn, as well as about confidence itself, these judgments are not static. Confidence builds as innovators realize profits and their practices are emulated. It is shaken by adverse surprises – when something happens which had not been carefully considered in advance, revealing the possibility of developments taking a turn for the worse. Events that trigger shifts of confidence often affect financial markets to a greater extent than would seem warranted by their intrinsic significance because they lead to a rethinking of decision processes as well as decisions. This is at least part of the explanation for the curious

array of proximate causes of financial crises, and sometimes the absence of a single clear cause that would account for why a crisis occurred when it did rather than at some other time, or indeed not at all.

Runs on banks and other depository institutions have figured prominently in most financial crises, and they are one of the continuing concerns about the future. The possibility of a period of stability followed by a run on a depository institution has been established to exist theoretically even when investors have perfect foresight – including knowing that a run will occur and when. Rational investors may find it optimal to hold their deposits with an institution until its economic net worth is exhausted and then for all of them to make withdrawals at once. (Flood and Garber, 1981). Such a run is not a matter of confidence, and all depositors would be paid off without loss. These theoretical predicable runs do not, therefore, have the character of those that have been disruptive in the past, and which should be of concern in the future. Introducing calculated risks into the theory leads to the possibility that, in the event of an adverse outcome, there could be losses to depositors, but only to the extent that a sudden event led to real losses that exceeded the net worth of an institution. Losses out of proportion to proximate events would seem to involve uncertainty and the consequent role of confidence.

Depository runs could occur when confidence is shaken if there is uncertainty and imperfect information. Since any depositor has the right to a fixed sum of money when a deposit matures, and depository institutions normally have assets that are longer dated than their liabilities, a bank that has adequate resources to go on servicing normal deposit flows indefinitely could be pushed into difficulty as a result of such a development. It is also possible, and seemingly a more common event, for confidence in an institution to be maintained beyond the point of solvency – that is, beyond the point where a bank has sufficient assets to cover its liabilities. Then, should confidence ultimately evaporate, an ensuing run will leave the slower runners unpaid.

This distinction between runs on solvent and insolvent banks is, however, more clear in the abstract than in application. Because full value may not be realizable if assets must be converted into cash quickly, a liquidity drain may impair the solvency of an institution. In this respect, solvency judgments involve an element of uncertainty, which may contribute to the volatility of confidence, even as they are themselves matters of confidence.

A loss of confidence, triggered by concern about banks' abilities to meet their depository obligations, is not the only way a run can occur. Restrictions on interest rates payable on deposits may induce an outflow of funds into other investments when market-clearing rates of interest rise above deposit rate ceilings – a phenomenon that is commonly referred to as disintermediation. And, under a fixed

exchange rate or gold standard, flows of funds into other currencies or gold may, as happened from time to time, drain the reserve base of a national banking system and produce a liquidity crisis. Under such conditions, solvent institutions may be precluded from attracting funds to maintain their liquidity. Thus, the vulnerability of a financial system to liquidity crises may be heightened by the interaction of regulation and macroeconomic policy.

Moreover, the solvency of depository institutions, as well as their liquidity, may be affected by macroeconomic policy. When these institutions have long-term, fixed-interest-rate assets, their solvency may be threatened by a rise in market interest rates. Thus, when interest rates rose in the United States in the late 1970s, the net worth of thrift institutions declined. Interest rate ceilings mitigated their solvency problems, but at the same time they induced an outflow of funds into higher yielding investments, creating liquidity problems that could be alleviated only by recourse to less tightly regulated deposits. However, to the extent that the thrift institutions avoided the Scylla of illiquidity by offering competitive rates of interest on deposits, they confronted the Charybdis of insolvency. Confidence was generally maintained despite the fact that there were large numbers of institutions where assets, valued at current market prices, were less than their liabilities because of deposit insurance and official lending to the industry. Following a decline in interest rates, the pressures abated, although the U.S. thrift industry remains vulnerable to higher interest rates.

