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Safeguarding the Banking System in an Environment of Financial Cycles

Proceedings of a Symposium
Held in November 1993

Richard E. Randall
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Gilbert
Litan
Pierce
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Rolnick

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Safeguarding the Banking System in an Environment of Financial Cycles: An Overview

*Richard E. Randall**

The theme of this Federal Reserve Bank of Boston symposium is captured in its title and in the following statement, distributed in advance to all participants:

> Various proposals to enhance the safety and soundness of the banking system have been debated in recent years, and some of these proposals have been enacted into law. But the debate, and the legislative changes, have generally focused on limiting losses to the deposit insurance funds in order to protect taxpayers, rather than on the broader implications for the banking system and its role in financial markets and the economy. Furthermore, most proposals have not been considered in the context of financial cycles, where changing economic circumstances may reveal risk exposures and the potential for widespread losses in important segments of the banking industry. Examples include the money center banks' exposure to loans to less developed countries around 1980 and the commercial real estate boom and bust cycles in New England and parts of the Mid-Atlantic region in the late 1980s.
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> The focus of the symposium will be to examine the likely effectiveness of the various proposals for change in the context of financial cycles and the role of banking in the economy.

In the first paper, Richard Randall of the Boston Fed described the recent financial cycles that severely damaged the United States banking system. The pattern of these cycles made clear, he argued, that actions to limit the damage to the banking system and the economy must come when risk concentrations are being built and well before a boom turns sour. Tough responses after problems become evident tend to be

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procyclical and can increase the ultimate damage. Randall argued that timely supervisory intervention against excessive risk concentrations could avoid or substantially moderate the distress caused by financial cycles.

The other three papers advocated enhancing market discipline as the way to protect the banking system. George Benston called for more capital in banks, with a significant proportion in the form of subordinated debt. Arthur Rolnick advocated coinsurance, where losses are shared between depositors and the insurance fund. James Pierce presented a proposal for functional banking akin to narrow bank and core bank proposals that had previously been made by others.

Both in the formal discussion of the four papers by Robert Litan and Alton Gilbert and in the general discussion that followed, sharp differences of opinion were apparent. Some attributed the banking problems primarily to euphoric overlending and lemming-like overconcentration in the same types of assets. Others stressed the moral hazard caused by the perverse incentives of deposit insurance, inadequate market discipline, and supervisors' forbearance with respect to failing institutions.

Many were skeptical that supervisors could be depended on to take unpopular actions against unwise risk-taking in a euphoric boom, but several felt that a combination of supervisory and market discipline responses to risk-taking was worth trying. Among the alternative market discipline proposals, none emerged as a clear winner. This overview summarizes the four papers and discussion, highlighting key themes and areas of controversy.

Safeguarding the Banking System from Financial Cycles

The lead-off paper by Richard Randall of the Boston Fed describes financial cycles not as recurring phenomena but as cycles through various phases—as in boom and bust cycles. Typically, a number of banks developed abnormal risk concentrations during periods of rapid growth in a particular area of activity. As growth continued, the expansion became euphoric and credit standards deteriorated, although actual loan problems remained within normal bounds. Eventually the economic underpinnings of the activity weakened, as a result of external factors or overdevelopment. The market psychology turned negative, values collapsed, and losses developed that wiped out capital in numerous banks and seriously weakened others.

Randall catalogs the more destructive of the recent financial cycles, noting the timing and nature of successive phases, the economic forces responsible, and the resulting damage. He estimates that about three-quarters of U.S. bank failures in the past 20 years, as measured by assets

rather than numbers of banks, relate to financial cycles, and only about one-quarter to isolated situations. This estimate does not include the money center banks, which were severely damaged in the early 1980s by a financial cycle involving loans to less developed countries. Randall notes that those banks, with assets well in excess of the assets of all failed banks, eventually sustained losses on developing country credits nearly equal to their capital at the time when such loans peaked.

Randall argues that financial cycles have critical implications for policy options in safeguarding the banking system. Once risks have been built in and economic factors begin to weaken, little can be done to avoid future losses. But problems are not apparent before this point. Thus, to be effective, action to head off severe losses must be taken in response to excessive risk concentrations, and well before indicators such as nonperforming assets exceed normal levels. Capital ratios of banks weaken relatively late in the cycle, long after risk exposures have been built in and losses are inevitable.

Based on his earlier research, Randall contends that market forces have not reacted to excessive risk-taking, only to actual evidence of problem loans. He finds no basis for relying on market discipline to head off future financial cycles. He further argues that proposals to increase market discipline generally also increase the vulnerability of the banking system to systemic crisis. In a context of financial cycles that simultaneously expose numerous banks, often including the largest, to failure and near-failure conditions, it would be unwise to experiment with changes that would increase the vulnerability of the system, he contends.

Randall proposes, instead, a program of direct supervisory action against excessive risk-taking by individual banks. Such actions were once understood to be part of the supervisor's job, he notes, and that role has taken on new significance with the prevalence of major financial cycles. He suggests that heading off financial cycles is the most critical task of bank supervisors. Such a program need not add to the regulatory burden, and can be controlled to avoid credit allocation on any basis other than risk.

Randall's proposal is intended to act countercyclically with respect to financial cycles (but not the business cycle, per se). He contends that the forces of market discipline tend to come too late and have a procyclical effect, aggravating the depressed phase of the cycle. The same is true of "prompt corrective action" tied to deterioration in capital ratios, higher capital requirements and deposit insurance premiums for banks with weakened supervisory ratings, and market value accounting.

The current focus on protecting the taxpayers from bank failures is misdirected, Randall argues. The banking industry supports the deposit insurance fund, and only if the banking industry were overwhelmed with losses would the taxpayer be called upon. The preservation of the country's banking system is essential to the economy, the payments

system, and the social fabric. The government must be prepared to do what is necessary to avoid chaotic failure of large segments of the banking system. This does not mean protecting individual banks from failure, but it does have implications for the way bank failures are handled and for avoiding unnecessary failures of marginal banks. According to Randall, "narrow" or "functional" bank reform proposals are designed to protect the deposit insurance funds and not the banking industry, and therefore do not address the real problem.

To summarize, Randall stresses the significance of financial cycles in recent banking problems and for bank reform. He advocates supervisory action against excessive risk concentrations as the only reform with a reasonable prospect for timely countercyclical action, while rejecting market discipline proposals as procyclical and potentially destabilizing.

Market Discipline: The Role of Uninsured Depositors and Other Market Participants

George Benston of Emory University focuses on how to counteract the moral hazard engendered by the safety net of government-provided deposit insurance, and the relatively low equity capital ratios tolerated in the banking industry. He favors restricting deposit insurance as a means of generating market discipline and argues that objections to this approach are invalid. In particular, he takes issue with the following arguments:

1. Uninsured depositors are unlikely to be able to monitor banks or to do so in a timely fashion.
2. Even if they could do so, the additional interest that depositors would require on uninsured deposits would be insufficient to alter bank behavior.
3. Once weaknesses are noted, uninsured depositors are likely to withdraw their funds (run) rather than continue to monitor a bank.

In dismissing the first objection, Benston points out that much information on banks' performance is available. Banks must disclose considerable information, including nonperforming loans and loan loss provisions, and several private firms sell analyses and ratings of the condition of banks. The federal agencies examine banks in detail and summaries of their reports could be made available to the public. (They are not disclosed at present.) Benston also argues that most corporate financial statements are more difficult to analyze than those of banks, yet these corporations regularly issue debt that is not guaranteed by the government. Thus, depositors could assess the risk taken by their banks, at least to the extent that creditors of corporations generally can

do so. Benston notes that while the large bank losses on loans to real estate developers and oil producers were not predicted by the market for bank stocks, apparently they were also not predicted by bank managers or by the regulatory authorities.

With regard to the second objection, Benston observes that most studies show at least some risk penalty in the rates required to issue large certificates of deposit and subordinated debt. This has been so even though most of the banks studied were large enough to be considered "too-big-to-fail," and most depositors have had good reason to assume that they would probably be paid in full, if the bank failed. Thus, Benston concludes that truly uninsured deposits would require risk premia sufficiently large to influence the risk choices of banks.

Regarding the likelihood of depositor runs, Benston does not appear to be concerned about runs on seriously damaged individual banks, but he carefully analyzes the potential for systemic bank runs. He argues that if depositors believe that their funds are at risk, market pressures will force banks to increase their capital and diversify their risks to provide assurance to their customers, just as nonbanks do. And under the provisions of the Federal Deposit Insurance Improvement Act of 1991 (FDICIA) for prompt corrective action, discount window constraint, and on-site supervision, banks will be closed promptly when capital falls below the minimum level, thus reducing the supervisory caseload. Moreover, solvency evaluations will always be current for all banks with more than $10 billion in assets.

Faced with a market test, banks would structure themselves to avoid runs, differentiating themselves from problem banks, raising additional capital or merging with stronger banks, or even liquidating themselves to avoid progressive weakening. Benston also cites studies showing that there is little evidence that bank runs have been contagious, causing the failure of solvent banks. Nevertheless, he concludes that the scenario of likely runs on a number of large banks, as presented by Randall in an earlier article, is overstated but plausible. However, Benston sees this risk as stemming from banks' low capital ratios and the fact that some banks are considered too large to have their costs inflicted on uninsured depositors, both conditions that Benston has consistently proposed eliminating.

Benston reviews various methods of limiting deposit insurance coverage, noting that if deposit runs are of concern, coinsurance might be less desirable since depositors will wish to avoid losses on even a portion of their funds. He also cites various reasons why it may not be fully effective to limit insurance to demand or very short-term deposits, or to give preference to depositors over other creditors.

In sum, Benston finds that uninsured depositors can provide timely market discipline and that the danger of systemic runs on solvent banks, if it exists, can be removed by actions taken by these banks. Neverthe-

less, he concludes that the incentives affecting bank regulatory authorities will cause them to continue to act in most cases to prevent losses to depositors of large banks. Consequently, he suggests turning to another source of market discipline—subordinated debt.

Benston calls for considering subordinated debt on a par with equity capital, as it serves to absorb losses that would be imposed on the Federal Deposit Insurance Corporation (FDIC). Such debt should have a remaining maturity of at least two years. Because the holders of such debt cannot run and do not benefit if the bank does well, they have every incentive to require a higher rate of interest if the bank takes more risks. Equity holders are less desirable sources of market discipline because they have upside as well as downside potential and, particularly in banks with low or declining capital, may have incentives to encourage greater risk-taking. Furthermore, subordinated debt can probably be sold at a cost lower than that of issuing additional equity.

Benston's earlier proposal (jointly with George Kaufman) for structured early intervention and resolution has been largely, but insufficiently in Benston's opinion, adopted in FDICIA. The Benston/Kaufman concept calls for capital to be measured after adjusting assets and liabilities to market values. Banks would attract supervisory concern when capital fell below 10 percent of assets, and the level of concern and stringency of supervisory constraint would increase as capital ratios fell. In the final category, capital below 3 percent of assets, quick recapitalization, merger, or liquidation would be the alternatives.

With adequate capital and the market discipline imposed by the holders of subordinated debt, deposits could be fully insured in order to avoid the inequity imposed on smaller banks by the "too-big-to-fail" practice. Furthermore, banks with adequate capital could be relieved of close supervision and of almost all restrictions on assets and on banking activities.

Thus, while Benston believes that depositor discipline, in conjunction with higher capital and early intervention in failing banks, could protect the banking system, he fears that the actions of regulatory authorities in handling large troubled banks will nullify depositor discipline. He therefore opts for subordinated debt holders to be the providers of market discipline, permitting full insurance for all depositors.

Market Discipline as a Regulator of Bank Risk

Arthur Rolnick of the Minneapolis Fed traces the history of banking panics from the free banking era that began in 1837 up to the establishment of the FDIC in 1934. Deposit insurance brought stability to banking and an end to banking panics, but it created another problem—moral hazard.

This new problem did not clearly manifest itself until it was recognized that deposit insurance was in reality unlimited, particularly at the larger banks. The authorities' handling of the Continental Illinois failure in 1984, when all depositors were protected, made this clear, if it had not been earlier. Between 1985 and 1990, fully 99 percent of uninsured deposits at all failed banks were protected by the FDIC.

With full insurance, depositors have no reason to worry about the risks their banks take, and banks need not pay a risk premium on deposits. Assuming that riskier assets generally yield higher returns and that bank stockholders are so well diversified that they are risk neutral or can readily hedge their risk, it follows that banks best serve their shareholders by taking on the riskiest portfolio possible. This is the essence of moral hazard, the incentive to increase risk beyond what would otherwise be considered prudent limits.

Rolnick contends that the experiences of both the savings and loan and the banking industries in the 1980s provide evidence of moral hazard induced by deposit insurance and of the failure of the regulators of both industries to contain that moral hazard. While regulation might be improved, regulators cannot control risk, because without a profit test they have no basis for determining the optimal amount of risk. Furthermore, when banks gamble in their risk-taking, regulators cannot monitor banks closely enough to close them in time to avoid losses to the insurance fund.

Rolnick goes back into history again to support his argument that, in the absence of full deposit protection, the market can discipline bank behavior. Depositor exposure reintroduces the possibility of bank runs, so a trade-off exists between moral hazard and bank panics. But Rolnick sees the Federal Reserve System as better able to contain panics than it was in the 1930s, so the trade-off today is less severe.

Nevertheless, Rolnick is concerned that regulatory authorities will consider it advisable to protect uninsured depositors when a large bank is failing, even though the appropriate long-term strategy calls for introducing more depositor discipline by not protecting them. He therefore advocates coinsurance, because the commitment to impose losses on depositors can be made more credible where individual depositors lose only a fraction of their exposure.[1] The probability of widespread bank runs following the failure of a large bank would be reduced because far more of the funds of large depositors would be covered. Consequently, the authorities would have little rationale for protecting uninsured depositors.

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[1] An example of coinsurance would be for depositors to be insured for 80 percent of their deposits. Because coinsurance can be phased in gradually, Rolnick notes that it would not be necessary to determine the optimal level in advance.

In sum, Rolnick seeks a means of limiting the moral hazard engendered by deposit insurance, while minimizing the risk of either banking panics or supervisory reluctance to force losses on depositors of large banks. He concludes that coinsurance is the best alternative.

The Functional Approach to Deposit Insurance and Regulation

James Pierce of the University of California at Berkeley proposes a radical restructuring of the financial system in terms of deposit insurance, supervision, powers, and the federal safety net. The concept is similar to "narrow bank" and "core bank" proposals.

After a transition period, what are now called banks would be divided into two parts, monetary service companies and financial service companies. Monetary service companies could accept only transaction accounts, which would be guaranteed by the government and on which they could pay interest. Monetary service companies would be limited to holding high-quality, short-term assets and would be closely supervised. The financial service companies, on the other hand, could accept any type of deposit, but without deposit insurance, and would be unrestricted in their lending activities.

These two "companies" could operate as integral parts of a broader financial entity engaged in any combination of financial services. No "fire-wall" requirements would be imposed, so that synergies need not be impaired.[2] But a monetary service company could not be the creditor of any other parts of the organization or be responsible for their debts, and it would have to be adequately and independently capitalized.

Thus, the functional approach is designed to isolate a unique and critical bank function that regulators believe must be protected to avoid payments system disruptions in a time of general bank distress. Pierce points out that the efficiency of the payments system would be significantly diminished if sellers of goods and services had to verify the soundness not only of buyers, but also of the buyers' banks, and therefore he proposes 100 percent insurance of transaction accounts. He sees no need to offer deposit insurance on time deposits, and accordingly no need to supervise the quality of credit or the adequacy of capital in the non-monetary portion of the organization.

Pierce envisions the Federal Reserve as the supervisor of the monetary service companies and the FDIC as its subsidiary to administer a federal insurance program for transaction accounts. The other bank

[2] For instance, the same employees could handle transactions in both companies.

and thrift regulators would be eliminated. While monetary service companies would have normal access to the discount window, financial service companies would have only emergency access in the event of a severe loss of liquidity. Insolvent institutions could not be bailed out.

Pierce argues that the functional approach probably would not adversely affect the supply or cost of business loans, but even if it did, he favors subsidizing such lending directly rather than financing it with insured deposits. He asserts that small banks would not be hurt by the loss of deposit insurance on the bulk of their liabilities.

Pierce also rejects arguments that the absence of prudential supervision would increase the danger of financial instability in the financial service companies. Deprived of deposit insurance and the protection of "too-big-to-fail," large creditors might be expected to withdraw funds at maturity if they perceive a problem. Monetarist economists should not be concerned because the central bank can maintain the money stock and bank monetary functions would be completely protected. Other economists might be concerned that a breakdown in the stock market or commercial paper market would result in a "flight to quality." Borrowers with asymmetric-information problems ("opaque" loans) would face higher rates or be rationed out of the market.[3] But Pierce argues that the Federal Reserve can soften these effects by providing liquidity. To the extent that financial service companies are unable to roll over maturing debt, or are forced to sell opaque assets at substantial losses, some may fail. But even during a panic, when creditors demand payment from a number of financial service companies, few will demand currency and a large part of the withdrawn funds will be invested in the securities of solvent financial service companies. Furthermore, the monetary service companies may use funds borrowed from the Federal Reserve to buy market instruments issued by sound financial service corporations.

Market discipline in financial service corporations will result in stronger capital positions, better control of failures, and avoidance of stampedes into risk concentrations such as those experienced in the 1980s. Pierce contends that occasional interventions by supervisors to protect creditors of large institutions, in extraordinary circumstances, would not nullify market discipline once functional banking is achieved. He hopes, however, that with money and payments safe, the authorities would be no more likely to bail out a financial service company than they would an auto company, a defense contractor, or a city.

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[3] As financial intermediaries, banks make business loans that cannot be readily handled by markets directly. The business loan portfolio of a typical commercial bank consists of numerous loans of various types and in various industries, involving detailed financial information, non-standard terms, and often collateral handling and periodic on-site visits and inspections. Such loans are sometimes referred to as being "opaque," in contrast to more "transparent" credits that trade in the commercial paper market.

Thus, Pierce would create a mechanism so that today's banking functions could be carried on within any type of financial firm, with deposit insurance limited to transaction accounts and market discipline replacing supervision in safeguarding the riskier activities.

Prepared Discussant Comments

The first discussant, Robert Litan of the U.S. Department of Justice, was not convinced by Richard Randall that supervisors can forecast future problems better than bank depositors, shareholders, and creditors.[4] Although he saw no harm in supervisors doing their best to dissuade bank managements from overly risky concentrations, he also saw the possibility that politicians would pressure supervisors to back off. He agreed with Randall that warnings by supervisors are best conveyed on a case-by-case, judgmental basis.

Litan stressed the importance of higher capital ratios as a major benefit of greater market discipline. He rejected coinsurance because it entails the risk of runs, which policymakers would not tolerate in the case of large banks. Litan sees subordinated debt as clearly the superior source of market discipline. He would require all large banks to have outstanding a minimum amount of subordinated debt.

Litan, a long-time supporter of narrow (or functional) banking, regards this approach as the ultimate in market-based solutions because all opaque lending would be subject to a market test. Narrow banking would remove most of the need for supervision and what Litan calls political cycles from the lending process. But the possibility remains of a run in the commercial paper market, which would be largely funding the financial service companies. Litan believes that the danger of systemic runs could be handled by open market operations and the discount window, but the concerns of policymakers are likely to delay serious consideration of the concept.

Litan's ideas for the transition to functional banking differ somewhat from Pierce's, and he would not impose narrow banking on small banks. Rather, Litan favors starting with a voluntary program tied to the acquisition of broader bank powers.

Litan also commented on a proposal being advanced by Bert Ely, consultant, and others for private deposit insurance through cross-guarantees. A serious problem with the concept is that while the risk will be assumed by various insurance syndicates, the government will be backstopping the system. It is inevitable, then, that government

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[4] Litan made clear that he was presenting his own views and not those of the Clinton Administration or the Justice Department.

authorities would want to supervise the syndicates, and to do that they must have knowledge of the condition of the larger bank and nonbank syndicate members. So, what do we gain in the end? Litan related his personal experience in attempting to establish a company to insure pools of bank loans. Potential financial backers viewed banks as blind asset pools, and the attempt was unsuccessful.

In conclusion, Litan suggested a combination of mandatory subordinated debt and supervisory warnings of excessive risk concentrations and perhaps, in the future, a transition to narrow banks.

The other discussant, Alton Gilbert of the St. Louis Fed, expressed disappointment that the three papers proposing market discipline reforms did not discuss how their proposals would safeguard the banking system in an environment of financial cycles. He sees a potential for procyclical lending behavior associated with strict enforcement of higher capital requirements or steps being taken to obtain depositor discipline. He agrees with Randall that some FDICIA provisions are akin to "shooting the wounded."

Gilbert has reservations, however, about the ability of supervisors to measure risk concentrations and overcome political interference. But his more fundamental concern is Randall's view that the basic cause of bank risk problems is the irrational animal spirits of people caught up in boom-time euphoria, rather than moral hazard stemming from deposit insurance. This view, unique in the literature of banking risk, could have sweeping policy implications because it could be interpreted to mean that the danger is not confined to depository institutions. This could, in turn, suggest that the supervisors' role should be expanded to moderate financial cycles in all forms of financial intermediation. This possible interpretation disturbs Gilbert, given the abundant evidence worldwide that market participants allocate resources better than government agents.

With respect to Benston's proposals, Gilbert is skeptical that a modest increase in capital ratios would help much. He also questions the value of "prompt corrective action," noting that very few failing banks have taken on additional risk once they became seriously damaged.

Gilbert devotes most of his remarks to one critical assumption underlying James Pierce's functional bank proposal: that the government can ensure the safe operation of the payments system by insuring only transaction accounts and supervising only the risks related to such accounts and the offsetting assets. Gilbert argues that monetary service companies will have to hold balances at other banks, including foreign banks, and thus will assume some credit risk. Monetary service companies will also need to extend intraday credit to customers, including financial service companies, to facilitate the smooth functioning of the payments system. In these areas ongoing credit analysis and corre-

sponding supervisory overview will still be required. Thus, Pierce's proposal does not deliver what was promised: protection of the payments system and elimination of supervisory review of bank credit risk.

Gilbert's choice among the proposals for bank reform is coinsurance as proposed by Arthur Rolnick. Coinsurance would enhance market discipline by making it more palatable for supervisors to close the largest banks. Closing a bank with a high percentage of deposits covered by insurance would be less disruptive to the banking system under a system of coinsurance than with the current limits on coverage.