The extent to which a financial system is **segmented** is a two-edged sword in considering the likelihood of systemic crises. In increasingly integrated markets, problems originating in one set of institutions may be propagated and their effects felt far from their origin. Consequently, weak institutions – those with thin margins of net worth – could become exposed throughout the system. The possibility of chain reactions spreading through increasingly integrated domestic and international financial markets is an often expressed concern. However, the vulnerability of the system to real losses is more closely related to the aggregate net capitalization of the financial system relative to the risks and uncertainty to which it is exposed than to the extent of integration. In an adequately capitalized system, disturbances would be quickly attenuated as they are propagated, since losses would then be absorbed by a widening circle of institutions with positive net worth.

When chain reactions in the past became increasingly virulent as they spread, they were sustained by a cumulative **loss** of liquidity. This aggravated initial real losses of some institutions. For example, systemic banking crises were fed by internal drains into gold or **specie** held by residents or external drains (foreign exchange crises). While the interdependence of the affected institutions contributed to the contagion among them, the segmentation of banking into national markets

and the vulnerability of each one to drains of liquidity were necessary conditions for a cumulative loss of liquidity within one market.

Shifts of funds from one bank to another within a closed system, even if there is a shift in currency of denomination, increase the liquidity of some banks while reducing that of others. Hence, closer integration reduces the likelihood that one market will be drained of liquidity and limits the extent to which liquidity problems can spread. If the market for funds linking depository institutions is well developed and not disrupted by a general loss of confidence in one another among institutions, liquidity difficulties will generally remain localized in problem institutions. A second safety valve may exist in the capacity of institutions experiencing inflows of funds to take over the lending of those suffering a drain. Clearly, this mechanism will function most smoothly when customer relationships are already established. Then the credit information will be at hand to enable credits to be granted quickly. The potential for systemic problems is greater if flows are from one group of specialized or nationally insulated institutions with a distinct customer base to another group. Interest rate restrictions, international capital controls or a fixed exchange rate, any of which could suppress incentives for funds to flow where they were in demand, segment the financial system and increase the likelihood of an important segment becoming distressed by liquidity problems.

II. FINANCIAL MARKET TRENDS AND VULNERABILITY TO SYSTEMIC CRISES

Changes in financial markets are continuing to alter the extent and nature of the vulnerability of the system to crises in several ways – increasing soundness in some respects, while making the system more vulnerable in others. An overall judgment as to whether a crisis is more or less likely than earlier is difficult to make, but some conclusions can be drawn about how the character of potential systemic problems has changed.

Financial market innovations and practices have greatly enhanced the capacity of financial institutions to manage quantifiable risks. The trend towards less specialization, facilitated by deregulation, has allowed greater diversification of credit risks. New instruments, such as financial options and futures contracts, and the development of interest rate swap techniques associated with securities offerings, have enabled financial and non-financial institutions to hedge interest rate and exchange rate risks better and at lower cost than they could in the past. The

increasing sophistication of financial models and rapid expansion of information processing capabilities have also enabled decision-makers to treat as risks some matters that were once left in the background – the domain of uncertainty has been cut back in some areas. Securitization – an expansion of the role of marketable instruments in the financial system – has also served to improve information flows and to facilitate risk evaluation in one respect: it has allowed for more continuous monitoring of market evaluations of credit standing by providing continuous price information.

At the same time, it seems likely that new uncertainties have arisen as a result of the rapid pace of change. For example, there are legal uncertainties about what would happen if problems arose in rolling over paper issued in connection with Revolving Underwriting Facilities (RUFs) and Note Issuance Facilities (NIFs) in the international marketplace³. And evolving clearing processes have not been fully tested under stress. Perhaps of greater concern is whether credit evaluations have a greater element of uncertainty than was the case when relationships between borrowers and lenders were closer and more stable.

One particular problem with innovative instruments arises in the context of the common law legal systems of the United States and the United Kingdom, which govern most of the new instruments. Under this legal approach it is impossible to know with certainty just what obligations various parties have until they are tested in the courts. The potential for surprises in the legal area was underscored a few years ago when a U.S. court ruled that those who had bought securities under repurchase agreements from the Lombard-Wall securities firm could not take possession of their securities when that firm failed and was unable to fulfill its repurchase obligations. This ruling overturned the fundamental assumptions of market participants about the nature of such transactions. No crisis ensued, and the legal status of repurchase agreements was subsequently clarified in new legislation, but the lesson is clear that uncertainty must be attached to the legal status of new instruments.