General Discussion: A Summary

The symposium participants represented a wide range of views regarding bank reform. While many, if not most, of the participants support some form of expanded market discipline as the preferred ingredient for a safer banking system, they have long debated among themselves the merits of various proposals. Several were prominent advocates of the concept that the principal underlying cause of the extraordinary banking and thrift problems of the 1980s was moral hazard, induced by deposit insurance, low levels of bank capital, the idea of "too-big-to-fail," and regulatory forbearance toward failing banks. Their focus was protecting the taxpayer from future losses related to deposit insurance, and it was largely because of their success in pushing their ideas that Congress passed FDICIA.

With its characterization of recent financial cycles, the lead-off paper suggested a very different explanation for recent banking problems and made a case for drawing separate lessons from the banking and thrift crises. As discussant Alton Gilbert pointed out, Randall sees the problem as primarily one of excessive growth and concentration of risk in a euphoric boom, not moral hazard. In the general discussion, several people commented on the apparent herd mentality of bankers, which resulted in similar risk concentrations in many banks. Those who commented on financial cycles generally agreed that we should expect to see more cycles of this type in the future. The strongest supporters of the moral hazard theory advanced their positions forcefully, but generally did not respond directly to the implications of financial cycles.

Randall's proposal for supervisory action to head off dangerous risk concentrations drew only limited, qualified support as a substitute for market discipline, but somewhat broader support as an idea worth trying in conjunction with changes to enhance market discipline. Market discipline supporters dismissed the notion that supervisors could forecast better than markets, and they doubted that supervisors could stand up to political pressure when the time came to slow credit growth in a boom. The discussion featured interplay between those anxious to

enhance depositor-imposed market discipline and those concerned about the potentially destabilizing effects of increasing depositor exposure.

A sharp divergence of opinion also emerged concerning the relevance of the thrift experience in designing safeguards for the banking system. Some supported Randall's contention that the regulatory environment of the savings and loans was unique, and that the focus of inquiry should be on what went wrong with the FDIC-insured banks. Others put much of the blame on regulatory forbearance, which FDICIA was designed to combat, without distinguishing between bank and thrift experiences.

Several participants criticized the early intervention and prompt corrective action provisions of FDICIA. They viewed them as procyclical, in that supervisory actions are tied to declines in capital ratios, a lagging indicator. These provisions were blamed for aggravating the "credit crunch" that accompanied the New England banking failures, and for making it more difficult for damaged banks to recover. Some complained that FDICIA represented overregulation and was unnecessarily inflexible.

George Kaufman of Loyola University and others defended the law and indicated that it is having its intended effect of forcing more losses on uninsured depositors. Capital ratios are improving rapidly, in part because of enhanced market discipline, and regulatory forbearance is less evident.

James Pierce's proposal for functional banking inspired considerable discussion. On the one hand, it was suggested that the proposal did not go far enough because it called for full insurance of transaction accounts. On the other, concern was expressed about the effects of widespread failures of uninsured financial service companies and of possible runs on the commercial paper market, where these companies would obtain much of their funding.

Discussion also followed Alton Gilbert's comment about the risk to monetary service companies in maintaining clearing balances with foreign banks and allowing daylight overdrafts. A question remains as to whether monetary service companies can be protected from the risks in settling the myriad of transactions flowing through a major bank without seriously damaging the efficiency of the payments mechanism.

Disagreement also emerged on the likelihood and desirability of bank runs, and how much the discount window can moderate systemic liquidity problems in banks. One view holds that few bank runs have taken place in recent years, and that systemic runs on a broad scale are unlikely because depositors will not demand currency, much less gold. Also, bank runs are a desirable form of market discipline.

Participants arguing on the other side of the issue cited significant runs in New England in the recent banking crisis including some with systemic potential, at least on a regional basis. All appeared to agree that

withdrawn deposits are likely to remain within the banking system. But deposit flights from regions and classes of banks could still occur in the loss recognition phase of financial cycles. With numerous banks in some degree of trouble, and uncertainty as to solvency, deposit churning could materially curtail credit availability, deepening economic problems and increasing the likelihood of unnecessary bank failures.

A similar divergence of views emerged on the level of reliance to be placed on the discount window. Some who considered bank runs a remote possibility assume that the Federal Reserve lending operations could handle any liquidity problems that might arise, and one participant suggested that this might be done through monetary policy alone, eliminating the need for the discount window.

The contrary view holds that discount window administrators would have difficulty distinguishing failing banks from other damaged banks in a major financial crisis. The task of providing liquidity to stabilize the system has been made more complicated by the discount window restrictions imposed by FDICIA.

Robert Litan had raised the issue of the private deposit insurance proposal advanced by Bert Ely. He thinks the idea deserves public discussion because it substitutes the market judgments of insurance syndicates for that of the FDIC. Richard Aspinwall of Chase Manhattan Bank argued against the proposal on the ground that the system of insurance syndicates, made up essentially of banks, can be no stronger than the capital supporting the banking system. Incentive conflicts could also inhibit large banks, in their role as syndicate members, from criticizing each others' practices. Edward Kane of Boston College supported the concept, if used in conjunction with subordinated debt, because of concerns for the actions of federal regulators in "political cycles." His vision of the syndicates could include nonbanks and could take the form of bonding, reinsurance, or subordinated debt.

Several participants discussed the implications of structural changes in the financial services sector, including greater competition in traditional banking services from nonbanks and increasing concern for government guarantees relating to nonbanks. Edward Ettin of the Federal Reserve Board staff expressed concern that some of the factors that gave rise to the safety net for banks now apply to other providers of financial services, including a propensity for systemic risk. This suggests consideration of limited federal supervision and discount window access for some nonbanks. Concern was also expressed about disruption of financial intermediation by nonbanks in a crisis. Jane D'Arista of Boston University advocates a limited government guarantee for each individual against the failure of any type of financial institution, including banks. This would be in addition to a guarantee of all transaction balances in banks.

Conclusion and Commentary

The United States has experienced extraordinary problems with depository institutions in the past 15 or so years. The debate has been vigorous over what changes should be made to prevent recurrences. Discussion of the causes of the various banking crises has been dominated by the view that most problems stemmed from moral hazard and inadequate market discipline, both consequences of the perverse incentives of deposit insurance, and from the supervisory practice of safeguarding uninsured depositors in large banks. As a consequence, much of the debate about reforms has revolved around alternative means of limiting depositor protections and otherwise enhancing market discipline.

One objective of the symposium was to force a careful examination of the nature and patterns of the several banking crises. The lead-off paper attempted to do this and concluded that most of the damage was done as a consequence of a few financial cycles. A characteristic of such cycles is that preventing losses requires curtailing risk-taking before economic forces cause a turn in the cycle. In discussing this paper, several participants acknowledged that most recent cycles involved euphoric excesses by bankers and borrowers, although no consensus emerged as to the underlying reasons. It was suggested that widespread euphoria in boom periods was a competing explanation for the cause of recent banking problems, along with the more familiar moral hazard view.

Five alternative proposals to moderate future problems were discussed in some detail, of which four were designed to enhance market discipline. The remaining proposal was for direct supervisory action to avoid excessive risk concentration in banks during boom periods. A number of participants were skeptical that supervisors could stand up to political pressures during a euphoric boom, but few saw harm in supervisors trying to discourage overconcentration.

No evidence was cited that market forces have reacted against cyclical risk-taking before it peaked and problems emerged. But market discipline solutions generally intend to put bank creditors more at risk, in the expectation that they will then exert timely pressure on bank management to curtail unwise risk-taking. Proposals advanced at the symposium were intended to do this with the least potential for initiating systemic instability. But participants were divided on the potential for bank runs, undesirable failures of damaged but viable banks, and procyclical effects on credit availability and economic activity as a result of bank problems.

Some participants expressed concern that coinsurance would leave the system vulnerable to systemic problems if depositors at large banks were forced to take losses. Some feared that the functional banking

proposal would weaken the efficiency of the payments system (by eliminating daylight overdrafts), while leaving the bulk of what we now call banks vulnerable to further financial cycles. Fewer commentators expressed negative views concerning reliance on subordinated debt, but questions were raised as to its applicability to smaller banks and the mechanics of achieving frequent market tests. Related issues include the potential for instability in a time of crisis if maturing subordinated debt cannot be rolled over, and the fundamental question of whether the theory will work in practice and produce timely risk-avoidance.

While opinions expressed at the symposium varied widely as to whether FDICIA will have a positive or negative effect on bank soundness, there seemed to be a clear consensus that further changes are needed to safeguard the banking system. The symposium and these proceedings are intended to be useful in reframing the debate and keeping attention on the need for further action, even as the banking problems of the 1980s fade.

Safeguarding the Banking System from Financial Cycles

*Richard E. Randall**

Throughout the 1980s and into the early 1990s, the effects of several financial cycles severely battered the banking system of the United States. As used here, the term "cycle" does not imply a recurring phenomenon, but rather a cycle through various phases—as in a boom and bust cycle. Most of these cycles began with a prolonged period of extraordinary growth centered in a particularly risky type of asset. Typically, banks developed abnormal asset risk concentrations and, in the later portion of the growth phase, acquired many assets at a time of market euphoria and reduced credit standards. The economic underpinnings of the assets eventually deteriorated, the market psychology turned pessimistic, and substantial losses to important segments of the banking system proved unavoidable.

This paper catalogs the more destructive of these financial cycles, noting the timing and nature of successive phases, the influence of underlying economic factors, and the extent of the damage inflicted on the banking system. The underlying cause of failure is determined for large institutions, and the assets of failed banks are allocated to one or another of the financial cycles where appropriate. For convenience in exposition, institutions formerly insured by the Federal Savings and Loan Insurance Corporation (FSLIC) are referred to as thrifts and collectively as the thrift industry, while those insured by the Bank Insurance Fund (BIF) are referred to as banks and collectively as the banking industry. The term "banking system" is used more broadly to encompass all depository institutions.

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Summary of Findings and Conclusions

Financial cycles were the major source of damage to the banking system during the 1980s. These cycles were not necessarily tied to macro business cycles but generally were driven by developments in one segment of the economy, such as extraordinary changes in the shape of the yield curve or the price of oil, or demand–supply imbalances in various real estate markets. The cycles generally involved a prolonged period of growth leading to a high concentration of risk, although in the case of the interest rate risk cycle, the exposure was of long standing. Considering the level of damage to the banking system resulting from financial cycles, which extended well beyond the banks that actually failed, it should be clear that this country's banking system will remain vulnerable to potentially destabilizing losses if we do not learn to moderate future financial cycles.

The evidence shows that, to be effective, action to avoid or greatly mitigate the damage such cycles can do to banks must be taken well before the end of the risk-taking phase of the cycle. Market forces, however, have shown no inclination to act against cyclical risk-taking until close to the turning point where actual banking problems begin to appear. At that point, it is too late to materially improve the outcome, and actions to make banks more vulnerable to market discipline are likely to adversely affect both the banking system and the economy during the depressed phase of the cycle. The appropriate approach to supervising banks in a world of financial cycles is to establish the clear responsibility of supervisors to act forcefully against excessive risk concentrations, before the potential for severe damage to the banking system is built in. This new level of responsibility would require a change in the recent tendency of supervisors, so evident in the financial cycles of the 1980s, to defer aggressive intervention until actual loan problems emerge.

Growing risk concentrations in banks and thrifts, such as those seen in the 1980s, are relatively easy to identify. A more challenging task is to evaluate, during the growth phase, the likelihood that economic forces will turn these risks into losses. This would require new techniques for risk delineation and the interaction of supervisory and analytical disciplines. Institutional checks to prevent abuses of the necessary supervisory intervention with bank management would also be required. But these are tasks well within the capabilities of the current supervisory agencies, once they accept this responsibility.

The first change must be in the recent perception that while supervisors should act promptly and vigorously at the first sign of unusual credit problems, they need not concern themselves with excessive risk concentrations. The nature of financial cycles is such that supervisors must, to borrow from William McChesney Martin, "take

away the punch bowl just when the party gets going." Former Federal Reserve Chairman Martin was referring to the responsibilities of the central bank with respect to monetary policy, but bank supervisors must bear a similar responsibility if they are to safeguard the banking system.

Despite some blurring of the distinction between banks and other financial institutions and the increased competitiveness of nonbanks for traditional banking products, the banking system remains at the core of the domestic and international payment systems and the main source of short-term business credit. We have recently seen how constrained bank credit availability in the aftermath of boom and bust cycles can deepen and prolong economic recessions. Attempts to convince the public that the United States government would not stand behind the banking system in a crisis, made in an effort to enhance the effectiveness of market discipline, are both unnecessary and dangerous. The evidence presented in this paper suggests that our banking system remains vulnerable to overwhelming losses, should several large banks be allowed to become overexposed to similar risks.

Recent changes in the bank/nonbank competitive picture may suggest the need to broaden the federal safety net beyond the banking system to other types of financial institutions in some circumstances. They certainly do not provide any rationale for curtailing the ability of the government to act to assure the safety of the banking system. The proposal made here, for increased supervisory responsibility, in no way suggests that individual banks must be protected from failure, but it does have implications for the way in which failures are allowed to happen.

Much of the recent debate over bank reform has focused on protecting the taxpayers from having to backstop the deposit insurance funds. The taxpayers are vulnerable only if the banking industry as a whole becomes so damaged that it cannot cover the collective losses of the industry. The appropriate focus should be on safeguarding the health of the banking industry, not the deposit insurance funds per se. Since so-called "narrow bank" proposals are aimed at protecting the insurance funds and not the banking industry, they do not address the real problem.

The proposed plan for supervisory action against excessive risk concentrations, even if imperfectly administered, should at a minimum moderate future problems from financial cycles. It also presents no increased risk to the banking system. In contrast, proposals to enhance the role of market discipline greatly increase the vulnerability of the banking system to destabilizing funding problems and loss of confidence. Instead, our supervisory approach should be reoriented to play a countercyclical role, not only by moving aggressively against dangerous risk concentrations in boom times, but by making it easier for

seriously damaged banks to survive a crash and for nonviable banks to be resolved without destabilizing effects on our financial system.

The Incidence of Banking Problems

The Great Depression of the early 1930s produced thousands of bank failures. Following the banking holiday of 1933 and the introduction of federal deposit insurance, the number of failures dropped off sharply but still exceeded 70 per year in the late 1930s, if uninsured banks are included.

The 30-year period from 1943 to 1972 was exceptional: fewer than 10 banks failed each year, annual losses to the Federal Deposit Insurance Corporation (FDIC) never exceeded $2 million, and assets of failed banks never exceeded $200 million in any year. The next eight years, 1973 to 1980, produced three unrelated large bank failures, U.S. National, Franklin National, and First Pennsylvania,[1] and higher losses to the FDIC (over $67 million in 1973), but still relatively few failures (the high was 17 in 1976). At least one major financial cycle posed a threat to the larger banks, the real estate investment trust (REIT) crisis of the mid 1970s. While no bank failures have been attributed to this cycle, it caused severe distress in financial markets and more serious consequences were narrowly averted.[2]

The pattern of bank failures over the 12 years from 1981 to 1992 was quite different. The number and size of failures soared, and the preponderance of failures were associated with one or another of a few major economic events. Figure 1 shows the assets of failed banks from 1973 through 1992.[3] Failed banks are slotted into seven groups, one for each of four financial cycles that caused significant failures (in terms of bank assets), a fifth group for banks that failed as a result of commercial real estate problems in other sections of the country, a sixth group for those that had a different or more complex story, and the final group for those where the cause of failure was undetermined. A lag of a few years often occurs between the time when a bank is damaged by a change in economic circumstances and its failure, so that the primary cause of failure must be traced back for each bank. This was done for each New England failed bank and for other failed banks with assets of $500 million or more.

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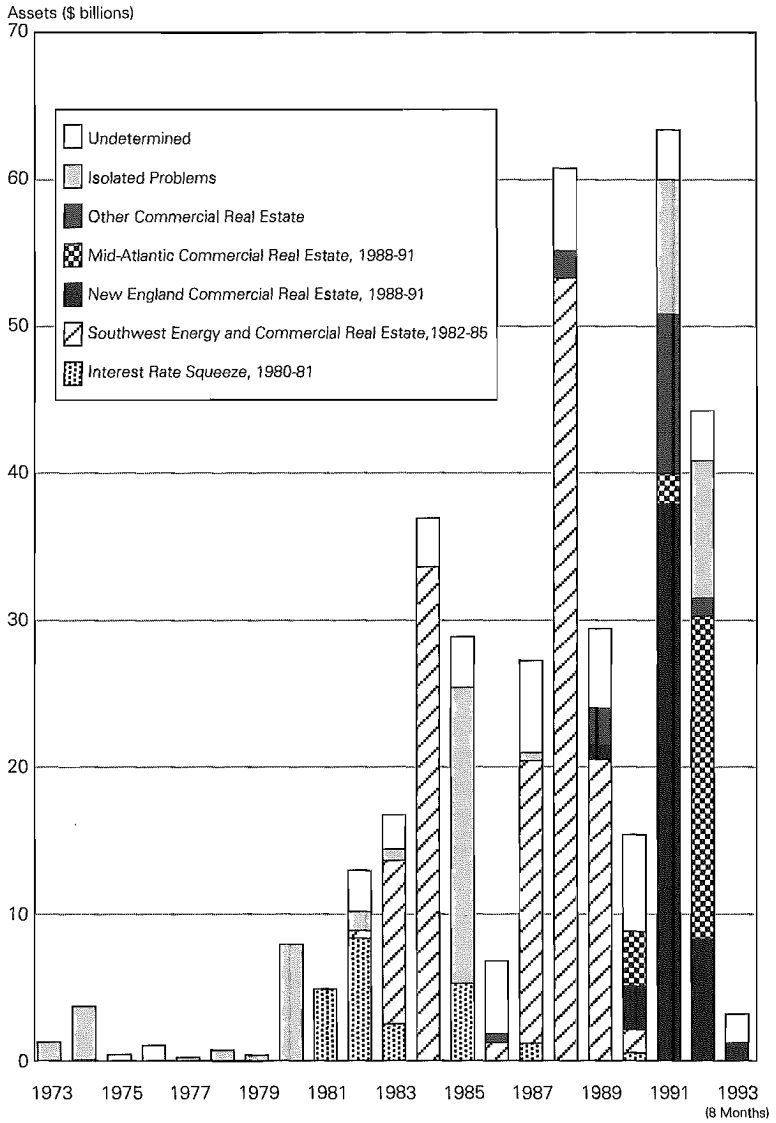
[1] See the Appendix for location, full name, assets, and cause of failure of these and other large failed banks.

[2] For a general discussion of bank involvement in the REIT crisis, see Robertson (1975).

[3] Failed banks include those receiving FDIC assistance. They also include six relatively large banks, identified in the Appendix, judged by the author to be de facto failures. Each was acquired on an unassisted basis, but proved to be costly to the acquiring institution and, in retrospect, had essentially failed.

Figure 1

Assets of Failed FDIC-Insured Banks, by Cause of Failure, 1973 to 1993



Source: FDIC *Annual Reports*; FDIC, *Historical Statistics on Banking*; Randall (1989 and 1993); news reports, articles, annual reports, and bank stock analysts' reports for individual large banks.

Figure 2 presents the corresponding picture for FSLIC-insured thrift institutions. The concept of failure was less clear-cut with the thrifts, and most available data are presented in terms of completed resolutions of failed institutions. For the purpose of this paper, however, a thrift was considered to have failed when it received assistance or was placed in liquidation or in the management consignment program. But because of deficiencies in data availability, 1988 failures are based on resolutions, excluding those known to have been accounted for in earlier years, and failures in 1989 and subsequent years are based on institutions placed in Resolution Trust Corporation (RTC) conservatorships. Because of these inconsistencies, some assets of failed thrifts may be shown in a later year, duplicated, or even omitted. Nonetheless, errors of this type should be small relative to the overall total. More significant is the delayed recognition of failures of institutions until long after insolvency.

The grouping of failed thrifts by cause of failure is also partly estimated. Federal Home Loan Bank Board (FHLBB) annual reports in the early 1980s indicate the percentage of failed bank assets related to interest rate sensitivity. Beyond this, each failed thrift with assets of $800 million or more was researched individually to determine the cause of failure. In a few cases, the information was insufficient to make a determination. In cases where two factors appeared to play about equal roles, total assets were divided evenly between the two.

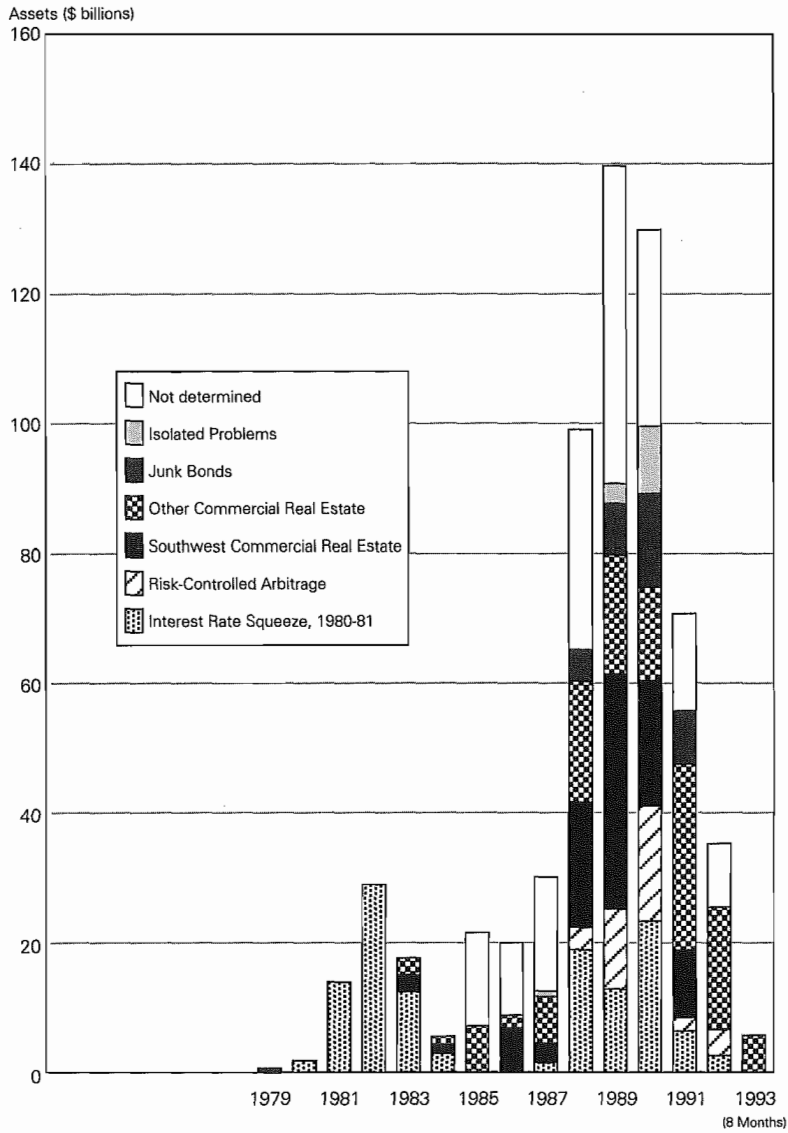
The categories in Figure 2 are not identical to those in Figure 1. In addition to thrifts that failed as a result of the 1980–81 interest rate spike, some large thrifts created interest rate risk by buying large volumes of mortgage-backed securities funded with brokered certificates of deposit (CDs). They then attempted to hedge the risk with interest rate swaps. Such schemes, some quite complex, were known as risk-controlled arbitrage. They were a major cause of failure for several large thrifts and are shown in a separate category. New England and Mid-Atlantic thrift failures due to commercial real estate lending have not been separately identified, but a new category has been established for the several thrifts destroyed by their holdings of junk bonds.

Interest Rate Sensitivity

The extremely high interest rates of 1980 and 1981 caused heavy losses at many liability-sensitive savings institutions. The traditional practice of savings banks and savings and loans was to fund fixed-rate mortgage lending with relatively rate-sensitive consumer deposits and, increasingly, with even more rate-sensitive "large" CDs. The loss experience of savings institutions in different areas varied significantly, depending on their degree of net liability sensitivity. Three large New York City savings banks failed in 1981 as a result of negative operating earnings, and eventually eight of the 10 largest savings banks in that city

Figure 2

Assets of Failed FSLIC-Insured Thrift Institutions, by Cause of Failure, 1973 to August 1993



Source: Federal Home Loan Bank Board, *Annual Reports*, 1979 - 1988; Resolution Trust Corporation, *Annual Reports* 1989-1991; Barth (1985); data provided by the RTC; news reports, articles, annual reports, and bank stock analysts' reports for individual large thrifts.

failed along with several other large savings banks in the Northeast (Figure 1). In contrast, the large New England savings banks survived, although severely damaged by rate sensitivity, and by 1984 had largely put this problem behind them.

Like the banks, the savings and loan industry experienced few failures in the 1970s. When the number and size of failures began to increase in the early 1980s, nearly all could be attributed to the effect of the spike in interest rates on their liability-sensitive funding positions. Most large savings and loan failures that resulted from the 1980–81 surge in interest rates occurred between 1981 and 1983 (Figure 2). A more modest increase in rates in 1988 was responsible for the failed hedges of the risk-controlled arbitrage thrifts, mainly in 1989 and 1990.

Energy and Real Estate Problems in the Southwest[4]

The credit problems of Southwestern banks and savings and loans attracted national attention with the shocking failure of the relatively small Penn Square Bank in Oklahoma City (assets $517 million) in July 1982. It was soon apparent that giant Continental Illinois (assets $33.6 billion), as well as Seafirst in Seattle (assets $9.7 billion) and a few other large banks outside the Southwest, were in serious trouble because of their purchases of energy loans from Penn Square, along with other energy loans. Seafirst effectively failed in July 1983, while Continental Illinois held on for another year. First National Bank of Midland, Texas, failed in late 1983 and two relatively large Oklahoma bank holding companies failed in 1986, all primarily because of energy loan losses and the negative effects of the energy price drop on the Southwest economy.

The energy boom of the late 1970s and early 1980s had sparked a real estate development boom in several Southwestern cities that continued even after the energy boom collapsed. The larger Texas banks financed much of the commercial real estate boom in their state, and all of the large Texas bank holding companies but one (Cullen Frost) failed (de facto if not de jure) as a result of losses on energy and real estate loans, with the latter the greater contributor. These large Texas bank failures due to energy and real estate loans dominate the failures between 1987 and 1989 (Figure 1), but 217 smaller Texas banks also failed in this same three-year period.

Problems in energy and commercial real estate lending, similar to those that so damaged banks in the Southwest, also occurred in the energy-producing Mountain states. Most of the larger banks in the region were severely damaged, although they eventually recovered. The

[4] For this purpose the Southwest was defined to include Texas, Oklahoma, Louisiana, Arizona, and New Mexico.

larger thrifts in the Southwest and Mountain states also were heavy commercial real estate lenders in the mid 1980s, and failures were still occurring among them in the early 1990s (Figure 2).

Other Commercial Real Estate Problems

Just as the Penn Square failure thrust the danger in the Southwest before the eyes of the public in 1982, the announcement in late 1989 of a major loan loss provision by Bank of New England focused public attention on another regional banking disaster. Bank failures in New England between 1989 and 1992 totaled 108, including commercial, savings, and cooperative banks plus savings and loans (but excluding some privately insured institutions in Rhode Island that failed during this period). The predominant cause of failure was aggressive lending to finance the construction of commercial and residential structures or the ownership of income-producing property.[5] Numerous other New England banks were severely damaged by such lending, and more than a few additional banks would probably have failed except for a fortuitous improvement in interest rate spreads in 1991 and 1992.

Commercial real estate problems also showed up in some relatively large banks in the Mid-Atlantic states.[6] Large savings banks failed in 1992 in Pennsylvania, New Jersey, and New York, along with some relatively large commercial banks in New Jersey and Washington, D.C. (Figure 1). Other troubled large banks in the region appear to have substantially recovered from their loan problems with a boost from favorable interest rate spreads. Southern California is currently undergoing a significant real estate adjustment, which has damaged a number of banks and is making it very difficult for struggling thrifts to survive.

Agricultural Loans

High interest rates, low commodity prices, and declining land values produced a surge in the number of problem agricultural banks in the early 1980s.[7] In the last four months of 1984, agricultural banks accounted for 71 percent of failed banks, and in 1985, 1986, and 1987, they continued to account for high percentages of the number of failed banks—52, 41, and 30 percent, respectively. These banks are generally relatively small, and it is estimated that the total assets of the many failed agricultural banks aggregated to only $4 billion to $6 billion for the

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[5] See Randall (1993) for an analysis of the causes of failure of the New England banks.

[6] Defined here to include New York, New Jersey, Pennsylvania, Delaware, Maryland, Washington, D.C., and Virginia.

[7] An agricultural bank is defined as one in which agricultural loans account for 25 percent or more of total loans.

1984–87 period, although precise data were not obtained. Assets of these banks are included in the "undetermined" category of Figure 1.

It should be noted that agricultural problems undoubtedly contributed to the failures of some less concentrated banks located in agricultural areas. They also contributed to the magnitude of losses in some failures of large banks, including Continental Illinois and Crocker, although they were not a major cause of these failures.

Leveraged Buyouts and Junk Bonds

In the 1960s, a wave of mergers and acquisitions occurred as large companies grew and diversified into conglomerates. Acquired companies were often kept intact as subsidiaries. Beginning in the early 1980s, the practice developed of spinning off subsidiaries or taking whole companies private by debt-financed transactions known as leveraged buyouts (LBOs). This activity was made attractive by arbitrage opportunities and tax incentives. Another phenomenon of the early 1980s was the rapid development of a market for new-issue bonds of less than investment grade, greatly expanding the volume of junk bonds outstanding. LBOs and junk bonds became tools for replacing equity with debt in corporate structures, and both practices grew rapidly until late in the decade.

Commercial banks were major lenders in LBOs, and while most loans were generated by large banks or consortiums of such banks, much of the loan volume was participated downstream among smaller institutions. As early as 1984, supervisors and market observers were warning of the dangers inherent in lending with so little equity involved. But the arbitrage opportunities between equity and asset values were so great that the banks could structure highly profitable loan agreements, and often they were taken out of the loan fairly early through junk bond refinancing or strong corporate cash flows. Thus, experience continued to be generally favorable until the junk bond market began to dry up in 1987 and the competition among banks produced less profitable deals, less selectivity in credits extended, and slower payouts.

The diminished marketability of junk bonds in late 1987 opened up an opportunity for commercial banks in mezzanine financing, a riskier type of funding with elements of both subordinated debt and equity. Continued expressions of supervisory concern in 1989 and 1990, together with the approach of the time when the burden of deferred debt service would fall on the debtors, led to a pullback by the banks from what had by then come to be called highly leveraged transactions (HLTs).

While it is not clear that such loans were the primary cause of any bank failures, certainly they contributed to some failures, including Bank of New England and First City in Houston (its second failure, in

1992). More important, they caused considerable concern and much tangible damage to a number of the country's largest banks at a time when it was not clear whether the banking system had the strength to overcome its problems. It may be that some potential damage was averted by reactions to the frequent warnings given by supervisors, however.

State-chartered thrifts, particularly those of California, along with a few life insurance companies, became major investors in the newly established junk bond market, often buying from the principal market-maker Drexel Burnham Lambert. (Federally chartered thrifts were limited in holdings of such securities, but some still managed to become overexposed.) While a number of thrifts acquired significant junk bond portfolios, extremely heavy concentrations in a few did most of the damage. Columbia Savings and Loan of Beverly Hills, California, held as much as $4.1 billion or 32.3 percent of its assets in junk bonds at one point. Columbia and several other thrift holders of such securities failed in the 1988–91 period and their aggregate assets of $36 billion have been allocated to junk bonds (Figure 2).

Loans to Less Developed Countries (LDCs)

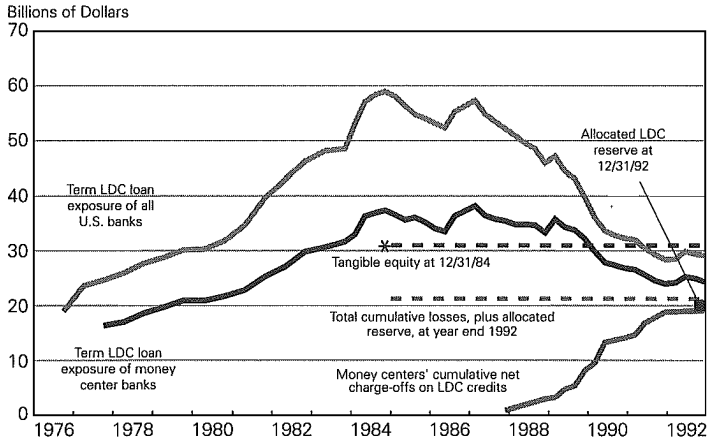
Following the first oil price shock in 1973, the oil-importing developing countries began to increase bank borrowing substantially. The larger United States banks steadily increased their lending to LDCs, particularly those in Latin America, where the banks had participated earlier in financing major infrastructure projects. Loan growth continued even after the Mexican payment crisis in August 1982, and outstanding term loans (one year or more) peaked about the end of 1984 at nearly $60 billion (Figure 3).

Despite growing evidence that several countries could not continue to service their debt, including some debt restructurings, U.S. banks made no specific accounting provisions for potential losses until Citicorp broke the ice with a substantial loan loss provision in May 1987. Other banks quickly followed, and total LDC loan provisions of about $16 billion nearly offset the earnings of all U.S. banks for the year. In the years since 1987, outstanding LDC loans have been worked down through various devices including loan sales, exchanges for equity positions in privatized companies, and, beginning in 1990, "Brady Plan" initiatives such as exchanges for securities collateralized by U.S. securities, after a debt write-down. At the same time, the ability of the countries to service the remaining debt has generally improved. Nonetheless, American banks have incurred a substantial loss of loan principal, although not as much as was expected in the 1988–89 period.

The LDC term loan exposure and cumulative net losses on LDC loans of nine money center banks are charted in Figure 3. The current allocated reserve for such loans plus the cumulative loss total $21.4

Figure 3

Exposure of U.S. Banks to Term Loans to Less Developed Countries



Note: Term exposure is the total of loans with a maturity of greater than one year. LDC countries here include Venezuela as well as the non-oil-exporting developing countries of Latin America and the Caribbean, Asia, and Africa.
Source: Board of Governors of the Federal Reserve System, "Country Exposure Lending Survey" (release E. 16); Keefe Bruyette and Woods, *Money Center Banks Statistical Review*; annual reports of the money center banks.

billion, an amount equal to 57.4 percent of the peak term loan exposure and 72 percent of their year-end 1984 equity capital. Had these future losses been fully recognized in 1984, the composite equity-to-assets ratio of these banks would have been only 1.2 percent. One of the nine money center banks would have been insolvent, seven below the 2 percent capital-to-asset threshold for critically undercapitalized banks, and the remaining bank just over the 2 percent capital threshold.[8]

This analysis demonstrates two important points. One is that risk concentrations in a few very large banks could potentially produce

[8] Others have made similar analyses to show, with hindsight, how close the U.S. money center banks came to being insolvent in the early 1980s. See Fieleke (1988, pp. 68–71); Guttentag and Herring (1989, pp. 29–34); and Kenen (1985, pp. 500–501).

The continued growth in term LDC loans after problems became evident in 1982 was not inappropriate, or even completely voluntary. Officials of the United States and other creditor countries encouraged banks to provide new money in conjunction with International Monetary Fund-supported refinancings, in the belief that this was necessary to preserve the stability of the financial system and in the best long-term interests of all parties. See Cline (1983, pp. 36–44) and Volcker and Gyohten (1992, pp. 202–203).

Table 1
Total Assets of Failed FDIC-Insured Banks, 1973 to 1992, by Cause of Failure

Cause of Failure	Assets	
	$ Billions	Percent of Total
Interest rate squeeze, 1980–81	$ 23	6
Southwestern energy and commercial real estate, 1982–85	141	38
Agricultural loan problems	5	1
New England commercial real estate, 1988–92	51	14
Mid-Atlantic commercial real estate, 1988–92	28	8
Subtotal, financial cycles	$ 248	67
Other commercial real estate	17	5
Isolated problems	55	15
Cause not determined	47	13
Total	$ 367	100
Memo: Assets of eight money center banks damaged by LDC loans, as of year end 1984:	$ 630	
Total assets of all FDIC-insured banks, year end:		
1984	$2,001	
1985	2,207	
1988	2,699	

failures of great consequence to the soundness of the U.S. banking system, with significant international implications as well. Secondly, each of the money center banks survived a very serious LDC loan problem (Continental Illinois failed for other reasons) and very gradually returned to health. The experience supports the argument that viable banks with sound management and adequate earnings capacity be allowed to work through their problems despite greatly diminished capital.

The Importance of Financial Cycles Relative to Isolated Failures

Table 1 summarizes the assets of failed banks by cause of failure for the 20 years ending in 1992. It also shows the assets of eight money center banks that, as a group, would have had unacceptable capital levels in the early 1980s, had full knowledge of future losses from existing loans been available.[9] The five financial cycles (excluding the LDC loan cycle) account for $248 billion in assets of failed banks, or 67 percent of the total. Commercial real estate outside of the Southwest,

[9] The group excludes Continental Illinois, which failed in 1984 because of Southwestern energy loans, to avoid double counting.

New England, and Mid-Atlantic regions accounts for an additional 5 percent, and much of this was related to these or other financial cycles. Included are real estate problems sparked by energy booms in the Mountain states and Alaska and residential construction booms in Florida and California.

The remaining 28 percent of failed bank assets is about evenly divided between a few large banks that failed for isolated reasons not attributed to financial cycles, and the many smaller banks for which no cause was determined.[10] Considering location and timing, many of the failures in the latter group were also related to financial cycles. Thus, it is probably fair to say that about three-quarters of the bank failures during those years (as measured by assets) relate to financial cycles, and only about one-quarter to isolated mismanagement situations.

The assets of the money center banks severely damaged by the LDC lending cycle overshadowed the assets of the banks that failed (Table 1). The combined assets of the two groups totaled about $1 trillion, an amount equal to 50 percent of year-end 1984 assets of all FDIC-insured banks.

Table 2 summarizes the distribution by cause of failure for thrifts, as presented in Figure 2. The interest rate squeeze of 1980–81, and the real estate lending problems in the Southwest of 1982–85, correspond to cycles affecting banks identified in Table 1. The risk-controlled arbitrage and junk bond problems relate to financial cycles that affected the thrifts but did not produce significant bank failures.

Failures of thrifts outside the Southwest attributable to commercial real estate problems represent 20 percent of total failures, but have not been allocated to financial cycles. The assets attributable to the New England real estate problem were too few to be meaningful for this analysis, and no attempt was made to identify those thrifts that failed because of the Mid-Atlantic real estate problem. Some of the larger thrifts in the other commercial real estate problem category did much of their more aggressive lending out of their home territory, so that allocating them to a particular financial cycle would be difficult.

About 49 percent of the failed thrift assets can be tied to a few financial cycles, and additional amounts in the real estate and undetermined categories undoubtedly relate to these and other financial cycles. Assets of all thrift failures through August 1993 amounted to $622

[10] Some large failures attributed to isolated factors might also have been attributed to one of the cycles. For example, First Pennsylvania (assets $10 billion) experienced severe credit problems due to poor lending practices, and attempted to recover by concentrating in long-term government securities. The interest rate spike of 1980 and 1981 was the immediate cause of failure, but this is considered to be more an egregious mismanagement situation than a long-standing interest rate vulnerability situation of the savings-type institutions.

Table 2
Total Assets of Failed FSLIC-Insured Thrifts, 1973 to August 1993, by Cause of Failure

Cause of Failure	Assets	
	$ Billions	Percent of Total
Interest rate squeeze, 1980–81	$ 126	20
Risk-controlled arbitrage	40	7
Southwestern commercial real estate, 1982–85	99	16
Junk bonds	36	6
Subtotal, financial cycles	$ 301	49
Other commercial real estate problems	125	20
Isolated problems	14	2
Cause not determined	182	29
Total	$ 622	100
Memo: Total assets of FSLIC-insured thrifts, year end:		
1985	$1,058	
1988	1,360	
1992	836	

billion, almost 59 percent of total thrift assets at the end of 1985 when, it is estimated, most of the large thrifts were already de facto insolvent. If year-end 1988 is used, after essentially all of the damage had been done, assets of failed thrifts would have been just under 46 percent of the total, because of continued growth in thrift assets.

The Thrift Disease

The political and regulatory environment in which the thrift industry operated was radically different from that of the banks, throughout the period studied. Most of the thrifts that failed because of the interest rate squeeze of the early 1980s, and some of the early failures in the Southwest in the mid 1980s, are directly comparable to failed banks that got caught up in the same economic environment. But for many other failed thrifts a significant additional environmental factor was at work, regardless of which economic factors were involved.

The environment of the thrifts was unique in the following respects:

1. The thrift regulators and the thrift industry had a credit allocation mandate toward housing that sometimes conflicted with sound banking principles.
2. Congress granted the thrifts broader powers for risk-taking, but thrift regulators did not adopt controls to limit or even detect unwarranted risk-taking.

3. Unqualified or unethical individuals were not prevented from acquiring control of thrifts, even after the broadening of powers enhanced the value of thrift charters.
4. Thrift regulators were highly sensitive to the demands of the industry and to political pressures on behalf of the industry and individual thrifts.
5. The thrift regulators' approach emphasized voluminous, detailed regulation of traditional thrift operations, and failed to develop bank-style supervisory activities relating to loan evaluation and detection of insider abuse.
6. When serious problems developed, they were obscured by misleading accounting innovations, and thrift regulators tolerated, even encouraged, further growth and risk-taking in an effort to recoup or diminish the significance of losses.

As a consequence of this environment and specific shortcomings in regulation and supervision, a number of thrifts were grossly and abusively mismanaged, took major gambles even after becoming de facto insolvent, and sustained heavy losses due to fraud.[11] This study did not attribute any of the failures of large thrifts to fraud, because it appeared that few if any of the failed thrifts would have survived even in the absence of fraud, considering the accompanying degree of mismanagement and the magnitude of the ultimate losses to the deposit insurance fund. But the author believes that the six factors above resulted in many failures that would not have occurred in a bank-type regulatory environment, even given the temptations and stresses of the various financial cycles. Quantifying this assertion would be difficult, however.

This study's allocation of failed institutions to particular financial cycles or to isolated factors was necessarily judgmental, and particularly imprecise with respect to thrifts, but the overwhelming importance of financial cycles seems clear. Moreover, the peculiar thrift regulatory environment no longer exists, and any moves to change the present system to decrease the likelihood and consequences of future failures should be based on an understanding of the nature of financial cycles and how they affect the banking industry. Unfortunately, nearly all of the input into policy formulation and legislative action so far has focused on the special circumstances of the "thrift problem"—the importance of

[11] Among the many descriptions of the thrift regulatory environment are those found in Kane (1989) and National Commission on Financial Institution Reform, Recovery and Enforcement (1993).

the various financial cycles to recent bank failures has been ignored by all but a few writers and commentators.[12]

The Nature and Timing of Recent Financial Cycles Affecting the Banking System

Each of the financial cycles affecting the banking system between 1970 and 1992 had in common a high level of risk exposure to potential economic events that could do significant damage to a sizable portion of the banking system. In the case of sensitivity to high interest rates in savings banks and thrifts, and to some extent in the case of credit problems in agricultural banks, the exposure had long been built into the structure of these institutions. In the other cycles, the institutions themselves engaged in a flurry of lending or investing activity in which the risk was embedded. In all cases, once the economic environment changed, either because of exogenous factors or because the boom had sown the seeds of its own destruction, it was too late to avoid or even to significantly mitigate the damage to the exposed institutions. These generalities will be illustrated by briefly reviewing some of the economic changes of the 1970s and 1980s that most influenced the financial cycles and led to banking losses. While the cycle of risk buildup, problem recognition, and eventual failure is fairly distinct in most cases, the economic factors that turned exposure into losses were sometimes quite convoluted.