The development of relationships by a borrower with increasing numbers of financial institutions as markets have become more competitive and less segmented constitutes another aspect of structural trends in financial markets that provides grounds for concern about greater exposure to uncertainty. This trend has made credit judgments more difficult because financial institutions often have a less close and less complete picture of a borrower's situation and prospects than they had when each borrower maintained fewer and closer banking relationships. As a result, financial institutions may be emphasizing diversification as a way of controlling risks rather than making careful credit judgments. Such a strategy could reduce the vulnerability of an individual institution so long as systemic risk and uncertainty were

unchanged. But it could lead to an increase in systemic exposure and, if not matched by a corresponding increase in capitalization, to greater vulnerability of financial institutions, individually and collectively.

Securitization has also both encouraged and facilitated diversification of risks by investors as an alternative to credit judgments based on extensive information. Securitization not only weakens direct contact between debtor and creditor, thereby reducing the information that most investors have at their disposal and can analyse, but it also encourages a short-term perspective on credit judgments because it opens to investors the possibility of reducing exposure if the credit worthiness of a borrower should begin to deteriorate. Thus, the possibility arises that a larger volume of questionable credits could be extended, and the systemic vulnerability to a business downturn or a period of tight money could therefore be greater than in the past.

It is not only that incentives to make careful credit assessments may have been weakened by financial market changes, however. Credit judgments have also been rendered more difficult by the new financial management practices of non-financial businesses and households, which have been made possible by financial innovations. Debt ratios are in many cases much higher than in the past, and the liquidity of balance sheets as gauged by traditional rules of thumb has fluctuated around a declining trend. But given a wider range of financial opportunities, it makes little sense to evaluate balance sheets according to these rules of thumb. It appears that much of the non-financial sector perceives itself to be more liquid than in the past, whatever financial ratios show. Allowing for the lowering of the cost of maintaining liquidity owing to more competitive markets and to the availability of new techniques of asset and liability management, this is not an unreasonable view. Nevertheless, it would seem likely that the uncertainty attached to liquidity judgments would be heightened because the environment is less familiar and less tested under stress. By the time sufficient experience has been accumulated to reduce this uncertainty, the financial environment is likely to have changed further. Hence the objective basis for credit judgments seems to have been weakened, and likely to remain so. In this area, the domain of uncertainty appears to have expanded.

More fundamentally than these specific areas where uncertainty may be greater, the question arises as to whether the much more competitive environment in financial markets today fosters a more uncertain financial environment. If the Knight view is correct, innovation in the search for profit will prove to be a durable feature of the emerging, intensely competitive financial markets. Indeed, market innovators often complain that their new products are profitable only briefly – that new financial techniques are soon reduced to the status of commodities, with margins that will not support the profits and salaries that participants in the market

seek. Hence, there is a continual drive to find new instruments and new techniques, a tendency that has left regulators concerned about uncertainties that are inadequately provided for (BIS, 1986, p. 3). One aspect of this is the complexity of new techniques, which may mask the uncertainties for both the management of institutions and for regulators, despite advances in information processing and analytical techniques.

It is not only the participants in the financial markets who confront greater uncertainty as the process of innovation in quest of profits proceeds. The interpretation of macroeconomic financial indicators – notably money supply numbers, but also credit numbers and other indicators – is more uncertain now than in the past. This may prove a durable phenomenon as competitive markets continue to generate rapid innovation. If so, macroeconomic uncertainty may continue to be rather high and impair the quality of financial decisions.