1973 to 1982: Oil, Shipping, LDCs, and Interest Rates

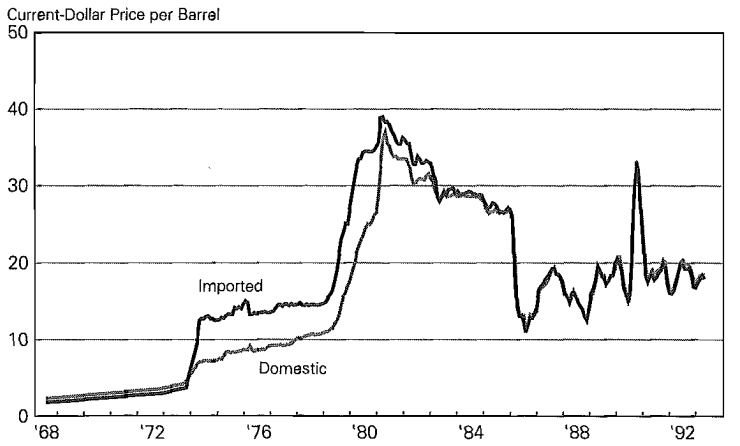
Oil and shipping. In late 1973, war in the Near East resulted in an Arab oil embargo against the United States and other nations sympathetic to Israel. This produced the sharp increase in world oil prices known as the first oil shock (Figure 4). Beginning in 1974, oil-dependent LDCs borrowed from large banks in the United States, Japan, and Europe to fund balance-of-payment needs in addition to already extensive infrastructure borrowing. The shipping industry experienced a series of wild swings in the demand for crude oil carriers in the mid 1970s. The demand for dry cargo ships fell, and then grew again in 1976 as commodity values rose. Shipbuilding and scrappage were affected by the demand for more fuel-efficient ships.

The second oil shock began in late 1978, as the Organization of

[12] A major exception is the work of Guttentag and Herring (1986 and 1988). They deal with prolonged increases in bank exposure to shocks that may affect many institutions, and argue for prudential supervision that monitors and controls systemic vulnerability. Ely (1993, pp. 9–11) discusses recent speculative bubbles.

Figure 4

U.S. Refiners' Acquisition Costs of Crude Oil, 1968 to 1993



Note: Data for 1968 to 1973 are annual figures and are plotted at mid-year; data for 1974 on are monthly figures.
Source: Energy Information Administration, *Annual Energy Review*; Board of Governors of the Federal Reserve System, FAME Data Base.

Petroleum Exporting Countries (OPEC) rapidly increased prices over a two-year period. One effect was a drop in the demand for supertankers, as extremely high prices curtailed energy demand. Also, development of new capacity in the North Sea, Mexico, and Alaska reduced the distances over which oil needed to be transported. Between 1982 and 1985, 30 percent of the world's tankers were scrapped and bays and fjords were filled with idle supertankers.

Colonial Bancorp in Waterbury, Connecticut (assets $1 billion) suffered heavy losses on its high concentration (225 percent of capital) in ship mortgages, mostly on old, dry cargo ships, when the scrap value of such ships fell well below loan values. While the bank was acquired on an unassisted basis, it is treated here as a de facto failure. Colonial was not large enough to be of significance to the banking system, but its problem illustrates the way economic factors worked to produce serious problems for overconcentrated banks. Of greater concern at the time were the substantial shipping exposures in several larger U.S. banking institutions, including equity positions in ships held by holding company subsidiaries. Most losses on such loans and equity holdings were

not recognized in accounting statements until the mid 1980s, however, at a time of deep concern for the viability of several large U.S. banks.

LDC loans. The major American banks continued to lend large amounts to LDCs for a time after the second oil shock, even though the soaring interest rates of the 1979–81 period had diminished the ability of some debtor nations to service their loans (Figure 3). But high inflation in the industrial nations held down debt service in dollars, and the strong demand for the raw material exports of several countries apparently moderated the problem enough to make continued lending attractive. The most rapid growth in term lending to LDCs by American banks took place in the 1981–84 period.[13]

The seriousness of the Latin American debt problem became unmistakable in mid 1982 when Mexico was in urgent need of debt restructuring.[14] But in order to keep these economies from collapsing, some additional funding was provided by U.S. banks over the next two years. The concentration in term LDC loans in the nine money center banks at the end of 1984 was 5.6 percent of assets and 121 percent of equity capital. This proved to be a very high concentration when ultimate losses exceeded 57 percent of peak exposure. A significant portion of the LDC loans in the 1981–84 period was participated or sold by money center banks to other U.S. banks. Over the next several years the smaller bank creditors gradually disentangled themselves from LDC credit exposure. It is only in the past year or two, however, that the money center banks have been able to put this problem largely behind them.

Interest rate spike, 1980–81. Savings banks and thrifts have long been vulnerable to high interest rates as a natural result of their specialization in funding home lending with savings type deposits. Customer preferences for long-term, fixed-rate home mortgages and readily available savings funds made these a natural, if risky, combination. The relative freedom of home owners to refinance mortgages in periods of low rates seemed to stack the deck against the lenders, but as long as rates did not stray too far from their historic range the specialized savings institutions were profitable. In the late 1970s, ample warnings were given by various observers that the industry was highly vulnerable to an upward swing in interest rates, and that the possibility of such a swing was increasing as a result of changes in rate regulations, in the way monetary policy was implemented, and in international factors.

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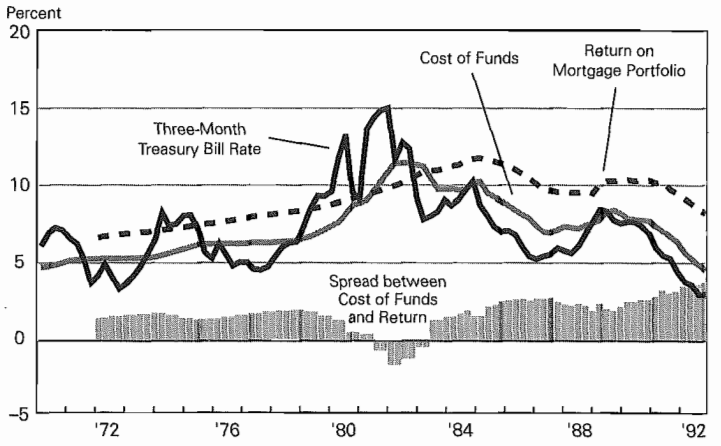
[13] While the banks continued to lend, the authorities were becoming concerned and were considering possible responses. Paul Volcker writes, "We had sensed the possibility of a Mexican debt crisis for some time before it materialized in August of 1982." Also, "The debt crisis was on an express train of its own, and by late 1981 or 1982 there was not much anyone could do to head it off." Volcker and Gyohten (1992, pp. 179–80).

[14] For an analysis of the response of the authorities to the Mexican crisis, see Volcker and Gyohten (1992, pp. 195–207).

Figure 5

Return on Mortgage Portfolio, Average Cost of Funds, and Spread for FSLIC-Insured Thrifts[a], and Three-Month Treasury Bill Rate[b], 1971 to 1992



[a] Prior to 1984, data are only available semi-annually; for 1984 and on, data are quarterly.
[b] Secondary market rate quoted on bank-discount basis.
Source: Federal Home Loan Bank Board, *Savings & Home Financing Source Book*; Office of Thrift Supervision staff; Board of Governors of the Federal Reserve System, FAME database.

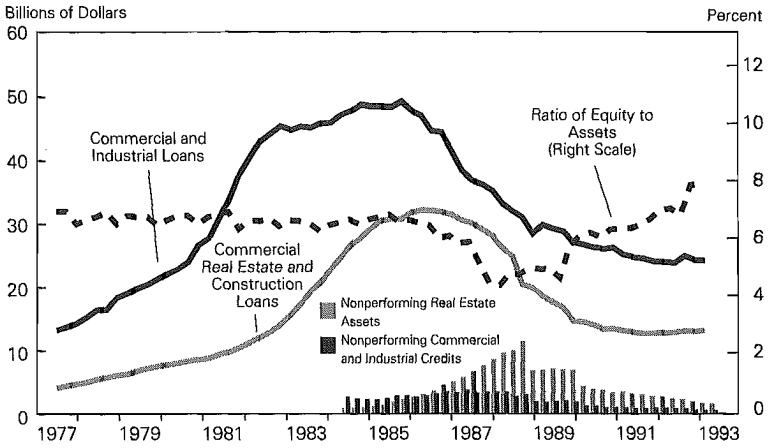
The 1970s was a decade of relatively high interest rates (Figure 5), but the sharp spikes in short-term rates in the 1969–70 period and again in 1973–74 did not severely damage depository institutions. However, the extremely high short-term rates of the 1980–81 period overwhelmed many of the thrifts and savings banks, including some of the largest. They also contributed to the strain on LDC debtors.

Even though a number of large savings institutions failed, most survived, and commercial banks generally were not seriously damaged. Much has been learned in recent years about measuring interest rate sensitivity, and new instruments are now available that, used properly, can greatly mitigate risk. While interest rate risk remains an area of considerable concern, the industry, the markets, and bank supervisors appear to be actively working to better measure and deal with it.

Energy boom. The price of Texas oil more than tripled in the years from 1971 to 1978 and then tripled again between 1978 and 1981. Even though oil production in Texas actually declined during this period as returns from old fields diminished, oil exploration and development produced a major economic boom in Texas, Oklahoma, and some

Figure 6

Texas Commercial Banks: Outstanding and Nonperforming Commercial Loans and Commercial Real Estate Loans, and Ratio of Equity Capital to Assets, 1977 to 1993



Note: Data for nonperforming loans were not available prior to 1984.
Source: Board of Governors of the Federal Reserve System.

Mountain states, with full employment, in-migration of workers, and rapidly rising bank lending for both energy activities and housing. (Energy loans are included with commercial and industrial loans in Figure 6.) By 1982, energy had been replaced by construction and development as the driving force of the boom.

The early boom atmosphere for banks is perhaps best represented by the "shopping center" bank in Oklahoma, Penn Square, which threw together oil industry loans for sale to some of the largest banks in the country. The energy loan problems that ruined Continental Illinois and Seafirst, and damaged some other large banks, were not the result of a collapsing boom but of the banks' overeagerness in the competition to participate in the boom itself. The loans purchased from Penn Square were problematic in mid 1982, well before the boom faded and crashed.

By 1982, the largest U.S. banks were suffering from problem LDC loans and in some cases from shipping and energy loans. The thrift industry and savings banks were in severe distress after three years of heavy losses due to an interest rate spike. The unusually wide movements of oil prices and interest rates had played major roles, but their

effects were magnified in each case by extensive risk concentrations in many of the larger banks and thrifts.[15]

1983 to 1992: Oil, Real Estate, LBOs, and Junk Bonds

Southwestern real estate. Commercial real estate loans, including construction loans, rose very rapidly in Texas banks in 1983 and 1984 (Figure 6). Growth in such loans slowed in the second quarter of 1985 and by late 1986 the volume was declining rapidly. Texas cities had a higher office vacancy rate than the United States generally as early as 1984, and over the next three years Dallas and Houston, along with Denver, Colorado, became noted for their "see-through" buildings.

The huge drop in oil prices in early 1986 threw the economies of the major oil-producing states into a deep contraction, and the deterioration of real estate credits accelerated. The failures of the large Texas banking and thrift institutions followed in the 1987–89 period (later for some large thrifts).

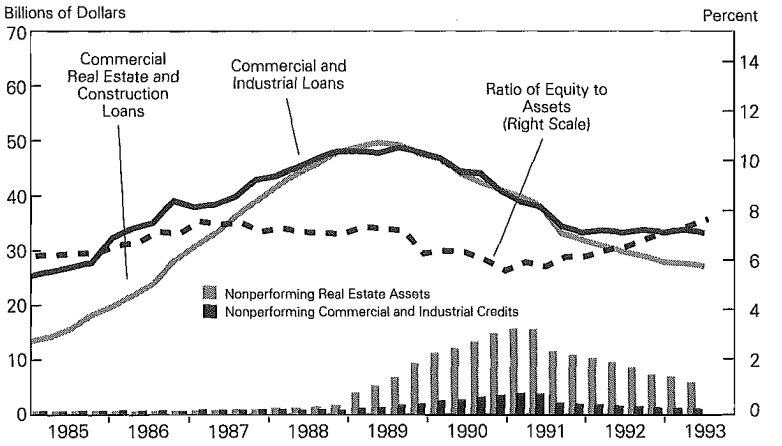
New England real estate. Between 1986 and 1988, despite almost daily reports in the financial press of the agony of the failing Texas banks, New England bankers aggressively fed the insatiable appetite of developers. Figure 7 shows the timing of the growth in commercial real estate loans (including construction and development loans) and the generally satisfactory performance of real estate credit until near the turning point in the cycle. The boom finally drowned in its own excesses in 1989, and a large number of the New England banks struggled to survive over the next two years. Many failed, and others may have been saved only by the low interest rates and the steeply sloped yield curve of 1992 and 1993.

The harsh criticism of bank supervisors in the early 1990s, and the enactment of the FDIC Improvement Act of 1991 (FDICIA), were both inspired by the thrift industry collapse and the need for massive taxpayer funding of thrift deposit insurance obligations. One result was a supervisory posture of applying very tough capital and credit quality standards to damaged banks as well as thrifts. Many New England banks were already seriously weakened, and the effects of the enforced tough standards fell heavily on this region. Forced shrinkage of bank assets to meet the especially high capital standards applied to damaged banks, and a general risk aversion on the part of bank managements, engendered in part by the FDICIA-created environment, helped to

[15] While not documented in this paper, data on such concentrations were one of the factors examined in slotting large institutions by cause of failure for Figures 1 and 2. Risk concentrations were documented for certain large troubled bank holding companies and for failed New England banks in Randall (1989) and (1993).

Figure 7

New England Commercial and Savings Banks: Outstanding and Nonperforming Commercial Loans and Commercial Real Estate Loans, and Ratio of Equity Capital to Assets, 1985 to 1993



Source: Board of Governors of the Federal Reserve System.

produce a credit crunch that hurt small business and the overall recovery by squeezing out marginal credits.[16]

Rolling real estate cycles? Roughly coinciding with the New England boom and bust cycle was the somewhat similar commercial real estate cycle in the Mid-Atlantic region. Lagging by a few years is the real estate cycle currently damaging Southern California. There has also been evidence of cyclical activity in commercial real estate in individual cities in the United States and Canada, as well as more general problems involving particular types of property, hotels for instance.

While it is natural to think of these real estate cycles as somehow related, a connection is not obvious. The Texas real estate boom was initiated by the preceding energy boom, although the change in the tax laws relating to real estate in 1981 probably also played a role. The subsequent crash can be attributed to the fading of the energy stimulus in the 1982 to 1985 period, the final collapse of oil prices in early 1986,

[16] See Syron and Randall (1992) and Peek and Rosengren (1992).

the more stringent income tax rules of 1986, and the inevitable correction of gross overbuilding.

In contrast, the New England economy had no such obvious external stimuli to explain how its real estate boom became overheated. The region had largely missed the 1981–82 recession, and its electronics and defense industries had grown strongly throughout the early and mid 1980s without the type of abrupt change that can produce major shortages. The more inhibiting tax structure after 1986 should have been a constraining influence.

It is not clear what transformed solid, steady growth into an irrational feeding frenzy. One partial explanation might be unusually strong competitive pressures on banks to acquire market share and prestige. In the mid 1980s, the expectation was widespread that full interstate banking was coming soon. The perception was that the money center banks would be acquiring large New England bank holding companies, and that only the largest and most aggressive would maintain their independence. This belief could have driven bank managements to compete more aggressively for growth in the hottest fad at the time—commercial real estate.

In any case, the Texas and New England real estate cycles do not appear to stem from similar factors, and nothing in the origins of the current Southern California cycle, which is more oriented toward residential construction, suggests a common cause with either.[17] Some have suggested a global propensity to overinvest in property in recent years. Even if true, this would not explain why normally conservative bank lenders suddenly lost perspective and showered funds on overeager developers.

Caught in a Trap

In many cases of isolated failures due to mismanagement, bank problems increase gradually, and corrective action can often reverse the process, saving the bank. With financial cycles, the risk concentration builds, but actual problems remain largely absent. At some hard-to-predict point, the economic factors affecting a particular risk may turn sour, trapping those banks with heavy exposure. Some loans become uncollectible and risk positions unsaleable. Banks caught in the trap can do little or nothing to avoid heavy losses.

This was apparent when banks became trapped in LDC loans in the early 1980s and found it necessary to advance more funds in an effort to minimize ultimate losses. The sudden and severe interest rate spikes of

[17] The writer did not investigate possible causes of the Mid-Atlantic real estate cycle, which appears to have more in common with the New England cycle.

1980–81 caught many savings banks and thrifts with long-standing exposure. The various real estate cycles caught those banks that had heavily financed construction and development, and over a period of two or three quarters many went from very low levels of nonperforming assets to very high levels.[18] Thus, a key consideration with financial cycles is that corrective action must be initiated well before turning points.

Comparison of Failed and Surviving Banks

The author's recent study of failed New England banks found that nearly all failures were linked to concentrations in commercial real estate loans, including construction and development loans. (Most exceptions were newly chartered banks.) That study also reviewed all non-failed banks and determined that only a few surviving banks had high concentrations of commercial real estate in the late 1980s without also becoming supervisory problems (CAMEL rating 4 or 5).[19] Of those few that did not become problems, most had avoided construction and development loans, and their concentration in commercial real estate involved a relatively steady volume of loans on existing buildings.

Systematic analysis of non-failed banks exposed to other cycles was not conducted, although all large Texas banks and all money center banks were studied. No significant instances were noted where banks heavily concentrated in troubled areas survived without serious problems, although the possibility cannot be ruled out.

Alternatives for Safeguarding Banks

In recent years the U.S. financial system has been plagued by a series of financial cycles affecting important groups of both banks and thrifts. Thrift industry problems were compounded by its peculiar supervisory/regulatory environment, which influenced not only the volume of the failures, as measured by total thrift assets, but the depth of the failures, as measured by the size of the losses to the thrifts' deposit insurance fund. The magnitude of insurance fund losses relative to assets was far greater for thrift failures than for banks.

Most of that earlier thrift supervisory/regulatory environment is gone now, however, replaced by one similar to the environment for the banks. Therefore, despite the magnitude of the thrift disaster, it is

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[18] Randall (1993, pp. 20, 24, 27).

[19] Banks are rated by supervisors on five factors: *C*apital, *A*sset quality, *M*anagement, *E*arnings, and *L*iquidity, giving rise to the acronym CAMEL. Each individual component, as well as a composite rating of all five factors, is assigned a score from 1 (strong) to 5 (likely to fail).

important to focus on what went wrong with the banks in designing improvements to the supervisory/regulatory environment.

Earlier sections of this paper demonstrated the dominant position of financial cycles in causing bank failures, particularly the "boom and bust" cycles stimulated by excessive bank lending. A few relatively large banks failed in the 1970s and 1980s as a result of isolated instances of mismanagement or fraud, but the impact of these failures on the banking system as a whole would have been unimportant in the absence of the many failures attributable to financial cycles. These large, isolated failures represented only 15 percent of the total assets of "failed" banks (Table 1).

By focusing particularly on the credit-related boom and bust cycles, and excluding agriculture, a typical pattern can be discerned: First, a period of exceptional growth occurred in a category of assets vulnerable to changes in economic factors. This growth period typically continued for three or four years, tending to become overheated and euphoric.[20] In time the boom faded, owing to some combination of exogenous and boom-induced changes in economic circumstances, and euphoria was replaced by pessimism. Loan nonperformance climbed, asset values tumbled, and bankruptcies and foreclosures increased.

In such cycles, little can be done to improve the circumstances of an overexposed bank, once the cycle begins to turn. Supervisors can force a bank to stop making things worse by continuing to lend into an overbuilt market. But nearly all New England banks, for example, promptly ceased such lending at the first sign of an emerging loan problem and without the need for a supervisory warning.[21] A less rigorous review of large bank failures elsewhere suggests that this is typical behavior for bank management generally. As troubles mount, supervisors can force a change of management, discontinuation of dividends, and stronger action in dealing with problems. But neither supervisors nor bank officials can materially decrease the problem; at best they can only manage their way through it.

It would be desirable to avoid or greatly mitigate such problems by discouraging the development of excessive concentrations in potentially risky assets, particularly at times when significant numbers of banks are making similar bets. To be timely, however, pressure on bank management to curtail lending or other actions that are building an excessive risk concentration must be effective at least a year or two before the turning point of the cycle. Generally, it is too late to shed a major risk concentration about the time the market starts to become nervous, and certainly most cannot squeeze through the exit once the rush begins.

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[20] Randall (1989, pp. 5–6) and (1993, pp. 17, 22, 27, 32).
[21] Randall (1993, p. 15).

Additionally, the pressure on management will have to be forceful, since it will have to be applied at a time when the bank is riding a wave—on the cutting edge of the hottest trend, expanding rapidly, highly profitable, able to tap capital markets, and benefiting from favorable press coverage.

Conceivably such pressure could come from sophisticated market forces, although evidence suggests that the bank stock analysts and debt rating services did not downgrade bank stock and bond ratings because of risk concentrations in the 1980s.[22] And even if these market forces do become more attuned to budding financial cycles, a question remains as to whether they will downgrade soon enough, or drastically enough, to force timely actions on the part of bank managements. Clients of these firms do not need two years' lead time to escape, and they might miss a good run-up in values if cautioned too early. Furthermore, one can question whether even significant downgrades would have sufficient influence on bank managements, or full credibility with the market, in a time of broad-based euphoria.

It is unclear if proponents of reduced deposit insurance would argue that depositors would pull funds from highly successful banks just because they appear to be developing heavy concentrations in energy or construction loans, at times when most people are enjoying full employment and soaring home values and "the experts" are saying that real estate always goes up. A more likely scenario is that depositor pressure would come only after the cycle has turned and has exposed serious problems in a significant segment of the banking industry. Depositor runs would then force hasty and costly resolutions of a number of troubled banks at about the same time, adding to the atmosphere of uncertainty and gloom, shrinking credit availability, and raising the danger of broader systemic problems.

A Supervisory Approach to Limiting Risk Concentrations

A safer and more promising approach would give responsibility to bank supervisors to take direct action to restrain excessive risk concentrations. In structuring a proposal to accomplish this, three basic questions must be addressed:

1. Can supervisors recognize and evaluate dangerous risk concentrations sufficiently in advance of cyclical turning points to materially alter the outcome?

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[22] Randall (1989, pp. 10–13) and (1993, p. 38). The review of bank analysts and rating services was not exhaustive but did include output of several of the better-known firms.