It is often alleged that the drive to maintain income flows in competitive markets leads financial institutions to make insufficient allowance for unforeseen possibilities when they set prices. While this may be so, it is by no means self-evident. The Knightian or Schumpeterian views presume that rewards to entrepreneurs for bearing risk and uncertainties are generous. An argument built on pervasive and persistent irrationality among managers of financial institutions is rather weak. But it is not necessary to assert an irrational bias towards excessive exposure to uncertainty for given rewards in competitive markets to be concerned about possible systemic vulnerability to a large volume of credits that turn bad. If there is a tendency for competitors to form a common view about how to factor the unknown into decisions, some uncertainties are likely to be under-appreciated by the market as a whole, even while other uncertainties are allowed for generously. The result could be a build-up of vulnerability to particular unforeseen possibilities which, should they materialize, would affect the soundness of a broad range of institutions. The issue is how to contain such risks. While it may be difficult for those who are intimately involved and directly exposed to assess uncertainties, it is even more difficult for an outside observer to do so. Indeed, the record of financial supervisors in recognizing major problems in such areas as country lending has not been a good one.

This line of thinking suggests that problems arising from excessive or misplaced confidence could be more common in the future than they were in the past. By the time bad credits become evident, they may have accumulated to the point where the solvency of financial institutions or the value of a significant volume of financial paper is doubtful. On the other hand, problems seem less likely to take the form of a generalized loss of confidence in sound institutions in the way that occurred in some historical periods. Consequently, the resilience of the emerging

system to runs and other liquidity problems in the absence of widespread solvency problems seems distinctly greater now than in the past. There are several reasons for this.

One reason is that individual solvent institutions should be less prone to runs than they have in the past. Interest rate ceilings have been removed and fixed exchange rates have been abandoned, thereby removing some of the institutional rigidities that once contributed to liquidity crises. Financial institutions also have an enhanced capacity to manage interest rate and exchange rate exposures as a result of new instruments such as floating rate credits, options contracts and financial futures contracts. The increasing share of securitized credits on the books of depository institutions are also more liquid than loans in the event of an outflow from a particular institution.

The closer integration of markets means that a loss of confidence leading to a run on one or a few institutions is less likely to become contagious and system-threatening than in the past. As the regulatory and customary barriers that once segmented financial markets between countries and within countries have eroded, and as markets for funds among depository institutions have expanded and deepened, the international network of depository institutions has come to approximate a closed system. Funds withdrawn from one part of the system are deposited in another and are available to maintain credit activity by relending through interbank markets, purchases of securitized assets or extension of new credits. (For a more extensive discussion of this issue see Shafer, 1987).

The likelihood of systemic liquidity difficulties in the absence of solvency problems has also been lessened by the increasing homogeneity of the institutions within this closed system. For a **loss** of confidence to lead to a run on a class of institutions, there must be others which are deemed safer in which to place funds. A contagion cannot be universal within a closed system – and a large scale flight into currency is difficult to imagine. Hence, while weak but solvent institutions are not immune from a loss of confidence, the process of liquidity contraction is likely to have a more self-limiting character as funds flow into and thereby strengthen other institutions. Indeed, the relatively few instances of loss of funding power of banks in the wake of seriously deteriorating asset quality in recent years can be ascribed to the fact that there were no good alternative places to put funds except in other banks, although confidence in lender-of-last-resort support has probably also helped to maintain confidence.

Finally, securitization can be presumed to have reduced the likelihood of systemic liquidity problems by reducing the weight of depository institutions in the financial system. Borrowers in a number of countries are obtaining a significant amount of credit outside the banking system for the first time since the financial

difficulties of the 1930s. Securities markets are generally less vulnerable to liquidity problems than are banks, and such problems as occur tend, in the first instance, to take the form of a moderate decline in prices on outstanding securities and the emergence of an interest rate premium on new issues. A holder cannot withdraw funds from the market unless there is a buyer willing to accept the securities and thereby replace the funds being withdrawn from the market.

This sanguine view must be tempered somewhat because much of the new securities activity is in short-term instruments, which must be rolled over frequently and are backed up by various arrangements with banks. Consequently, the liquidity of banks could be impaired, not by an outflow of funds, but by an upsurge in credits if investors, as a group, were no longer willing to hold these investments and withdrew funds as they matured. These funds would flow somewhere, presumably into banks, which could use them to extend the necessary credits provided the loans did not seriously deteriorate the quality of banks' assets and their capital base was adequate. Bank supervisors have recognized the importance of these two elements – the credit judgments that must go along with contingent lending arrangements and the importance of adequate capital – for the stability of the financial system, given a larger volume of short-term securitized credits backed up by banks. (Committee on Banking Regulations and Supervisory Practices, 1986).

History is somewhat reassuring about the likelihood of a serious implosion of securitized credit and about the manageability of such an event should it occur – provided that most of the credits extended to the non-financial sector are fundamentally sound. There are relatively few instances of contagious flight from securities as compared with the numerous instances of runs on banks. The U.S. commercial paper market crisis of 1970, following the failure of the Penn Central Railroad, was one instance that exhibits a number of features in common with the worrisome scenario of a collapse of the market for short-term securities leading to a drawdown of backup lines of bank credit (Timlen, 1977). In the wake of the Penn Central failure, \$6 billion, or some 15 per cent of outstanding commercial paper in the U.S. market, ran off – that is, it could not be rolled over and borrowers in that market were obliged to use liquid assets or turn to banks for funds to pay off these credits as they matured. While this was a major adjustment, most sound borrowers were able to continue to fund themselves in this market. Nonetheless, bank credit demands increased by more than \$2 billion, and banks increased their discount window drawings on the Federal Reserve by about \$1 billion in the immediate aftermath of the failure.

It is not clear what lessons to draw for the future from the role played by the Fed's discount window in containing this crisis. For one thing, banks tested the Fed's willingness to lend, in some cases by borrowing more funds than they

required. More importantly, however, when the crisis occurred, interest rate ceilings applied even to large time deposits. These ceilings hampered the ability of banks to attract the funds that were flowing out of the commercial paper market. After the lifting of interest rate ceilings on large time deposits, banks were quickly able to raise \$10 billion through this vehicle in a short period of time. In today's environment of unconstrained interest rates, banks might be less dependent on discount window credit if calls were made on back-up lines of credit. But to the extent that money shifted from short-term securities to bank deposits, it would still be important for monetary policy to accommodate the shift by providing reserves through one means or another so that banks could meet expanded precautionary or regulatorily prescribed reserve needs.

Pulling together the various ways that the vulnerability to financial crises has changed, two broad conclusions stand out. First, there are good grounds for concern that problems of a systemic scale could build up in unregulated, competitive financial markets as they did in regulated markets. They are particularly likely to involve potential problems of the sort that cannot be pinpointed and evaluated – by supervisors or outside observers any more than by market participants. Further, there are reasons to be concerned that greater difficulty in making credit judgments and increased reliance on risk management through diversification as a substitute for them may be leading to a higher overall level of systemic vulnerability. In other words, some credit risks may be increasingly treated as uncertainties, with a strategy of **going-with-the-crowd** to some extent replacing careful evaluation. The second conclusion is that a more integrated global financial market, with more securitized credit and subject to fewer regulatory constraints, may well be less vulnerable to systemic liquidity problems characterized by contagious bank runs affecting sound institutions as well as unsound ones.

Before moving to what these conclusions imply for policies to avoid or manage crises, some implications of the changing financial markets for the options that authorities have available to deal with them should be noted. Most important are the stricter limitations on what any one authority, having responsibility for one part of the system, can do alone to contain a crisis – or for that matter, what it can do alone to prevent a build-up of problems without impairing the competitive position of the institutions for which it has responsibility. Thus, there is a greater need for coordination among financial supervisors within those countries where responsibilities are now fragmented. Indeed, as financial institutions have come to have broader powers, the case has been strengthened for consolidating regulatory and supervisory responsibilities in **countries** where they are now spread among several authorities. And there is a greater need for coordination internationally. Some steps are being taken in recognition of this. Discussions of areas of mutual concern among

national financial supervisors have been intensified. Responsibilities of supervision of transnational banking has been established among major bank supervisors meeting in Basle and a common view has been developed on some questions – for example, between the U.S. Federal Reserve and the Bank of England on the treatment of the off balance sheet exposures of banks.