2. Will supervisors have the courage to force meaningful changes in bank behavior in the face of a boom psychology? Do they possess the means to do so within the legal and political framework in which supervision currently operates?
3. Can the process be controlled so as to prevent overzealous supervisory actions that impinge unnecessarily on management prerogatives, retard desirable economic activity, or introduce some credit allocation bias?

Recognition and Evaluation of Risk Concentrations

Early recognition of the major risk concentrations in banks was not particularly difficult in the 1970s and 1980s. Much was published in the late 1970s about the interest sensitivity of savings-type institutions and supervisors were generally aware of the risks, even though they lacked the tools to properly measure exposures. The authorities also were well aware of the buildup in LDC loans at an early stage, and it received intermittent press attention as well. While the risks of sovereign default were sometimes downplayed, concerns were also expressed at an early stage.[23]

Energy loan totals were not identified in bank call report data, but information about this type of concentration would usually have been developed as a part of bank examinations and presumably would have been hard to overlook in a large Texas bank. Normally such industry concentrations would also be identified in internal management reports, although the full energy loan exposure of Continental Illinois apparently came as a surprise to both senior management and the supervisors in June 1982. In any event, it is not difficult for examiners at least to roughly estimate industry concentrations, and it would not have been unusual at that time to request that management track such concentrations and make the information available to supervisors on a regular basis.[24]

Bank call reports in the early 1980s permitted supervisors to track, for each bank, growth and concentrations in construction loans and

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[23] See Kindleberger (1977) for a pre-crisis evaluation of LDC borrowers and their shift in the use of proceeds to finance consumption. Also see Neikirk (1987, p. 177), regarding Federal Reserve Chairman Volcker's concern about an LDC loan crisis in 1979.

One might question why the supervisors did not act against the growing concentration in term LDC loans in large banks in the 1981–82 period. Was it overconfidence in sovereign risk, broader concerns about the balance of payments distortions stemming from the second oil shock, or a general reluctance to intervene against risk concentrations? For one explanation, see Volcker and Gyohten (1992, pp. 195–96).

[24] Keefe, Bruyette & Woods, and probably other bank stock analysts, obtained and published energy lending data from large Texas bank holding companies intermittently throughout the buildup of such loans.

loans on commercial properties, although not all supervisors had surveillance systems that did so. Thus the growth in construction and development loans in the large Texas and Oklahoma banks could have been continuously monitored.

The increasing concentrations in such loans in New England banks were evaluated by the Boston Reserve Bank quarterly throughout 1985 and 1986. Some banks had construction loans in excess of 20 percent of total loans (one 57 percent), whereas such loans had generally been 5 percent of loans or less in the past. In the second half of 1986, a phone survey was made of 12 commercial banks and five savings institutions selected as heavy construction lenders, either in total dollars or as a percentage of total loans. This survey provided data on subconcentrations within the construction loan category in terms of location and type of property, as well as general information on lending terms and practices. A survey is an unreliable way to collect such information, particularly on lending practices, but at that time examination reports of the banks surveyed contained almost no information on construction and commercial real estate lending. In conjunction with the survey, data were collected on the condition of the real estate markets considered most sensitive, and market observers were interviewed. Since this survey took place three years before Bank of New England shocked the region with its massive loan loss provision, and much of the growth was yet to come, it demonstrates that emerging concentrations can be recognized at a sufficiently early stage. Unfortunately, supervisors were not inclined to act against heavily concentrated banks because their loans were performing well, and they continued to do so for another two to three years.

Identification of risk concentrations of the type experienced in the 1970s and 1980s is not difficult, but categorizing and measuring concentrations can be quite complex and future risk concentrations may not be so obvious. Thus, supervisors need more sophisticated tools for identifying and delineating concentration risk. A good place to start would be a comprehensive study of past concentrations in banks and other financial institutions, both those that had serious consequences and those that did not. But such analysis of concentrations should be linked to a study of the economic environment relevant to these risk exposures.[25]

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[25] Some have suggested that the focus of anticyclical supervision should be on any liberalization of lending terms and underwriting standards, rather than concentrations in risky categories of loans. While there may be complexities in identifying and evaluating some dangerous concentrations, the task of controlling booms by either regulation or selective criticism of terms, practices, and credit standards would be far more difficult.

Examiners should criticize clear outliers in lending terms, but the relevant measures of terms and typical lending standards differ by region, type of loan, and industry.

The evaluation of the danger in the construction loan concentrations in New England banks would have been facilitated by access to expertise in real estate cycles. This points up the need to bring together the supervisor's identification of risk concentrations with the insights of industry analysts and specialized economists, in order to evaluate the potential for changes in the relevant economic environment. A recommendation for supervisory action should take into account the nature and degree of concentration, whether or not a number of banks had similar concentrations, growth factors, the inherent risk of the activity, and how current and prospective economic factors might alter the risk. Particular attention should be paid to large banks because of the greater threat they present to the health of the banking system.

Supervisory Responsibility and Authority

The key to ensuring that bank supervisors will act in a timely manner to deal with truly dangerous concentrations of risk is to make this clearly their most important responsibility, and one on which the success of their performance will be measured. The supervisory agencies collectively should assume this role, rather than waiting for direction from Congress. It would be a subtle change in the supervisory role, even though a critical one, marking perhaps a return to a more traditional supervisory role of steering banks away from potential dangers.[26] The current tendency to take a hands-off approach until problems emerge, and then to enforce strict standards on damaged banks, is of fairly recent vintage, and could be reversed quickly, should the supervisory agencies agree to do so.[27] If the agencies adopt a clear policy stating their intent to deal with excessive risk-taking on a timely basis, develop the expertise and techniques to evaluate concentrations, and make clear to supervisory officials at all levels that they will be called to account for any failure to recognize and act firmly against dangerous concentrations, professional supervisors will not be deterred by intimidation from outside the agencies in carrying out their mission.

Furthermore, standards change with industry cycles and with structural evolution. Few data are available on business lending terms and practices at the level of disaggregation needed, and even the characterization of loan terms and standards in a particular bank by an examiner may not be easy. Accordingly, it is proposed that the primary focus be excessive concentrations in risky assets.

[26] The author spent the first 31 years of his career in some phase of bank supervision, from field examiner to surveillance officer to regional supervisor, laboring under the impression that the object was to prevent banks from getting in serious trouble, and to guide their recovery when they do.

[27] The bank supervisory agencies have recently focused considerable energies toward the evaluation of some types of risk, interest rate risk and financial derivatives being examples. But there is no evidence that the agencies have addressed the general problem of identifying and acting against dangerous risk concentrations.

In the great majority of cases, supervisory persuasion or firm pressure coming from an appropriate level in the agency will be successful in convincing a bank's board of directors, if not the chief executive, to back away from an excessive concentration. It will be particularly important that agencies reinforce each other in areas of multiple jurisdiction. Because an agency may have to resort to a cease and desist order to limit risk-taking, a clear interagency policy statement, defining unsafe and unsound banking to include excessive concentration in risky asset categories, should be presented to the appropriate members of the Administration and Congress and widely publicized. Because of the nature of risk concentrations and financial cycles, it would be inappropriate to set fixed limits or rigid definitions in attempting to delineate unsafe risk concentrations. This is a problem better dealt with through agency guidelines, expertise, and judgment than by legislation.

Controlling the Supervisory Process

The federal bank supervisory agencies have a high degree of professionalism and well-established control mechanisms that ensure a reasonable degree of consistency among regions and conformance to policy directives. They also have a tradition of avoiding actions that could be considered credit allocation. Even within this environment, it would be desirable to set up a mechanism to ensure that significant actions against risk concentrations are approved at an appropriate level and are well documented as to both the nature of the concentration and the economic factors governing the risk of loss.[28]

An interchange of information will be needed, between regions and between agencies, on potentially risky concentrations in banks and on cyclical factors that could affect those concentrations. It may be desirable to establish an interagency clearing house on such information and on techniques for evaluating risks and dealing with them. An important side benefit of such an information clearing house would be better control of the integrity of the process.

Type of Supervisory Action

In most cases, action should be brought against banks on an individual case basis. Those few banks that have gone the furthest in terms of taking excessive risks should be required to reduce their

[28] It is important to note that this is a proposal for countercyclical action with respect to financial cycles, particularly those involving banks, but not for using the supervisory apparatus to counter the general business cycle.

exposure. As additional banks reach a comparable level of exposure, considering qualitative as well as quantitative factors, they should receive similar requests.

An alternative is to issue general warnings about overconcentrations in the particular type of assets in question. This can cause the cautious lenders to back away while the more aggressive continue to lend, however. It also compounds the damage if supervisors later decide that they have overreacted to a risk situation. Even if supervisors take action too late and find that a "bubble" situation already exists, they may still elect to proceed on a bank-by-bank basis, but as expeditiously as possible, in an effort to engineer a more orderly transition to the recovery phase without suddenly bursting the bubble.

Safeguarding the Banking System

The focal point of much of the debate on banking reform has been deposit insurance and protection for the taxpayer from deposit insurance "bailouts." This is an inappropriate focus, which has led to dubious policy prescriptions. The cost to the deposit insurance fund when banks fail is borne by the industry, not by the taxpayer. Abnormal costs result in higher deposit insurance premiums. The taxpayer becomes involved only if the industry as a whole becomes so weakened that the remaining healthy banks cannot absorb the losses of the failing banks.

A few years ago one might have argued that such a contingency was unimaginable, absent a 1930s-type depression or an unprecedented natural disaster. But we have witnessed the collapse of much of the thrift industry to the point where it was overwhelmed with losses, and the taxpayer is now having to pay heavily. Even more to the point, we have seen risk concentrations in some of our larger banks lead to losses so severe that for a while they appeared to threaten the ability of that industry to self-insure—and this under general economic conditions no more severe than those in other postwar recessions.

The appropriate response, however, is not to insulate the government's (taxpayer's) backstop role in deposit insurance from the destiny of the banking system as a whole, as is the intent of the various narrow bank proposals. Reorganizing banks so as to link insured deposits to relatively safe assets may protect the deposit insurance fund, but it does nothing to protect the "broad" banks (what is left over after creating the narrow banks) from their potential for widespread failures should a popular area of asset concentration turn sour. Had the narrow bank concept been in effect in the 1980s, most of the large bank failures and near failures would still have occurred, but much of the implicit government commitment to an orderly resolution of problems would

have been missing. Considering the uncertainties when a number of banks are in trouble in the aftermath of a financial cycle, the danger of systemic runs would have been significantly greater. In addition, the narrow bank concept requires a major restructuring of sources and uses of funds in the industry, with unknown consequences for the allocation and pricing of credit and the security and earnings power of savings and checkable balances, including those funds induced to forgo deposit insurance. Some proposals would even eliminate intraday credit, thereby materially decreasing the efficiency of the payments mechanism.

Until the mid 1980s, it was generally accepted in this country that the government must ensure the safety of the banking system. Individual banks were allowed to fail when they become nonviable, but their demise was controlled, particularly in the case of large institutions, so as to reduce the dangers of a general lack of confidence in banks and potential systemic runs on deposits.

It is still the practice in nearly all developed countries for the government to back the banking system (although some go much further in protecting individual troubled banks, with less disclosure, more flexible accounting, and informal pressures for absorption of failing institutions by stronger ones). Some foreign countries have found it necessary to seize major portions of their banking systems in recent years because of insolvencies stemming from cyclical problems similar to those affecting U.S. banks. They are now facing the difficult task of reprivatizing some of their largest banks.[29]

In the United States we appear to be moving toward a position where the government will no longer back the banking system in a crisis. Recent banking law has intentionally limited the authorities' discretion in handling distressed banks in ways that allow them to recover gradually, or to fail in a manner that is least damaging to public confidence. Discount window flexibility, to give supervisors time to determine viability or arrange orderly transitions, has been curtailed. Rather than allow capital to absorb losses and gradually be rebuilt, we now impose short-term capital targets that are actually higher than the industry norm, reflecting the problem status of the bank;[30] we impose higher deposit insurance premiums on damaged banks, reflecting not the buildup of risk concentrations in their assets, but the fact that the cycle has turned against them; often we rigorously force effective write-downs of assets (through provisions to the reserve for bad debts or otherwise) to depressed values in the aftermath of an adverse cyclical movement; and we appear to be moving toward full market value

[29] See Berg (1993).
[30] Syron and Randall (1992, pp. 8, 11).

accounting, which will likely add to the procyclical pressures.[31] To enhance market discipline or to limit the cost of failures, the vulnerability of our banking system to runs has been increased by reducing deposit insurance coverage and giving the FDIC preference in liquidations.

The "prompt corrective action" provisions of FDICIA, which require specific actions by supervisors as capital ratios are eroded, are "end game" strategies for closing weakened banks sooner. Because capital ratios decline some time after serious loan problems emerge, and long after risk exposures are built in, actions tied to capital declines cannot materially decrease the ultimate losses stemming from the effects of financial cycles.[32] They do have the effect of shifting some losses from the industry-supported insurance fund to uninsured creditors of banks, however. And in doing so, they increase the vulnerability of the banking system to disorderly closures and potentially to systemic runs. They may also force the failure of severely damaged banks that have the potential to recover (shooting the wounded?), thereby increasing losses to the insurance fund.[33]

In the context of the series of "boom and bust" cyclical problems affecting a number of our larger banks over the past few years, it would be hard to argue that our banking system is immune to disasters. The price of oil remains vulnerable to wide gyrations, and we have no guarantee against future interest rate spikes. We do not fully understand how real estate booms get out of hand, much less know how to control them. Future calamities may involve still different risk concentrations and economic distortions.

It would be unwise to argue that permitting a collapse of our banking system without intervention by the government would be sound public policy. Many have supported the concept that no bank is too big to fail, but they err if they extend this point to argue that the near simultaneous failure of several of our largest banks would be tolerable.

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[31] There is no evidence that the increased risk in bank assets tied to a euphoric boom would be reflected in lower market values, and it is more likely that the opposite would be true. The pessimism of the loss recognition phase would drive market values of such assets to levels well below long-term values, increasing the likelihood of insolvency. Thus, market value accounting will do nothing to moderate boom and bust cycles, and very likely will aggravate them.

[32] Randall (1993, p. 33).

[33] Some argue that potential bank runs are not a major problem because withdrawn funds would probably be deposited in another bank rather than being held in currency or gold. But the main concern with widespread bank runs is not a diminishment of the money supply, but the potential for chaotic effects on the payments mechanism and on banks' ability to survive, as well as the curtailment of credit availability. In a banking crisis, redeposited funds are unlikely to be used for loan expansion to offset the reduced capacity of the banks losing deposits.

Given the financial cycles of the past 20 years, this is clearly a possibility that must be taken into account in banking reform.

When a boom turns sour and severe credit problems arise in one bank after another, neither the markets nor the supervisors are going to be sure which troubled banks will ultimately survive and which seemingly healthy banks will become troubled next week. In such a period of uncertainty, the danger of runs on banks is high, whether for valid reasons or based on misinformation, and the ability of supervisory and discount window officials to deal with runs is diminished. In very large banks, both domestic and international, clearing and settlement mechanisms could break down, broadening the confusion and dragging down additional banks with similar or different weaknesses.

In the aftermath of a banking crisis, the diminished availability of credit to small and mid-size businesses and others can materially damage the economy over a prolonged period. As we have seen on a regional basis in New England and some other parts of the country, such a credit crunch can be caused by both the direct effect of failures and a shift to risk aversion on the part of both banks and supervisors. In a crisis involving very large banks, these credit crunch effects would apply to larger borrowers over a broader area. While the focus of this discussion has been banks, much of it would apply to some degree to certain large nonbank firms that act as major providers of short-term business credit or are important participants in the payments mechanism (even though they must settle through a bank).

This is not an argument for government funds protecting all creditors of large failing institutions from losses, and certainly not for preserving nonviable financial institutions. But it is an argument that the government has an interest in preventing a situation that could threaten the banking system, broadly defined, and in managing any such crisis that does develop. Unfortunately, by trying to convince the world that the U.S. government will not intervene, and putting in place legal impediments to such action, we create a danger that action will come too late and be so ineffective that it will not avert a domestic and international crisis involving funds settlements, liquidity, and credit availability, with widespread implications for the economic and social structure of the country.[34]

Instead of taking steps that will make it more difficult to work our way through a period of recovery from a cyclical disaster, we should be focusing on steps to moderate the vulnerability of the banking industry to such cycles. The time for firm supervisory action is when the banks are taking extraordinary risks, not when they are struggling with extraordinary problems.

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[34] See Randall (1990) for a more extended discussion.

Appendix Table
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
BIF-Insured Banks (assets of $500 milion or more)				
1973–81				
United States National Bank	San Diego, CA	Oct-73	1.3	Isolated or more complex problems
Franklin National Bank	New York, NY	Oct-74	3.7	Isolated or more complex problems
Banco Credito y Ahorro Ponceno	Ponce, PR	Mar-78	.7	Isolated or more complex problems
First Pennsylvania Bank, N.A.[1]	Philadelphia, PA	Apr-80	8.0	Isolated or more complex problems
Greenwich Savings Bank	New York, NY	Nov-81	2.5	Interest rate squeeze
Central Savings Bank	New York, NY	Dec-81	.9	Interest rate squeeze
Union Dime Savings Bank	New York, NY	Dec-81	1.4	Interest rate squeeze
1982–83				
Western New York Savings Bank	Buffalo, NY	Jan-82	1.0	Interest rate squeeze
Farmers and Mechanics Savings Bank of Minneapolis	Minneapolis, MN	Feb-82	1.0	Interest rate squeeze
Fidelity Mutual Savings Bank	Spokane, WA	Mar-82	.7	Cause not determined
United States Savings Bank of Newark	Newark, NJ	Mar-82	.7	Cause not determined
New York Bank of Savings	New York, NY	Mar-82	3.4	Interest rate squeeze
Western Saving Fund Society of Philadelphia	Haverford, PA	Apr-82	2.1	Interest rate squeeze
Penn Square Bank, N.A.	Oklahoma City, OK	Jul-82	.5	Southwestern energy and commercial real estate
United Mutual Savings Bank of New York	New York, NY	Sep-82	.8	Interest rate squeeze
Colonial Bancorp[1]	Waterbury, CT	Dec-82	1.3	Isolated or more complex problems
Dry Dock Savings Bank	New York, NY	Feb-83	2.5	Interest rate squeeze
United American Bank in Knoxville	Knoxville, TN	Feb-83	.8	Isolated or more complex problems
Seafirst Corporation[1]	Seattle, WA	Jul-83	9.7	Southwestern energy and commercial real estate
First National Bank of Midland	Midland, TX	Oct-83	1.4	Southwestern energy and commercial real estate

[1]De facto failure: the date of failure is the date the institution was acquired, in most cases.

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
1984–85				
Continental Illinois National Bk & TC	Chicago, IL	Jul-84	33.6	Southwestern energy and commercial real estate
Orange Savings Bank	Livingston, NJ	Sep-84	.5	Cause not determined
Crocker National[1]	San Francisco, CA	Jan-85	22.1	Isolated or more complex problems
Bowery Savings Bank	New York, NY	Oct-85	5.3	Interest rate squeeze
1986–87				
Park Bank of Florida	St. Petersburg, FL	Feb-86	.6	Other commercial real estate
First National Bank and Trust Company of Oklahoma City	Oklahoma City, OK	Jul-86	.8	Southwestern energy and commercial real estate
Texas Commerce Bancshares[1]	Houston, TX	May-87	18.0	Southwestern energy and commercial real estate
Syracuse Savings Bank	Syracuse, NY	May-87	1.2	Interest rate squeeze
BancTexas, Dallas (and affiliates)	Dallas, TX	Jul-87	1.2	Southwestern energy and commercial real estate
1988				
United Bank Alaska and Alaska Mutual Bank	Anchorage, AK	Jan-88	1.3	Other commercial real estate
Allied Bancshares[1]	Houston, TX	Feb-88	8.1	Southwestern energy and commercial real estate
McAllen State Bank	McAllen, TX	Apr-88	.6	Southwestern energy and commercial real estate
First City Bancorporation	Houston, TX	Apr-88	11.2	Southwestern energy and commercial real estate
First Republic Bank—Dallas, N.A. (and affiliates)	Dallas, TX	Jul-88	33.4	Southwestern energy and commercial real estate
Caribank	Dania, FL	Dec-88	.5	Other commercial real estate

[1]De facto failure: the date of failure is the date the institution was acquired in most cases.