Supervisory options for dealing with problems have been narrowed in a second important respect as a consequence of less restrained competition in financial markets. When financial institutions occupied protected market niches – whether geographically, according to the services they could offer, or with respect to the customers they could serve – there was an element of monopoly rent in the returns that could be earned. This rent created an intangible asset of the institution – the value of the franchise. When institutions experienced difficulty, even to the point of being insolvent by balance sheet criteria, they could, within limits, be kept afloat and ultimately restored to health as the monopoly return made up the losses over time. Even if the institution was too troubled to be revived, it could often be sold for more than the value of its tangible net assets, and losses could be correspondingly reduced. In effect, the value of the franchise was an asset that did not show on the books and which provided an additional buffer against loss. Deregulation and competition is rapidly eroding the value of these franchises. If financial institutions are worth more than their tangible net assets, it is because they are well managed. An institution in difficulty, and hence one whose management commands little confidence, is unlikely to have any premium value in the future. Hence, authorities may need to intervene earlier if they are to protect depositors and other creditors or themselves from **loss**.

III. SYSTEMIC SAFEGUARDS

The traditional function of the lender of last resort in a financial crisis is to conduct a triage – leaving those institutions who are able to do so to continue on their own, supporting those institutions in difficulty that are solvent [that have good collateral, in Bagehot's (1873) original formulation], and allowing those that are insolvent to fail. Three of the trends in financial markets identified earlier would seem to shrink the importance of the middle group for whom support would make the difference between survival and failure. First, the trend towards securitized finance means that depository institutions, which are more vulnerable to runs, make up less

of the financial system. And they are building portfolios containing more marketable and hence potentially more liquid assets. Second, as financial markets become more nearly one closed system, with market-determined interest rates and exchange rates, some mechanisms that once led to drains of liquidity from national markets or sectors of them are less likely to come into play. Third, the likely erosion of the value of franchises in competitive markets will narrow the room for manoeuvre in restoring an institution to health once confidence in it is lost.

This conclusion does not mean, however, that the lender-of-last-resort machinery can safely be neglected. Depository institutions still are, and are likely to remain, important parts of the financial system. Moreover, the web of credit flows among institutions and the growing daily volume of transactions among financial institutions are not immune from disruption – from technical failure as well as from a loss of confidence. And the tighter relationships among institutions, as well as the importance of Eurocurrency activity – business conducted in currencies other than the local one – have created greater needs for co-operation among central banks to establish, maintain and operate this machinery. The particular needs are to identify which central bank will assume responsibility for supporting each institution and to ensure that adequate funds are available in foreign currency, if necessary, to do so. The technical problems of conducting such support are not difficult if responsibilities are agreed. These questions have been reviewed from time to time by the central banks meeting in Basle. In a communiqué issued on 10th September 1974 they stated their satisfaction "that means are available for that purpose [lender of last resort in the Euromarkets] and will be used if and when necessary".

The somewhat sanguine conclusion concerning likely calls on a lender of last resort does not mean that a financial crisis is less likely than in the past. Rather, it seems more likely that a crisis, should it occur, would involve widespread questions of solvency.

One possible response to this eventuality could be to abandon the principle of supporting only solvent institutions. There have been some recent cases of support provided to institutions that ultimately proved non-viable, but the general principle has generally been reaffirmed. If this principle were relaxed, market discipline on financial institutions would erode and some would be encouraged to take excessive risks. In particular, it would create incentives for management of a troubled institution to "bet the bank" – that is, take gambles that would restore the bank to viability if they paid off and leave authorities to assume still larger losses if they did not. Moreover, it would place the burden on taxpayers to pay for financial mistakes.