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
1989				
MBank Dallas, N.A. (and affiliates)	Dallas, TX	Mar-89	15.8	Southwestern energy and commercial real estate
First Service Bank For Savings	Leominster, MA	Mar-89	.9	New England commercial real estate
Alliance Bank	Anchorage, AK	Apr-89	.8	Other commercial real estate
Texas American Bank/Fort Worth, N.A. (and affiliates)	Fort Worth, TX	Jul-89	4.8	Southwestern energy and commercial real estate
First American Bank and Trust	North Palm Beach, FL	Dec-89	1.7	Other commercial real estate
1990				
Monroe Savings Bank, FSB	Rochester, NY	Jan-90	.5	Interest rate squeeze
Seamen's Bank for Savings, FSB	New York, NY	Apr-90	2.1	Mid Atlantic commercial real estate
NBC Bank—San Antonio, N.A. (and affiliates)	San Antonio, TX	Jun-90	1.6	Southwestern energy and commercial real estate
National Bank of Washington	Washington, DC	Aug-90	1.7	Mid Atlantic commercial real estate
First American Bank for Savings	Boston, MA	Oct-90	.6	New England commercial real estate
1991				
Bank of New England, N.A. (and affiliates)	Boston, MA	Jan-91	21.8	New England commercial real estate
Maine Savings Bank	Portland, ME	Feb-91	1.2	New England commercial real estate
Madison National Bank (and affiliate)	Washington, DC	May-91	.7	Mid Atlantic commercial real estate
First National Bank of Toms River	Toms River, NJ	May-91	1.4	Mid Atlantic commercial real estate
Goldome	Buffalo, NY	May-91	9.2	Isolated or more complex problems
First Mutual Bank for Savings	Boston, MA	Jun-91	1.2	New England commercial real estate
Citytrust	Bridgeport, CT	Aug-91	2.0	New England commercial real estate
Mechanics and Farmers Savings Bank, FSB	Bridgeport, CT	Aug-91	1.1	New England commercial real estate
Southeast Bank, N.A. (and affiliate)	Miami, FL	Sep-91	10.9	Other commercial real estate
Amoskeag Bank	Manchester, NH	Oct-91	.8	New England commercial real estate

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
1991 continued				
BankEast	Manchester, NH	Oct-91	.7	New England commercial real estate
New Hampshire Savings Bank	Concord, NH	Oct-91	1.0	New England commercial real estate
Dartmouth Bank	Manchester, NH	Oct-91	.8	New England commercial real estate
Central Bank	Meriden, CT	Oct-91	.7	New England commercial real estate
Connecticut Savings Bank	New Haven, CT	Nov-91	1.1	New England commercial real estate
Bank Mart	Bridgeport, CT	Dec-91	.5	New England commercial real estate
1992				
CrossLand Savings, FSB	Brooklyn, NY	Jan-92	7.2	Mid Atlantic commercial real estate
Independence Bank	Encino, CA	Jan-92	.6	Isolated or more complex problems
Dollar Dry Dock Bank	White Plains, NY	Feb-92	3.8	Mid Atlantic commercial real estate
American Savings Bank (and affiliate)	White Plains, NY	Jun-92	3.5	Mid Atlantic commercial real estate
Attleboro-Pawtucket Savings Bank	Attleboro, MA	Aug-92	.6	New England commercial real estate
Union Savings Bank	Patchogue, NY	Aug-92	.5	Mid Atlantic commercial real estate
Howard Savings Bank	Newark, NJ	Oct-92	3.3	Mid Atlantic commercial real estate
First Constitution Bank	New Haven, CT	Oct-92	1.5	New England commercial real estate
First City, Texas-Houston, N.A. (and affiliates)	Houston, TX	Oct-92	8.8	Isolated or more complex problems
Merchants Bank	Kansas City, MO	Nov-92	1.2	Other commercial real estate
Burritt InterFinancial Bancorporation	New Britain, CT	Dec-92	.5	New England commercial real estate
Heritage Bank for Savings	Holyoke, MA	Dec-92	1.3	New England commercial real estate
Meritor Savings Bank	Philadelphia, PA	Dec-92	3.6	Mid Atlantic commercial real estate
Eastland Savings Bank (and affiliate)	Woonsocket, RI	Dec-92	.6	New England commercial real estate
1993				
New England Savings Bank	New London, CT	May-93	.9	New England commercial real estate

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
FSLIC-Insured Thrifts (assets of $800 million or more)				
1984				
San Marino S&LA	Tustin, CA	Dec-84	.8	Cause not determined
1985				
Sunrise S&LA	Lake Worth, FL	Jul-85	1.5	Commercial real estate
Beverly Hills Savings	Beverly Hills, CA	Dec-85	2.5	Commercial real estate
Southern California S&LA, a FSB	Beverly Hills, CA	Dec-85	1.3	Commercial real estate
Bell Savings, FSLA	San Mateo, CA	Dec-85	1.0	Commercial real estate
1986				
Mainland Savings Association	Houston, TX	Apr-86	1.0	Southwestern commercial real estate
Western FSA	Dallas, TX	Sep-86	1.6	Southwestern commercial real estate
FirstSouth S&LA	Little Rock, AR	Dec-86	1.6	Commercial real estate
1987				
Central S&LA	San Diego, CA	Apr-87	1.7	Commercial real estate
Vernon S&LA	Dallas, TX	Mar-87	1.2	Southwestern commercial real estate
Independent American S&LA	Irving, TX	May-87	1.0	Southwestern commercial real estate
Eureka FS&LA	San Carlos, CA	May-87	1.7	Commercial real estate
American Diversified Savings Bank	Lodi, CA	Jun-87	.8	Isolated or more complex problems
Alamo Savings Association of Texas	San Antonio, TX	Jun-87	.6	Southwestern commercial real estate
Freedom S&L	Tampa, FL	Jul-87	1.9	Commercial real estate
Lyons Federal Trust and Savings Bank	Countryside, IL	Sep-87	1.9	Commercial real estate
Pelican Homestead and SA[2]	Metairie, LA	Dec-87	1.5	Interest rate squeeze

[2]At this date Pelican Homestead Savings Association acquired four failed thrifts, which later led to the failure of the consolidated institution.

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
1988				
Lamar Savings	Austin, TX	May-88	1.9	Southwestern commercial real estate
Briercroft Savings	Austin, TX	May-88	.9	Southwestern commercial real estate
Sunbelt Savings	Dallas, TX	Aug-88	2.2	Southwestern commercial real estate
Frontier Fed	Ponca City, OK	Aug-88	1.1	Cause not determined
American Savings	Stockton, CA	Sep-88	30.2	Commercial real estate and interest rate squeeze
First Fed	Austin, TX	Sep-88	1.0	Southwestern commercial real estate
Guaranty Fed	Dallas, TX	Sep-88	2.0	Risk-controlled arbitrage
Olney Savings	Olney, TX	Oct-88	1.4	Southwestern commercial real estate
Lincoln Fed	Westfield, NJ	Nov-88	1.3	Interest rate squeeze
Gibraltar Savings	Houston, TX	Dec-88	6.3	Southwestern commercial real estate
First Texas	Dallas, TX	Dec-88	3.2	Southwestern commercial real estate
Monfort	Dallas, TX	Dec-88	1.2	Southwestern commercial real estate
American Savings	Springfield, IL	Dec-88	1.0	Interest rate squeeze
First Fed	Jacksonville, FL	Dec-88	1.3	Commercial real estate
Mile High Fed	Denver, CO	Dec-88	2.3	Commercial real estate
Columbia Savings	Englewood, CO	Dec-88	3.1	Interest rate squeeze and risk-controlled arbitrage
Pathway Fin	Chicago, IL	Dec-88	1.4	Cause not determined
Cardinal Fed	Cleveland, OH	Dec-88	1.5	Cause not determined
United Savings	Houston, TX	Dec-88	4.9	Junk bonds
1989				
Gill SA	Hondo, TX	Feb-89	1.4	Southwestern commercial real estate
Freedom S&LA, A FS&LA	Tampa, FL	Feb-89	1.5	Commercial real estate
Baltimore Federal Financial FSA	Baltimore, MD	Feb-89	1.6	Southwestern commercial real estate

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
1989 continued				
Pacific Savings Bank	Costa Mesa, CA	Feb-89	1.1	Interest rate squeeze
Bright Banc SA	Dallas, TX	Feb-89	4.5	Southwestern commercial real estate
First Federal of Arkansas, FA	Little Rock, AR	Feb-89	1.9	Interest rate squeeze
Sandia FS&LA	Albuquerque, NM	Feb-89	.9	Southwestern commercial real estate
Savers FS&LA	Little Rock, AR	Feb-89	.9	Commercial real estate and interest rate squeeze
Midwest FS&LA of Minneapolis	Minneapolis, MN	Feb-89	3.1	Other or more complex problems
University SA	Houston, TX	Feb-89	4.9	Southwestern commercial real estate
American S&LA, A FA	Salt Lake City, UT	Feb-89	2.2	Commercial real estate
Southwest S&LA	Phoenix, AZ	Feb-89	2.3	Southwestern commercial real estate
Anchor SA	Kansas City, KS	Feb-89	.9	Interest rate squeeze
Commerce SA	San Antonio, TX	Mar-89	.8	Southwestern commercial real estate
San Antonio SA	San Antonio, TX	Mar-89	2.8	Southwestern commercial real estate
Bexar Savings Association	San Antonio, TX	Mar-89	.9	Southwestern commercial real estate
Commonwealth SA	Houston, TX	Mar-89	1.8	Southwestern commercial real estate
Hill Financial S&LA	Red Hill, PA	Mar-89	3.2	Interest rate squeeze
Benjamin Franklin SA	Houston, TX	Mar-89	2.7	Southwestern commercial real estate and junk bonds
Skokie FS&LA	Skokie, IL	Mar-89	1.0	Commercial real estate and interest rate squeeze
Broadview Savings Bank	Cleveland, OH	Mar-89	1.7	Interest rate squeeze
Gibraltar Savings	Simi Valley, CA	Mar-89	12.3	Risk-controlled arbitrage
Murray Savings Association	Dallas, TX	Apr-89	1.5	Southwestern commercial real estate
American FS&LA of Colorado	Colorado Springs, CO	Apr-89	.9	Commercial real estate
Lincoln S&LA	Irvine, CA	Apr-89	5.1	Commercial real estate
Horizon Financial FA	Southampton, PA	Jun-89	2.6	Interest rate squeeze

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
1989 continued				
Sun State S&LA	Phoeniz, AZ	Jun-89	1.1	Southwestern commercial real estate
Western S&LA	Phoenix, AZ	Jun-89	6.1	Southwestern commercial real estate
Great Southern FSB	Savannah, GA	Jun-89	.9	Commercial real estate and interest rate squeeze
Victoria SA	Victoria, TX	Jun-89	1.0	Southwestern commercial real estate
Commonwealth S&LA	Margate, FL	Jul-89	1.7	Junk bonds
Peoples Heritage FS&LA	Salina, KS	Aug-89	1.9	Commercial real estate
Metropolitan Financial S&L	Dallas, TX	Aug-89	.8	Southwestern commercial real estate
Sooner FS&LA	Tulsa, OK	Nov-89	1.6	Southwestern commercial real estate
City Federal Savings Bank	Bedminster, NJ	Dec-89	9.7	Commercial real estate and junk bonds
1990				
Midwest FSB of Minot	Minot, ND	Jan-90	1.0	Interest rate squeeze
Atlantic Financial Savings, FA	Bala Cynwyd, PA	Jan-90	5.4	Other or more complex problems
Horizon Savings Bank, F.S.B.	Wilmette, IL	Jan-90	1.2	Interest rate squeeze
Duval FSA	Jacksonville, FL	Jan-90	1.0	Interest rate squeeze
Empire of America FSB	Buffalo, NY	Jan-90	8.5	Interest rate squeeze
Merabank Federal Savings Bank	Phoenix, AZ	Jan-90	6.5	Southwestern commercial real estate
Centrust Federal Savings Bank	Miami, FL	Feb-90	8.3	Junk bonds
Pioneer Federal Savings Bank	Clearwater, FL	Feb-90	2.0	Commercial real estate
Albuquerque FSB	Albuquerque, NM	Feb-90	2.1	Southwestern commercial real estate and junk bonds
American FSA of Iowa	Des Moines, IA	Feb-90	.9	Interest rate squeeze
Franklin SA	Ottawa, KS	Feb-90	9.4	Risk-controlled arbitrage
Great American S&LA, FA	Oak Park, IL	Feb-90	1.0	Interest rate squeeze
The Benjamin Franklin FS&LA	Portland, OR	Feb-90	4.8	Risk-controlled arbitrage
First Atlantic FSA	Plainfield, NJ	Feb-90	1.3	Interest rate squeeze

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
1990 continued				
Imperial FSA	San Diego, CA	Feb-90	10.0	Junk bonds and other or more complex problems
Mercury FS&LA	Huntington Beach, CA	Feb-90	2.2	Commercial real estate and interest rate squeeze
Pima FS&LA	Tucson, AZ	Mar-90	2.8	Southwestern commercial real estate
Pacific Coast FSA of America	San Francisco, CA	Mar-90	1.1	Interest rate squeeze
Home Owners Savings Bank F.S.B.	Boston, MA	Apr-90	3.5	Risk-controlled arbitrage
Santa Barbara FS&LA	Santa Barbara, CA	Apr-90	4.2	Interest rate squeeze
Capitol FS&LA	Aurora, CO	May-90	1.0	Commercial real estate
Southwest FSA	Dallas, TX	May-90	5.5	Southwestern commercial real estate
American Pioneer FSB	Orlando, FL	May-90	1.6	Commercial real estate
Caguas-Central FSB of Puerto Rico	Caguas, PR	May-90	1.7	Cause not determined
Ensign FSB	New York, NY	Aug-90	1.8	Commercial real estate
Heritage FSB	Richmond, VA	Oct-90	.9	Commercial real estate
Florida FSB, FSB	St Petersburg, FL	Nov-90	4.2	Commercial real estate
San Jacinto SA, FA	Bellaire, TX	Nov-90	3.5	Southwestern commercial real estate
Central FSB	Long Beach, NY	Dec-90	.9	Cause not determined
Comfed SB, FA	Lowell, MA	Dec-90	1.5	Commercial real estate and interest rate squeeze
Olympic FSA	Berwyn, IL	Dec-90	1.1	Interest rate squeeze
1991				
Fulton FSA	Atlanta, GA	Jan-91	2.0	Interest rate squeeze
Far West S&LA, FA	Newport Beach, CA	Jan-91	3.9	Junk bonds
Columbia S&LA, FA	Beverly Hills, CA	Jan-91	6.2	Commercial real estate and junk bonds
Coreast FSB	Richmond, VA	Feb-91	1.3	Commercial real estate

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
1991 continued				
First FS&LA of Toledo	Toledo, OH	Feb-91	1.1	Commercial real estate
Hollywood FB, a FSB	Hollywood, FL	Feb-91	1.6	Commercial real estate
Amerifirst FSB	Miami, FL	Mar-91	3.7	Commercial real estate and interest rate squeeze
Bell FSB	Upper Darby, PA	Mar-91	.9	Commercial real estate
Home SA of Kansas City	Kansas City, MO	Mar-91	3.0	Commercial real estate
County Bank, FSB	Santa Barbara, CA	Mar-91	1.2	Commercial real estate
Cimarron FSA	Muskogee, OK	Apr-91	.8	Southwestern commercial real estate
Metropolitan FS&LA, FA	Nashville, TN	Apr-91	1.0	Commercial real estate
John Hanson SB	Beltsville, MD	Apr-91	.9	Commercial real estate
Sunbelt FS, FSB	Dallas, TX	Apr-91	6.1	Southwestern commercial real estate
Altus FSB	Mobile, AL	May-91	2.0	Interest rate squeeze
Far West FSB	Portland, OR	May-91	2.1	Risk-controlled arbitrage
Goldome FSB	St Petersburg, FL	May-91	1.5	Junk bonds
New Merabank Texas, FSB	El Paso, TX	May-91	1.2	Southwestern commercial real estate
Great American FSA	San Diego, CA	Aug-91	9.9	Commercial real estate
Oak Tree FSB	New Orleans, LA	Oct-91	2.3	Southwestern commercial real estate
First FS&LA	Pontiac, MI	Oct-91	.9	Commercial real estate and interest rate squeeze
Investors FSB	Richmond, VA	Dec-91	2.1	Commercial real estate
1992				
First American FSB	Greensboro, NC	Jun-92	.9	Cause not determined
Columbia Bank FSA	Rochester, NY	Jun-92	1.5	Cause not determined
Homefed Bank, FA	San Diego, CA	Jul-92	13.0	Commercial real estate
TransOhio FSB	Cleveland, OH	Jul-92	4.0	Risk-controlled arbitrage

Appendix Table continued
Date and Cause of Failure of Large Banks and Thrifts

Name of Institution	Location	Date of Failure	Assets ($ billions)	Principal Cause of Failure
1992 continued				
Standard FSA	Gaithersburg, MD	Oct-92	1.8	Cause not determined
Homestead Savings, FS&LA	San Francisco, CA	Oct-92	1.6	Commercial real estate
Carteret FSB	Newark, NJ	Dec-92	5.2	Commercial real estate and interest rate squeeze
Second National FSA	Salisbury, MD	Dec-92	1.6	Commercial real estate
Security FSB	Vineland, NJ	Dec-92	1.2	Cause not determined
1993				
Old Stone FSB	Providence, RI	Jan-93	1.9	Commercial real estate
Western FSB	Marina del Ray, CA	Jun-93	3.8	Commercial real estate

Source: Federal Deposit Insurance Corporation, *Annual Reports* and *Historical Statistics on Banking*; Federal Home Loan Bank Board, *Annual Reports* 1977–1988; Resolution Trust Corporation, *Annual Reports* 1979 to 1991 and additional data; Barth (1985); Randall (1989, 1993); news reports, articles, annual reports, and bank stock analysts' reports for individual large institutions.

References

Berg, Sigbjørn Atle. 1993. "The Banking Crises in the Scandinavian Countries." Federal Reserve Bank of Chicago, *FDICIA: An Appraisal. Renaissance, Requiem, or just another acronym*? Proceedings of the 29th Conference on Bank Structure and Competition, pp. 441–49. May.

Cline, William R. 1983. *International Debt and the Stability of the World Economy*, Policy Analyses in International Economics. Institute for International Economics. Washington, D.C. September.

Congress of the United States. Congressional Budget Office. 1992. *The Economic Effects of the Savings & Loan Crisis*, A CBO Study. January. Washington, D.C.: Government Printing Office.

Ely, Bert. 1993. "Financial Innovation and Deposit Insurance: The 100% Cross-Guarantee Concept." Paper presented at the Cato Institute's Eleventh Annual Monetary Conference. March.

Fieleke, Norman S. 1988. *The International Economy Under Stress*. Cambridge, MA: Ballinger Publishing Company.

Guttentag, Jack M. and Richard Herring. 1986. "Disaster Myopia in International Banking." Essays in International Finance, No. 164, International Finance Section, Princeton University, Princeton, NJ. September.

———. 1988. "Prudential Supervision to Manage Systemic Vulnerability." In Federal Reserve Bank of Chicago, *The Financial Services Industry in the Year 2000: Risk and Efficiency*. Proceedings of a Conference on Bank Structure and Competition, pp. 602–33. May.

———. 1989. "Accounting For Losses On Sovereign Debt: Implications For New Lending." Essays in International Finance, No. 172, International Finance Section, Princeton University, Princeton, NJ. May.

Ingram, James C. 1983. *International Economics*. Second Edition. New York, NY: John Wiley & Sons.

Kane, Edward J. 1985. *The Gathering Crisis in Federal Deposit Insurance*. Boston, MA: The MIT Press.

———. 1989. *The S&L Insurance Mess: How Did It Happen?* Washington, D.C.: The Urban Institute Press.

Kenen, P.B. 1985. *The International Economy*. Englewood Cliffs, NJ: Prentice Hall.

Kindleberger, Charles P. 1977. "Debt Situation of the Developing Countries in Historical Perspective." Paper for a Symposium at the Export-Import Bank on Developing Countries' Debt. August.

———. 1989. *Manias, Panics, and Crashes: A History of Financial Crises*. Revised edition. New York: Basic Books, Inc.

Minsky, Hyman P. 1982. *Can "It" Happen Again?* Armonk, N.Y.: M.E. Sharpe, Inc.

———. 1986. *Stabilizing an Unstable Economy*. Twentieth Century Fund Report. New Haven, CT: Yale University Press.

National Commission on Financial Institution Reform, Recovery and Enforcement. 1993. *Origins and Causes of the S&L Debacle: A Blueprint for Reform*. A Report to the President and Congress of the United States. July. Washington, D.C.: Government Printing Office.

Neikirk, William. 1987. *Volcker, Portrait of the Money Man*. New York, NY: Congdon & Weed, Inc.

Peek, Joe and Eric S. Rosengren. 1992. "The Capital Crunch in New England." *New England Economic Review*, May/June, pp. 21–31.

Randall, Richard E. 1989. "Can the Market Evaluate Asset Quality Exposure in Banks?" *New England Economic Review*, July/August, pp. 3–24.

———. 1990. "The Need to Protect Depositors of Large Banks, and the Implications for Bank Powers and Ownership." *New England Economic Review*, September/October, pp. 63–75.

———. 1993. "Lessons from New England Bank Failures." *New England Economic Review*, May/June, pp. 13–38.

Robertson, Wyndham. 1975. "How the Bankers Got Trapped in the REIT Disaster." *Fortune*, March, pp. 113–115, 168–176.

Smith, Gordon W. and John T. Cuddington. 1985. *International Debt and the Developing Countries: A World Bank Symposium.* Washington, D.C.: The International Bank for Reconstruction and Development.

Syron, Richard F. and Richard E. Randall. 1992. "The Procyclical Application of Bank Capital Requirements." Federal Reserve Bank of Boston, *Annual Report 1991.*

Volcker, Paul A. and Toyoo Gyohten. 1992. *Changing Fortunes.* New York, NY: Times Books.

Market Discipline: The Role of Uninsured Depositors and Other Market Participants

*George J. Benston**

Moral hazard, engendered by the safety net of government-provided deposit insurance, tends to increase the probability and cost of bank failures. Uninsured depositors, by far the largest group of bank creditors, can bring market discipline to banks that should reduce their propensity to take excessive risks. However, three important objections to reliance on depositors for this purpose have been raised: (1) uninsured depositors may be unable to monitor banks or to do so in a timely fashion; (2) even if they could evaluate bank performance, the additional interest rate they could charge would be insufficient to affect bank behavior materially; and (3) in any event, uninsured depositors are likely to withdraw their funds rapidly (run) rather than monitor banks, thereby causing costly disruptions to other banks and the economy. Each of these objections is evaluated here, including a review of relevant empirical studies. The conclusion of this analysis is that the objections to allowing uninsured depositors to serve as market disciplinarians are not valid.

Several means of limiting deposit insurance coverage are described next. These include coinsurance, limited insurance, and depositor preference. The coinsurance proposal would increase monitoring by depositors, but would also increase the probability of runs. Limiting insurance to transactions accounts has some merit, but also some important shortcomings. Depositor preference reduces the risk faced by uninsured depositors and the Federal Deposit Insurance Corporation, but the effect may be offset by weak banks collateralizing nondeposit debt.

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This paper concludes that the objections to uninsured depositors serving as effective monitors of banks' risk-taking activities are not valid; still, banking supervisors and legislators are likely to bail out uninsured depositors, in large banks particularly. Hence, alternative sources of market discipline are considered. Subordinated debt has properties that make its holders excellent monitors and restrainers of bank risk. Equity capital holders also have incentives to monitor bank performance, but they gain from risk-taking when their bank's capital is low. Higher required capital that includes subordinated debt fully as meeting this requirement, together with structured early intervention and resolution, are seen as the preferable means of imposing market discipline on banks.

Moral Hazard and the Need for Market Discipline

Moral hazard refers to the adverse incentive engendered by a guarantee or contract that does not account for all contingencies, or by a safety net that fully or partially compensates people for some outcomes. The adverse incentive is that people take actions or risks that they would not otherwise have taken, had they expected to bear the full cost as well as the benefit from their actions.