These considerations suggest that the efforts of financial supervisors should be directed towards averting the build-up of problem situations in the future. This is not

easily done. It does not seem feasible to return to a compartmentalized, non-competitive system of markets. And the costs of lost efficiency, flexibility and innovative effort would be high. Nor does more careful examination with the traditional emphasis on asset quality seem a fully adequate response to correct possibly dangerous exposures of an entire class of institutions, given that these dangers may be shrouded in uncertainty. Examiners' standards of asset quality inevitably embody prevailing views about how to allow for uncertainties because they must make their judgments in the face of the same unclear picture of the future that market participants face. Thus, while they may interject an element of conservatism into financial practices and induce more timely correction of behaviour by institutions that stray far from the norm, examinations do not provide adequate protection against the system's drifting in a dangerous direction. The failure of examiners effectively to curtail bank lending to Latin America illustrates their tendency to accept prevailing standards of reasonable financial practice. A less judgmental and more mechanistic approach to examination is not likely to overcome the tendency for examiners to be part of the crowd. Over time, innovations would undermine the basis on which objective examination criteria were initially established. This does not mean that examination is unimportant in the emerging financial landscape, but it is essential to recognize what it is and is not likely to accomplish and to adapt examination practices accordingly. How this might be done needs to be seen in the context of other policies that might reduce the likelihood of financial crises.

Policies that contain the uncertainty in the environment are almost certainly the most effective way of reducing systemic vulnerability. If the view put forward in this paper is correct, this will be a matter for ceaseless action in an environment in which new uncertainties are likely to arise repeatedly. The objective should be to reduce the likelihood in an uncertain environment of a cumulating build-up of misplaced confidence, and a consequent hidden deterioration of asset quality – whether of securities held directly by the public or of loans extended by financial institutions. There are a number of areas for action. None is likely to be sufficient by itself; collectively, they would promote a more sound global financial system.

One priority should be to pursue economic policies in general that are sustainable over the medium term and are more stable. This includes both macroeconomic and microeconomic policies. Short-sighted and unstable macroeconomic policies contributed to the build-up of problem debts in the 1970s and the deterioration of asset quality in the first half of the 1980s, and they have contributed to the unpredictability of asset prices, with attendant risks. Today, macroeconomic uncertainty remains high because macroeconomic policies have allowed current account imbalances and public indebtedness to accumulate and exchange rates to

become distorted without timely and adequate corrective action being taken to maintain the global economy on a sustainable course. The result is a level of uncertainty about the medium-term future that could be reduced by better medium-term macroeconomic policies. The systemic uncertainty in credit evaluation is correspondingly higher than it need be.

Microeconomic policies have also contributed to the cumulative build-up of problem credits – notably in agriculture and a number of subsidized industrial sectors – which have contributed to financial strains. When microeconomic policies are set without regard to medium-term economic viability, it is not surprising that financial markets neglect these considerations as well.

A second priority should be to reduce uncertainty in the legal framework. One way to do this would be to establish regulations to govern new activities as they emerge and begin to reach significant scale. Such regulation might be of a passive sort – that is, the objective would not be to restrain or restrict practices so much as to codify market practices as they evolve. Such codification, which would entail going beyond current efforts of some supervisors to describe and take a view on innovations, would reduce the scope for misapprehension. A consensus on specific practices should be given the force of law. Such regulations need not and ought not be static. They should evolve to accommodate innovation. Self-regulation may be one way of establishing greater codification of practices, but such regulation must have legal enforceability if it is to reduce uncertainty about rights and responsibilities of participants in financial markets.

The systemic vulnerability resulting from uncertainty can also be reduced by legal or regulatory measures that are realistic about the capacity of various economic agents to make informed judgments. Thus, for example, it is unrealistic to expect individuals to make judgments as to whether to maintain deposits with a bank or to leave securities in custody with a broker on the basis of a precise and informed risk assessment. Such decisions for most people are largely a matter of confidence and fall in the domain of uncertainty rather than calculated risks. Thus their decisions cannot be expected to exert timely market discipline. A legal framework that offers considerable protection to consumers (by, for example, giving their claims a preferred status in the event of reorganization or liquidation) would reduce the potential instability arising from a shift of confidence. At the same time, it could improve the effectiveness of market discipline exercised by market professionals, who are better placed to make informed decisions by increasing their exposure. They would demand expected returns commensurate with the risks that they assumed.

A third priority should be to require more extensive financial disclosure across the board. There is a tendency, both among the managers of financial institutions

and some supervisors, to be too concerned about the impact of adverse information on markets. In fact, problems have more often developed because adverse information has been withheld, contributing to uncertainty and ultimately leading to an abrupt **loss** of confidence when problems could no longer be hidden. An extensive and continuous flow of information would lead to more gradual adjustments of expectations based on more objectively assessed risks. There are complex problems involved in establishing exposure rules – in determining what is meaningful information, in protecting the legitimate right to privacy of clients, and in balancing the interests of institutions in keeping some strategic information from competitors. But much more information that would be informative could be widely disclosed by financial institutions while protecting privacy and maintaining a fair competitive game.

Finally, the priority for financial supervisors should be on the continual raising of questions of the 'what if ...' sort. These have an important role in stimulating reflection on as wide a range of uncertainties as imaginative and worried thinking can produce. In order to do this, supervisors must have the detailed understanding of the operations of financial institutions that comes from close examination of financial institutions and frequent contact at all levels of management. Indeed, this is one important and indispensable outcome of the examination process. Only by demanding that the unquestioned be questioned, thereby continually eroding the domain of uncertainty, can supervisors contain uncertainty in the system as the efforts of innovators expand it in a competitive environment.

While governments could act in all of these areas to reduce the likelihood of an unstable financial situation developing, problems could still arise, and they almost certainly will. If **lender-of-last-resort** operations are less likely to be appropriate for dealing with problems, what is a better instrument? The answer may be in stronger regulatory powers and stronger will to use them to force reorganization of financial institutions that are judged to be at the outer limits of safety – that is, before they are unquestionably insolvent. Such judgments cannot be based fully on objective criteria. Authority to proceed in this way should extend over the full range of institutions engaged in financial business and not only to depository institutions. Examination of the operations, management and balance sheets of financial institutions must be undertaken with extreme care and diligence in order to give legitimacy to such an action. The possibility of forced management change, forced merger or liquidation would instill an element of conservatism into financial activity. And the exercise of such power would prevent a gravitation of financial institutions toward the margin of viability, where an unforeseen shock might not be withstood.

It is essential, in order not to instigate a crisis in the process of such

reorganizations, that the liquidity of an institution's creditors be protected. Hence, there is a role in conjunction with these operations for a lender of last resort to lend, either to the institution so that it is able to meet its obligations in a timely manner while it is undergoing restructuring, or to its creditors so that their liquidity is not impaired while the affairs of the institution are being sorted out. Two things would differentiate such operations from the traditional view of the lender of last resort. One would be the price attached: in the traditional conception, the price of support was a penalty interest rate. In this conception, it would be a change of management or loss of autonomy. The second difference is in the way in which such operations would be activated: in the traditional conception, the trigger was a loss of confidence by the market and a call by the affected institution for support. It is more likely than in the past that such an event would come too late. In the suggested new approach, the trigger would be a loss of confidence by the supervisory authorities. It is to be hoped that this would prove more timely.

NOTES

1. These changes and the processes through which they came about have been described in a number of studies. See, for example, Bryant (1987), which is a carefully study of the process of internationalization. Bingham (1985) reviews changes in banking, both domestically in Member countries and internationally. Papers on financial changes in thirteen industrial countries and their policy implications are collected in Bank for International Settlements (1984). Country Reviews published by the OECD during 1986-1988 have or will take stock of changes in domestic financial markets in most Member countries.
2. See Bank for International Settlements (1986) for a detailed treatment of some of the most important developments on this front.
3. These are two recently developed techniques whereby marketable paper is issued in international markets by borrowers, backed up by credit lines provided by banks. The precise nature of the contingent liability of the banks providing the back-up and how the attendant off balance sheet risk should be evaluated has been a matter of concern to regulators. The U.S. Federal Reserve and the Bank of England have recently formulated a joint policy on the treatment of these risks in the assessment of the capital adequacy of the banks they supervise.

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