Debtors to limited liability firms are subject to the moral hazard that equity holders will act differently than they promised, once the debt holders have committed their resources to the firm. In particular, equity holders might assume greater risks and remove assets from the firm that the debt holders could attach. In effect, corporate equity holders have an option that they can put to the debt holders if losses from risky firm activities exceed the assets remaining in the firm (Black and Scholes 1973).

As agency theory emphasizes (see, for example, Jensen and Meckling 1976), the cost of the put option is borne by the equity holders rather than by the debt holders, since the debt holders can either withhold their funds or charge a price for their funds that includes the expected cost to them of the option. Alternatively, equity holders can offer debt holders assurances that the put option will not be exercised. These assurances include covenants that restrict equity holders' opportunities to increase risk (such as limitations on new investments), collateral that reduces the debt holders' cost of default as well as equity holders' incentives to default, and monitoring of equity holders' activities (such as periodic presentation of financial statements audited by respected independent public accountants).[1] Debt obligations also might include a put option that the debtors could exercise.

[1] See Smith and Warner (1979) for a review of such restrictions in corporate bonds.

Deposit Insurance and Moral Hazard

Deposit insurance removes the need to be concerned about moral hazard from depositors whose funds are fully protected. Hence, they have no reason to monitor the activities of banks, nor do banks have to pay these depositors a premium that reflects the risks the banks might take with the depositors' funds. Rather, the risks are shifted to a government-sponsored and backed deposit insurance agency, the Federal Deposit Insurance Corporation (FDIC). This situation would not present a problem if it could be assumed that the FDIC had the same incentives and ability as private debt holders do in dealing with bankers' moral hazard incentives to take greater risks. However, such an assumption must be questioned, for two important reasons.

First, government officials have incentives to overrestrain banks, because the officials do not get the full benefit of risks that bankers take but are criticized for the bankers' failures. Customers and bankers who lose when banks fail might blame the officials, but those who are well served are not likely to praise them. Bankers who are conservative, though, tend to praise officials for "reining in" their more adventurous brethren, particularly when these often more imaginative bankers take away some of the conservative bankers' customers.

Second, government officials have incentives to put off closing down banks that are in danger of failing. As Kane (1988, 1992, and elsewhere) has pointed out, these officials can maximize their own welfare by permitting insolvent or weak banks to continue operations in the hope that the banks' fortunes will improve. Or, at the least, the banks' closings will be put off until after the officials have moved on to other opportunities. This forbearance is particularly desirable for bank regulators when a troubled bank is large, because many people might be hurt should it be closed. An exception to this expectation occurs with a change in regime. Then the new regulators tend to "clean out" the mistakes of those they displace.[2]

Government officials also fear runs on other banks, even though detrimental effects on the money supply and runs on solvent banks almost certainly can be offset and contained by Federal Reserve open market operations. For the officials, "almost certainly" is not good enough, as they bear the immediate cost of the runs (should these occur) and get few benefits from other banks' more prudent operations to avoid future runs.

Hence, government officials are unlikely to operate as would private debt holders whose personal fortunes (or those of their employ-

[2] The initial forbearance by the Federal Home Loan Bank Board and the zealous cleanup by its successors, the Office of Thrift Supervision and the Resolution Trust Corporation, are illustrative.

ers) are at stake. The question is whether depositors and other bank debt holders are likely to act in the same manner as would holders of nonbank corporate debt.

Market Discipline by Uninsured Depositors

The general argument in favor of using uninsured depositors to impose market discipline on banks is fairly straightforward. These debt holders are expected to act like the holders of the debt of other corporations, which is not government-insured. As described above, they are subject to moral hazard costs imposed by equity holders, and should act accordingly.[3] The major difference between banks and nondepository corporations is that demand deposits, most banks' major liability, are redeemable on demand. Although this situation can result in rapid withdrawals (runs), which might give rise to externalities (as discussed below), it is also seen as a benefit for reducing the costs of moral hazard. As Flannery (1994) points out, banks can change the risk structure of their assets very rapidly, thereby changing the conditions under which they obtained funds from debt holders. Banks' offer of liabilities repayable on demand is an effective means for assuring these debt holders that the banks will not change their risk structure.

Alternatively, if banks did assume more risk, the debt holders could readily demand higher compensatory rates of interest. Calomiris and Kahn (1991) similarly suggest that liabilities that can be withdrawn on demand restrain bankers with low ratios of equity to assets from engaging in inefficient actions, such as taking on high-risk, negative present value projects or withdrawing funds in the form of high dividends and salaries. Such bankers must be concerned that depositors will run if they have reason to fear that their bank might become insolvent. Hence, deposits that can be withdrawn on demand, or on short notice, serve as a means of restraining bankers and assuring depositors that bankers will not take advantage of them.

Those who believe that uninsured depositors cannot be relied on to monitor and restrain excessive risk-taking by deposit-insured banks, and that they should not be used for this purpose, emphasize three concerns: (1) uninsured depositors are unlikely to be able to monitor banks or to do so in a timely fashion; (2) even if they could evaluate bank performance, the additional interest that uninsured depositors might charge would be insufficient to affect bank behavior meaningfully; and (3), in any event, uninsured depositors are likely to withdraw their

[3] See Benston and others (1986, Chapter 7), and Macey and Garrett (1988) for extended discussions and additional references.

funds rapidly (run) rather than monitor banks.[4] Each of these concerns is analyzed in the following sections.

Ability to Assess Risk in a Timely Fashion

Randall (1990, p. 65) argues that "[m]arket analysts, whether they represent bank stock investors or creditors, have relatively little to go on in forming a judgment on the potential for major losses in a bank's loan portfolio." Consequently, they cannot monitor bank performance in a timely fashion. Even if a run by uninsured depositors were desirable as a means of disciplining bankers, Randall would argue (and Garten 1986 emphasizes) that it would come too late to affect bankers' behavior.

Randall supports his conclusion with a careful study of 87 New

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[4] Several recent articles appearing in *The Yale Journal on Regulation* (Garten 1986; Macey and Garrett 1988; Garten 1988; and Mantripragada 1992) discuss the case for and against depositor discipline in some detail. Because the best expression of the case against relying on depositor discipline of which I am aware is given by Randall (1990), the sub-section of my paper on bank runs relies importantly on his article.

Garten (1986) bases her doubts about the usefulness of depositors to constrain bank risk-taking on the three reasons given above. Her long article (54 pages and 209 footnotes) is well summarized in her reply to a comment by Macey and Garrett (1988):

> First, since a significant portion of uninsured deposits are maintained for reasons that have little to do with the risk and return associated with investments in particular banks, the majority of even uninsured depositors will not continuously monitor bank risk. Second, the structure of the deposit market provides strong incentives for all depositors to rely on the liquidity of their deposits, rather than analysis of bank disclosure, to protect themselves against risk. Third, for the same reasons, depositors as a group are unlikely to develop effective contractual mechanisms that will limit the inclination of bank management to take excessive risks. Finally, empirical studies of depositor behavior not only have failed to demonstrate that depositors will exert effective market discipline, but cannot explain why market discipline is not already working to constrain bank risk-taking (Garten 1988, pp. 241–242).

Her proposal for improving the situation is discussed later in the present paper.

Macey and Garrett (1988) criticize her 1986 article, emphasizing the ex ante effect of possible depositor withdrawals on banks' propensity to take risks. In only 25 pages and 108 footnotes, they point out that it is not necessary that all depositors assess risks—marginal depositors are sufficient. In a reply of but 11 pages and 42 footnotes, Garten (1988) restates her original position and disputes (correctly, I believe) Macey and Garrett's suggestion that depositors could protect themselves by obtaining contractual guarantees from banks to limit their risk-taking and banks could similarly protect themselves from depositor runs by contractually limiting depositors' right to withdraw funds. However, she pays little heed to their valid points about ex ante effects and the role of marginal depositors.

Mantripragada (1992) reviews the well-known defects of the federal deposit insurance system, restates Garten's concerns, and suggests that depositor discipline could be made effective if the policy were "to set insurance coverage limits in terms of the maturity of the deposits rather than to set dollar limits for coverage of *all* types of deposits. Under such a policy, deposit insurance will essentially be extended to all short-term or transactions deposits. . . . Deposits of longer maturities are actually financial investments and the government should not insure those investments . . . " (p. 571, emphasis in original). This proposal is considered below.

England commercial and savings banks that failed in the period from 1989 through 1992. In this study (Randall 1993), he examines the portfolios of the failed mature and new commercial and savings banks and compares them with banks that did not fail. He finds that "[c]ommercial real estate loans were the dominant factor in recent New England bank failures" (p. 14), particularly loans for construction and development.

Randall examines these banks' investments in commercial real estate loans for years before and after their nonperforming real estate loans exceeded 1 percent of total assets, which he defines as the "normal level." From this analysis, he concludes: "When nonperforming loans began to exceed normal levels, most banks had already ceased making commercial real estate loans and commercial and industrial loans or, if not, they pulled back at the first sign of credit problems" (p. 15). He finds that "[s]ubstantially all of the loans that caused the failures of the 87 banks in the study were on the books before the credit problems began to appear. No evidence was found of efforts to 'grow out' of lending problems" (p. 16). Furthermore, he states that "when credit problems first appeared, bankers either were already shrinking loan portfolios, both in total and in troublesome categories, or quickly began to do so" (p. 19).

This evidence supports Randall's previously expressed conclusion that "a sudden deterioration in such indicators [nonperforming loans, provisions for bad debts, and charge-offs] has little predictive value since it is seldom clear whether it is the result of a housecleaning, or the tip of an iceberg. . . . [Rather,] the best evidence of a potential credit problem is a rapid growth in a particular loan category with high inherent risk characteristics" (1990, p. 65). This leads Randall to conclude:

> While greater emphasis on this type of analysis should help in timely evaluation of risk, standardized data pertinent to concentrations are limited. It is usually only in the later stages of risk-taking that the sophisticated market can clearly distinguish irresponsible overconcentrations from reasonable specialization. The typical depositor, and even the large depositor with analytical resources, has little potential for making timely judgments on bank risk-taking in loan portfolios.

Additional evidence seems to support this conclusion. Randall (1989) examines stock price movements, stock analysts' warnings, and bond rating changes for 40 large bank holding companies from 1980 through mid 1987, in the years before they revealed serious credit problems. About one-half of the cases were Southwestern banks that suffered losses when oil prices declined; most of the rest suffered real-estate-related losses. He finds that stock market participants were

unable to detect the problems before they were revealed by the banks' disclosures of high levels of nonperforming loans and loan loss provisions.

Simons and Cross (1991) examine the stock prices of 22 New England banks that were downgraded by examiners to a 4 or 5 CAMEL rating between 1981 and 1987.[5] They compute cumulative stock-return residuals from the market model over the 52 weeks prior to the bank examination. Although the cumulative residuals are consistently negative in the aggregate and for 12 of the banks, the aggregate is not significantly different from zero and the cumulative residuals are consistently positive for 10 banks. A similar pattern is found for a control sample of 15 bank holding companies. Thus, they (like Randall) conclude that there is "no reason to believe that the prices of bank holding company stocks can be monitored [by uninsured depositors, among others] to improve the supervision of commercial banks" (p. 55).

However, several earlier studies (Pettway 1980; Pettway and Sinkey 1980; Shick and Sherman 1980) find that unexpectedly low stock price returns provide early warnings of serious bank problems. Gilbert (1990) reviews seven additional studies of bank equity share prices (see his Table 3, reproduced as an Appendix to this paper) from which he concludes (p. 17): "The only useful information from the empirical studies is that investors in bank stocks, who have the strongest incentives to be sensitive to the risk assumed by banks, are able to differentiate among banks on the basis of risk."

The distinction between the two groups of studies appears to be the severe and apparently unexpected decline in real estate values and oil prices experienced by the New England and Southwestern banks in the 1980s, as opposed to the bank-specific operating problems and general credit problems experienced by the banks in the 1970s. In his detailed examination of New England bank failures, Randall (1993, p. 15) reports: "Available evidence suggests that most decisions to discontinue lending were initiated by bank management rather than the supervisory authorities." Thus, the credit problems that resulted in the New England banks' severe problems in the 1980s appear to have been unexpected by both the bankers and their supervisors. As noted by Gilbert (1990, p. 16), a similar situation occurred with the Southwestern banks: "We cannot expect the participants in the market for bank stocks to have greater foresight in predicting the decline in the price of oil than the participants in the market for oil."

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[5] Banks are rated by supervisors on five factors: Capital, Asset quality, Management, Earnings, and Liquidity, giving rise to the acronym CAMEL. Each individual component, as well as a composite rating of all five factors, is assigned a score from 1 (strong) to 5 (likely to fail).

Furthermore, stockholders benefit when banks take risks (Benston 1984). Investments in risky real estate loans offer high returns as well as high losses. Indeed, considering that the FDIC takes up losses that exceed equity, stockholders (who can diversify their investments) should prefer banks with low levels of equity to take risks that offer even negative expected present values. Hence, Simon and Cross's (1991) finding that the stock prices of New England banks that took high credit losses did not decline until these losses were recognized should not be interpreted to mean that investors were not aware of the risks.

Some analysts (for example, Merton and Bodie 1993) also argue that it is difficult for depositors to assess the riskiness of banks' assets because such assets are inherently opaque. The essence of banking, they point out, is making loans to firms and people who cannot communicate clearly and publicly the risk of their enterprises (Diamond 1984). How, then, could depositors assess this risk? Four responses answer this question. First, banks disclose a considerable amount of information about their financial condition, such as call reports that include nonperforming loans and earnings statements that include loan loss provisions. Second, several private financial reporting services make comparisons among banks, giving details of their financial structures. Third, banks are examined in detail by federal agencies. The examiners' reports (or summaries thereof) could be made public.[6]

Finally, compare the information made available by banks with the information about most other corporations. The financial statements of other corporations often exclude important intangible assets (such as research and development, patents, advertising, and customer goodwill) and include fixed assets and inventories valued at cost numbers that diverge considerably from market values. Furthermore, unlike banks, few other corporations are directly comparable to each other. These corporations' financial statements are much more difficult to interpret than are those presented by banks. Yet, nonbank corporations regularly issue debt that is not guaranteed by the government.

The risk of uninsured lending to banks, however, is often greater than the risk of lending to nonbank corporations. Banks presently hold much lower ratios of equity capital to assets than do other corporations. Uninsured bank creditors thus have a much smaller equity cushion on which to rely. Hence, they must be concerned with decreases in asset values to a greater extent than holders of nonbank corporate debt, who usually must be concerned only that the corporations have sufficient net cash flow to pay the debt as promised.

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[6] See Garten (1986, pp. 141–47) for additional discussion and citations to supporting publications. Jordan (1993), President of the Federal Reserve Bank of Cleveland, strongly urges this disclosure.

Garten (1986), though, bases her conclusion—that noninsured depositors cannot effectively assess the risk to which their funds are subject—on the depositors' difficulty in determining the amount of loss they might take, should their banks fail. This problem is exacerbated, she says, by the uncertainty of predicting which banks the regulators will close. She proposes that banks' assets be stated at market values and that the regulators adopt a clear rule as to which banks they will close and the extent to which losses will be imposed on uninsured depositors. The structured early intervention and resolution procedure developed by Benston and Kaufman (1988) and essentially adopted in the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) could provide such assurance, in large part because (if it were implemented) it is unlikely that a bank will fail with losses imposed on depositors.

Therefore, I conclude that depositors could assess the risks taken by their banks. At the least, they could make such assessments as effectively as can creditors generally.

Are Interest Charges Insufficient to Affect Bank Behavior?

In his comprehensive article, "Market Discipline of Bank Risk: Theory and Evidence," Gilbert (1990, p. 4) points out: "Proposals for the reform of deposit insurance that rely on market discipline assume that market participants can differentiate among banks on the basis of risk, and that market yields on bank debt reflect that risk." He reviews six studies on the market for uninsured deposits and six studies on the market for subordinated debt.[7] He reports (p. 16):

> The findings about the relationship between risk and interest rates on uninsured deposits and on subordinated debt are more mixed. Three of the six studies of bank CD rates report no evidence that higher CD rates are paid by banks that assume more risk. Four of the six studies of the determinants of rates on the subordinated debt of banks find no significant effects of risk measures on interest rates.

In addition to the studies reviewed by Gilbert, four other papers analyze the risk premia on large certificates of deposit (CDs). Cargill (1989), Hirschhorn and Zervos (1990), Keeley (1990), and Ellis and Flannery (1992) find that the interest rates on these largely uninsured deposits reflect the risk of the banks that issued them. Furthermore, Cook and Spellman (1991) find that the CD rates paid by savings and loan

[7] Gilbert (1990), Table 3, reproduced as an Appendix to this paper. Nine studies on the market for bank equity also are reviewed.

associations responded to the market's perception of the insolvency of the Federal Savings and Loan Insurance Corporation (FSLIC).

Considering the reasonable assumption by uninsured depositors during the period examined in the studies that the FDIC was very likely to bail them out by arranging for the assumption of all deposits held by an insolvent bank, it is surprising that these studies find any relationship between risk and the interest rate paid to largely uninsured depositors. As Gilbert (1990, p. 16) notes, most of the banks studied are large banks that, for most of the periods studied, were considered to be "too-big-to-fail"—that is, too large for the losses to be imposed on their depositors.

Garten (1986, p. 134) raises an additional issue: "in order for market discipline to be effective, depositors must view their accounts as investments, in which case risk and return are the primary considerations in choosing a bank." She concludes (p. 134):

> [F]or most depositors, a deposit account is less an investment than a product purchased for reasons that have little to do with either risk or return. These "involuntary depositors" . . . may be large uninsured depositors who use their accounts for other investment purposes . . . [I]nvestor-depositors are concentrated in the large national banks, making market discipline a possibility only for this relatively small group of institutions [footnotes omitted].

Although many (perhaps most) depositors may keep their funds in particular banks because these banks offer them services and convenience, it is difficult to accept her assertion that depositors have no or little regard for the possibility that their funds might be at risk of nonrepayment. If depositors (or any creditors) really believed that their funds were at risk, it is implausible that they would not demand rewards (for example, higher interest rates or "free" services) that reflect that risk, or assurances that their funds were not at risk.[8]

Hence, I find little merit in the assertion that uninsured depositors and other bank creditors could not, or would not, charge banks an interest rate that reflected the risk to which they were exposed. In addition, there is no reason to believe that banks would differ from other firms, in that they also would take the charge imposed by uninsured creditors into account in determining the level of risk that they would assume.

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[8] See Macey and Garrett (1988) for a more extensive discussion and critique of Garten's argument.

Runs by Uninsured Depositors

Demand depositors can almost immediately remove their funds from a bank they fear might have insufficient assets to repay their balances. The direct cost to uninsured depositors of withdrawals is very small, as demand depositors with accounts over $100,000 usually have accounts in several banks and can transfer funds among these accounts. However, these depositors also tend to have borrowing and other financial relationships with their depositories. Hence, they bear the cost of disrupting and possibly severing these relationships, should they mistakenly run when their bank actually is solvent.

Time depositors and holders of certificates of deposit (CDs) cannot remove their funds until the maturity dates without incurring a penalty charge. However, banks almost never prevent time and savings depositors from withdrawing their funds, for fear of starting a run by demand depositors. Most banks that issue large (over $100,000) CDs must roll them over almost continuously. Hence, banks can experience a slow run, should investors be unwilling to renew or newly purchase CDs that replace those that mature.

Randall (1990) expresses well the concern about runs, particularly on large banks. He says (pp. 67–68) that a run that causes "the isolated closure and liquidation of a single very large bank with well-known problems at a time when the domestic and international banking systems are in unquestioned good health . . . [would result in a considerable transitory disruption] with limited systemic effects and no prolonged negative impact from a macroeconomic point of view."[9] This is serious, he states, particularly if it were to be "taken as a precedent and result in instability at a later time when several large banks were in trouble." The major policy issue, however, "would involve several large banks in danger of failing at about the same time, including some money center banks and perhaps a few major foreign banks."

Because paraphrases cannot do justice to his specific and well-expressed concerns, I quote his explanations of them in their entirety (p. 68–69). My brief responses to the issues he raises follow each of his paragraphs.

> Problems would likely stem from the impact of some economic event on several banks, and banks could be adversely affected by more than one economic event because of a coincidence in timing. There would likely be a

[9] The Federal Reserve could use open market operations to offset a reduction in base money that would occur should depositors run to currency or redeposit funds in banks with reserve ratios that are higher than those of the original banks. The "health"—good or bad—of the domestic and international banking systems is irrelevant for the purpose of avoiding a negative macroeconomic impact.

high degree of public uncertainty as to the depth of the underlying economic problems and the timing of recoveries. Most uninsured depositors and other bank creditors would be concerned about the possible failure of particular banks, and would be prone to hasty reaction to rumors and misinterpretation of information. Adverse developments in one bank could cause instability in other banks perceived to have similar problems.

The situation described is based on several important assumptions. One is that banks have insufficient capital to absorb expected losses. A related assumption is that banks are insufficiently diversified, such that the negative effect of the economic event alluded to would render banks insolvent. However, if depositors believed that their funds were at risk, it is likely that most, if not all, banks would increase their capital or diversify their risks and take steps to assure their customers that their funds were safe, similar to the actions taken by nonbank corporations.

Supervisors would face similar uncertainties, even though they had much more information on the weaknesses of specific banks. While the depositor need only decide that the situation warrants pulling funds from one bank and putting them into another, the supervisor must determine if a particular bank is likely to fail, quantify the degree of any potential insolvency, and devise and execute a strategy for resolving the institution. A careful evaluation of the credit exposure of a troubled major bank involves a significant portion of the available examiner resources, and evaluations must be updated frequently as conditions change. When a number of large banks are in trouble at once, the supervisors will not necessarily be in a position to know the viability of a particular major bank when a deposit run develops. In a chaotic situation where depositors are rapidly shifting deposits from bank to bank, and creditors of banking concerns are refusing to roll over notes, the authorities must decide whether to seize particular institutions or support them, in some cases without a current evaluation.

In addition to the assumptions given above, Randall is assuming that the supervisors do not employ a system of automatic intervention when a bank's capital declines below prespecified levels, as is now required by FDICIA. With structured early intervention and resolution, it is doubtful that bank examiners and supervisors would have the heavy caseload described. Furthermore, FDICIA also established a continuous, on-site regulatory presence for large (over $10 billion in assets) institutions. This means that, at least for this group of banks, a "current evaluation" will always be available.

The consequences of seizing an institution that is damaged, but still viable, are fairly serious, so the temptation will be to support banks in questionable condition until a reassessment can be made. Such support may involve heavy discount window lending on increasingly uncertain collateral.

> This problem should be mitigated, but will not be eliminated, by prompt resolution techniques.

I agree with the final sentence, except that I would have said, "almost entirely mitigated." With structured early intervention and resolution, a seriously weak institution would not be permitted to continue operations without increasing its capital. Even without it, the actuality, as well as the possibility, of runs would force the supervisory authorities to take action expeditiously, even though they might prefer to wait and hope that conditions would improve, as Randall suggests. In addition, FDICIA restricts discount window borrowing to undercapitalized institutions.

> In the payments area, sudden runs on a number of major institutions could place great pressure on banks and the Federal Reserve System to limit daylight and overnight exposure to other banks and customers. It is not hard to visualize scenarios in which the payments system would cease to function efficiently for an extended period while multiple runs on large banks continued. This could produce a snowballing of defaults and delinquencies, and lead to failures of weak firms and disruption of business generally. The effect could be to depress economic activity for a number of months.
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> Numerous borrowers would abruptly be forced to try to find other lenders as their usual banks experienced major deposit runs and were forced to suspend lending activities. Defaults could occur on bank and bank holding company debt as well as that of other firms, leading to a flight to quality and likely disruption in various markets. Some funds could flow to foreign banks in search of safety, disrupting normal intermediation patterns even where the funds continued to be denominated in dollars.

The disasters Randall sketches are possible, perhaps even plausible, if one assumes, as he does, that banks would not structure themselves to avoid runs. I believe not only that they would do so, if they believed it were necessary, but also that they would differentiate themselves from banks that were not prudently structured and operated, so that they would not be subjected to misinformed runs. Then, the specter of simultaneous runs raised by Randall would be unlikely to occur. He goes on to say:

> The contagion of uncertainty could cause runs on any major foreign banks that were believed to be in difficulty, further adding to the general confusion. Bank supervisory, deposit insurance, and discount window personnel could become overwhelmed by the combination of failures of nonviable banks and liquidity crises in viable banks. This could result in delays and misjudgments that increased the costs to the insurance fund, the banking industry and the public, and prolonged the period of disruption.

Structured early intervention and resolution would work to keep supervisory personnel from being overwhelmed by failures. Indeed, very few failures would occur, as banks would have strong incentives to raise additional capital or merge with strong banks or even liquidate, rather than become progressively weaker until the bank supervisors took over or uninsured depositors decided to withdraw their funds rather than risk taking losses.

> It is probably true that, even in a chaotic situation such as that described above, the total volume of deposits of the banking system would not be substantially reduced by direct conversion to currency or foreign-denominated balances. The amount of funds available for loans, however, could be substantially reduced. As deposits run from weak banks to stronger banks, the banks receiving the sudden influx of deposits cannot be expected to increase loans quickly, taking on customers squeezed out of other banks. Much of the influx would be considered temporary funds and invested accordingly. Capital adequacy considerations and the time necessary for information gathering, credit analysis, and loan approval would also limit the ability of healthy banks to absorb the lending activity of the weak and failing banks. Thus, a period of significantly reduced bank lending would result, with negative implications for the level of economic activity.

The failure of a bank does, indeed, disrupt its borrowers' economic situation, particularly for those borrowers who use only one bank. But the failure of any large company is disruptive to its customers and to its employees and their dependents. As is the situation for companies generally, customers and employees are likely to consider the possibility that a firm might not survive when deciding whether and how to establish and maintain a relationship with it. Unlike many nonbanks, though, banking products (for example, loans) have close substitutes offered by other banks and by nonbanks (although difficulty in transferring credit information might cause temporary dislocations). Thus, the failure of a bank, even a large one, is likely to be less disruptive than the failure of many other companies. Banks are special in that they are not very special.

> The banking system is central to the payments mechanism and the provision of short-term credit, and also affects the financial markets and the transmission of Federal Reserve open market operations. The discussion above suggests that the level of disruption to the banking system and bank customers and creditors that could result from a crisis of confidence in the major banks could significantly depress the level of economic activity. It could also increase the losses to be absorbed by the banks, increasing the risk that the banking system itself could be overwhelmed and unable to support the deposit insurance fund.

Banks are indeed central to the payments mechanism. But many ways can be found to protect the payments system without protecting individual banks from runs. First, banks could limit their exposure with bilateral credit limits and net debit caps. They also might be required to hold capital or collateral sufficient to cover net uncleared funds. Or, participants could (and do) protect themselves much as they do when dealing with their other customers and correspondents or respondents, by refusing to extend credit to banks that are undercapitalized. Second, the legal obligations of all participants in the payments system can be clearly specified, in order to reduce the cost of litigation. Third, participants in the system could agree to guarantee the obligations of a defaulting institution, with each assuming a pro rata share of its settlement obligation. These procedures are employed by CHIPS, the multilateral payment netting and settlement system operated by the New York Clearing House Association. Federal Reserve charges for overdrafts give participants further incentives to reduce the amount of uncleared funds outstanding. Or, the Federal Reserve System could permit only transfers against funds known to be in place.[10]

Banks are not central, however, to the transmission of Federal Reserve open market operations. These need not be conducted directly through banks; about one-half of the security dealers the Fed trades with are not banks. Lack of public confidence in major banks would not affect the efficiency with which open market operations could be conducted or cause a financial or economic crisis.

Finally, there is little evidence that bank runs have been contagious, causing the failure of solvent banks. Kaufman (1994) reviews studies of the effect on other banks of the failures of six large banks in the United States between 1973 and 1988, three bank failures in Hong Kong between 1982 and 1985, two bank failures in Canada in 1985, and the unexpected announcement of suspended debt repayments by Mexico, Brazil, and other Latin American countries in 1982, 1983, and 1987. These studies found no failures of similar banks and little evidence of deposit outflows. Most of the studies examined the stock prices of other banks to determine whether the failure or lesser problems of a large bank affected the economic value of similar banks. Kaufman (1994, p. 141) reports that "[w]ith only rare exceptions, these studies report strong evidence that contagion of share returns occurred only for banks in the same market or product area as the initially affected bank. Investors successfully differentiated among banks. Strong shocks to one

[10] See Gilbert (1989) for a description of payments system risk, the Federal Reserve's procedures, and an analysis of the effect of the Fed charging for daylight overdrafts.

bank or group of banks did not spill over to other banks randomly or to all banks."[11]

Dwyer and Gilbert (1989) review the evidence on bank runs and the methods adopted by banks to cope with them in the period before enactment of deposit insurance. After analyzing a considerable amount of data on banking panics between 1857 and 1933, they state (p. 55):

> In sum, two things seem to be clear from these data. First, some holders of bank liabilities did bear significant losses during periods with runs. These losses were not necessarily caused by the runs themselves. . . . Second, before the creation of the Federal Reserve, depositors' loss rates from failed banks were declining over time.

They conclude (p. 60):

> While several runs on the banking system took place before the formation of the Federal Reserve System in 1914, banks took actions that limited their effects. By issuing clearinghouse loan certificates that other banks accepted to clear checks, banks operated temporarily with relatively low reserve ratios. In the more severe runs, bankers jointly restricted payments but continued operating. Moreover, even prior to the creation of the federal safety net in the United States, runs on the banking system were infrequent. The banking system can operate for many years without runs on the banking system, even in recessions.

Although I believe that Randall overstates the seriousness and frequency of the problems that might result from the failure of large banks, many of his concerns are plausible, given two important assumptions. One is that banks have such a low level of capital for absorbing losses that uninsured depositors have reason to believe that their funds would be in danger if they did not withdraw them immediately. The second is that the situation described does not consider bankers' behavior if they had reason to fear runs by depositors.

Both of these related assumptions describe the present situation, where uninsured depositors (and their bankers) have reason to believe that they are not at risk. As long as banks are considered to be "too-big-to-fail" (or, rather, too big to have their costs inflicted on uninsured depositors), the scenario painted by Randall might best be described as a self-created crisis, where the regulators believe they must intervene

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[11] Further, although Garten (1986, footnote 9, p. 130) states: "Even now, few—if any—depositors count on the protection afforded by federal intervention to prevent bank failure, as is vividly demonstrated by the frequency of bank runs," I could find only one citation to a bank run in her paper. She reports that depositors ran on a New York City Chinatown bank "following rumors that a bank officer had been identified at an organized crime hearing as the 'godfather' of Chinatown's underworld" (p. 137, and footnote 32, p. 133).

because they have established a situation where banks, rationally, have not taken actions that would make such intervention generally unnecessary. Furthermore, with structured early intervention and resolution implemented as suggested by Benston and Kaufman (1988) and outlined below, it is unlikely that the authorities would have to intervene to prevent uninsured depositors from having to take losses.

Limiting Deposit Insurance Coverage: Coinsurance, Limited Insurance, and Depositor Preference

This section will consider briefly some proposed and enacted methods of limiting the claims of depositors and other creditors to the deposit insurance fund.

Coinsurance

Coinsurance is an often-used means by which insurers reduce moral hazard costs that might be imposed by insurees. Two forms may be distinguished. One, modeled on the system used in the United Kingdom, would pay depositors a fraction of their deposits, perhaps up to some limit. In the United Kingdom, depositors may receive 75 percent of their deposit balances up to £20,000, or a maximum of £15,000 (approximately $22,000). The second, suggested by the American Bankers Association (1990), would impose an automatic "haircut," or reduction in the amount of the uninsured deposit balance, equal to the average loss incurred when a bank failed (approximately 10 percent).

Randall (1990, p. 69) points out that partially insured depositors still would have incentives to withdraw their funds before their bank was declared insolvent, thereby saving them the coinsurance amount that otherwise would be lost. Thus, if runs are a concern, these proposals would be less acceptable, as they would put all deposits at risk and hence give all depositors incentives to run.

Limited Insurance

Deposit insurance might be limited to short-term deposits, which would be fully insured (Furlong 1984; Mantripragada 1992). Thus, depositors who could run would have no incentive to do so. Deposits that could not be withdrawn before some specified time period, presumably at least through the period between bank examinations plus some additional time for the authorities to act (in all, perhaps two years), would be entirely uninsured. In effect, time deposits (including CDs) that could not be repaid before the authorities had time to close an insolvent or unsafely managed bank would serve to absorb losses, much

as capital and subordinated debt absorb them. Furthermore, holders of such deposits would have strong incentives to monitor banks' activities and to demand assurances that banks would not take excessive risks or change their risk profiles or would pay compensatory interest rates.

Four possible problems with this proposal should be mentioned. First, the status of deposits with remaining maturities of less than approximately two years is not clear. These deposits might be insured to prevent slow runs. In this event, however, banks would have considerable incentive to offer only time deposits with maturities of less than two years. As a result, many banks would subject themselves to interest-rate risk, since they would shorten the duration of their liabilities.

Second, banks would probably collateralize many, if not most, of their uninsured time deposits. While this of itself is not an undesirable move, it would serve to obviate the role of uninsured time depositors in bringing market discipline to bear on banks' activities. It also would shift a considerable amount of banks' assets from loans to Treasury and other market instruments.

Third, banks would have to be prevented from directly or indirectly repaying uninsured time-dated deposits in advance. If this were not done, the goal of preventing runs would not be met. However, if the possibility and actuality of runs were considered to be desirable (as is suggested above), there is an advantage in allowing banks to redeem time-dated deposits early at a discount (as they now do). If banks refused such redemptions, they would be signaling the supervisory authorities that they were suffering financial difficulties.[12]

Fourth, even though time-dated deposits were said to be uninsured, it is likely that holders of these deposits would seek protection if their banks failed with losses imposed on the depositors. The depositors probably would claim that they did not realize that these bank deposits, unlike demand deposits and time deposits with maturities of less than two years, were not insured. As is noted below, it would be difficult for legislators and the banking authorities to deny such claims, particularly if the uninsured time-dated deposits were in amounts of less than $100,000.

Depositor Preference

The Omnibus Budget Reconciliation Act of 1993 includes a provision that gives preference to depositors and the FDIC over other creditors in the event that a bank is insolvent. This presumably was enacted as a means of reducing the costs to the FDIC. The cost savings would be reduced, however, if banks gave the nonpreferred creditors

[12] This might be considered a form of Wall's (1989) "puttable subordinated debt" proposal.

(or they demanded) effective 100 percent insurance by collateralizing their debt. The assets used as collateral thus would no longer be available to the FDIC. Uninsured depositors also would no longer benefit from the collateralized assets, but they would gain by obtaining a preference over noncollateralized, nondeposit creditors.

The consequences of federal depositor preference can be inferred from the experience of thrifts in the 23 states with depositor preference laws (as of December 31, 1987). Hirschhorn and Zervos (1990, p. 119) find that thrifts "adopting depositor preference would increase the average proportion of total (both secured and unsecured) nondepositor claims that are collateralized from 47 percent to 60 percent. This would represent a collateralization of 25 percent of currently unsecured nondepositor claims." Furthermore, they find that "the effect is significantly larger for institutions that are more likely to fail. Thrifts with negative net worth would collateralize 99 percent of unsecured nondepositor claims, and thrifts with net worth between 0 and 3 percent would collateralize 54 percent of such claims" (pp. 119–120). They also find that interest rates on partially insured large CDs would decrease by 6 to 14 basis points for solvent thrifts, and by 8 to 18 basis points for insolvent thrifts, the amounts increasing with the maturities of the CDs (p. 122).

It should be noted that banks could raise funds by selling assets rather than by engaging in collateralized borrowing. The result would be a similar loss to the FDIC and uninsured depositors of these banks' best assets. Indeed, banks with low capital-asset ratios would be better advised to reduce their assets rather than borrow. It also should be noted that thrifts probably used collateralized borrowing because a major source of their funds has been advances from Federal Home Loan Banks, which make only collateralized loans.

Consequently, depositor preference should make little difference in the amounts absorbed by the FDIC when banks fail, with one exception. It should be more difficult for bank creditors who are not explicitly identified as depositors to make claims on the deposit insurance fund.

Conclusions with Respect to Uninsured Depositors

I find that the objections to uninsured depositors serving as effective monitors of banks' risk-taking activities are not generally valid. First, uninsured depositors can assess credit risk at least as well as can creditors of nondepository corporations. Indeed, there is reason to believe that the risks taken by banks are easier to estimate than are the risks taken by other corporations. (However, given the present low level of banks' equity capital, uninsured lenders to banks have little scope for measurement errors.) Although the evidence suggests that the large losses absorbed by banks that loaned to commercial real estate devel-

opers and oil producers were not predicted by the stock market, it appears that these losses were also not predicted by bank managers or by the regulatory authorities.

Second, evidence shows that holders of de jure partially insured CDs and de jure uninsured debt differentiate among banks with different degrees of risk. They make this assessment even though partially insured depositors and even uninsured debt holders have had good reason to believe that they would be bailed out by the deposit insurance agencies. Aside from this evidence, there is no reason to believe that bank creditors who were actually at risk would not behave as do creditors generally, by demanding assurances and interest rates that compensate them for expected losses.

Third, the well-expressed concerns about bank runs delineated by Randall (1989) are considered and largely rejected. Indeed, if it were accepted that bank runs could occur, it is likely that banks would hold sufficient capital and organize their activities so as to assure depositors that their funds were not at risk.

Nevertheless, the banking authorities appear to believe that runs on large banks could be severely disruptive, as does Randall, despite evidence and reasoning to the contrary. As Kane (1988, 1992) has emphasized, and as is discussed above, the authorities have considerable incentives to avoid bank runs and few incentives to permit large banks to fail, even though such failures probably would reduce future costs to the FDIC and uninsured depositors. The experience of the United States and many other countries indicates that depositors will rarely be permitted to absorb losses from bank failures.[13] Consequently, despite my previous conclusion that uninsured depositors can be effective monitors and controllers of bank risk, I suggest that we must look to other sources of market discipline. The two remaining sources are subordinated debt and equity capital.[14]

Subordinated Debt[15]

Subordinated debt should be considered fully as bank capital, as it serves to absorb losses that would be imposed on the FDIC as much as does equity capital. It differs from other debt in that it cannot be collateralized or redeemed, directly or indirectly, before the authorities can act to

[13] See Benston (1994) for a review of this evidence.

[14] Much of the material on subordinated debt and equity capital is taken from Benston (1992).

[15] See Benston and others (1986, Chapter 7, section IV) for a more complete description and Osterberg and Thompson (1991) for a formal analysis and additional references to much of the relevant literature.

reorganize or close a bank. Hence, subordinated debt ought to have a remaining maturity of at least two years, and the bank or its subsidiaries should not be permitted to purchase it at any time. Because holders of subordinated debt are not depositors and cannot expect to be reimbursed by the FDIC, they should serve well as monitors over banks' activities.

Subordinated debt has at least six important advantages over deposits and equity capital. First, subordinated debt holders cannot run; hence authorities should have no concern about the disruptive effects of runs should they close a bank. Second, subordinated debt promises an asymmetric payoff. Should a bank do well, debt holders collect only the interest promised. Should a bank do badly, the debt holders will absorb losses that exceed the equity holders' investment. Third, the interest on subordinated debt serves as a risk-adjusted deposit insurance premium, because the debt holders stand to lose should a bank engage in risky activities; hence, they will have to be reimbursed for this perceived ex ante risk or they will not purchase the debentures.

Fourth, when subordinated debt is publicly traded, the authorities are provided with an early warning signal in the form of the interest rate demanded on the debt and any difficulty a bank has in replacing maturing debt. Fifth, subordinated debt probably can be sold by closely held banks at a lower cost than that of obtaining additional equity. Owners of such banks may not want to invest more of their personal wealth (thereby subjecting themselves to undiversified portfolios, particularly when they also work for these banks); outside investors rarely are interested in being minority shareholders. Closely held banks and banks with thinly traded securities can, however, sell subordinated debentures to the public or to institutional investors such as pension funds and other banks, which are capable of monitoring the banks' activities. Sixth, interest on subordinated debt is a tax-deductible expense; hence, this debt is no more costly (with respect to taxes) to a bank than are deposits. Indeed, subordinated debt differs from time deposits only in that the debt is explicitly and implicitly not government-insured.

Note that should losses deplete or wipe out a bank's equity capital, subordinated debt holders become partial or full equity holders. To the extent that they become equity holders, they have incentives to increase the put option value of deposit insurance by increasing risks. Therefore, unless the bank supervisors reorganize or close a bank before this occurs, an important advantage of subordinated debt will be lost.

Equity Capital

Equity holders clearly have incentives to monitor bank performance. However, they can benefit from a high degree of risk-taking because they get all the returns from successful outcomes but absorb

losses only to the extent of their investments in the bank. In effect, equity holders have a "put option" on the bank, with the exercise price the amount owed to depositors. As noted above, the option usually has value to bank equity owners because, unlike most other creditors, the FDIC does not price its deposit insurance to account sufficiently for the risks taken by banks.

The value of the "deposit-insurance put option" to a bank managed to maximize the wealth of its owners increases with the variance of returns and the time it takes the authorities to take over a failing bank. As a bank's capital declines towards zero, the value of this put option increases because the equity holders have less to lose.[16] Once the value of the equity goes below the point where the option might be exercised, equity holders have incentives to increase its value. They can do this by increasing the riskiness of the bank's investments and operations, withdrawing funds from the bank, and delaying actions by the FDIC to displace them. (They may be constrained, however, by their managers, who are subject to severe civil monetary penalties and possible criminal prosecution for operating the bank in an unsafe manner.)

The value of the deposit-insurance put option, and hence the incentive for bank owners to increase risk as their economic capital declines towards zero, can be reduced, if not entirely eliminated, by higher capital requirements and a system of structured early intervention and resolution.

Higher Capital Requirements and Structured Early Intervention and Resolution

Structured early intervention and resolution was first proposed by Benston and Kaufman (1988) and has been largely (if insufficiently) adopted in FDICIA in 1991.[17] A brief description should provide the key elements of the system.[18]

Bank capital should include both equity and subordinated debt. Capital should be measured in terms of the economic market values of a bank's assets and liabilities. However, the proposed scheme also can be effective when capital is measured according to traditional accounting

[16] See Merton (1977) for a formal analysis and Marcus and Shaked (1984), Ronn and Verma (1986), and Pennacchi (1987) for applications.

[17] The intellectual history of structured early intervention and resolution is described in Benston and Kaufman (1993a, Chapter 1). A complete description of the system, an analysis of its advantages and shortcomings, and a comparison with the system adopted in FDICIA can be found in Benston and Kaufman (1993b).

[18] The description is taken largely from Benston (1994) and is based on Benston and Kaufman (1993b) and Shadow Financial Regulatory Committee (1989).

values, particularly when the Financial Accounting Standards Board's requirements for stating financial instruments at market values are fully adopted. Four explicit, predetermined ranges or tranches of capital-to-asset ratios are specified. Assets and liabilities include off-balance-sheet accounts. Assets are not classified according to risk because of the difficulties in measuring ex ante risk accurately.

(1) Banks are considered to have *adequate capital* when it is 10 percent or more of their total assets, measured in terms of market or current values.[19] Banks falling into this first tranche would be subject to minimum regulation and supervision.

(2) Banks with capital-to-asset ratios of 6 to 9.9 percent are at the *first level of supervisory concern*. A bank in this second tranche is subject to increased regulatory supervision and more frequent monitoring of its activities. It is required to submit a business plan to raise more capital. At its discretion, the bank supervisory authority could require the bank to suspend dividend payments and to obtain approval before transferring funds within a holding company system; the authority could also restrict the growth of bank assets.

(3) The third tranche is the *second level of supervisory concern*; it is reached when a bank's capital ratio falls below 6 percent but is at least 3 percent. Banks in this range are subject to intense regulatory supervision and monitoring. The supervisory authority is required to suspend dividends, interest payments on subordinated debt, and unapproved outflows of funds to the bank's parent or affiliates. The institution must submit an emergency plan for its immediate recapitalization to the tranche one level.

(4) Finally, when a bank's capital falls below 3 percent of its assets, it is in tranche four—*mandatory recapitalization and reorganization*. The supervisory authority is required to quickly recapitalize the bank, merge it, or liquidate it in an orderly fashion by the sale of individual assets. The present owners and subordinated debt holders (who might, by then, be the owners) have the options of implementing more quickly the emergency plan they submitted when the institution moved into tranche three, or of electing not to inject additional funds into the bank. If the owners and debt holders elected not to recapitalize the bank, any residual value from its sale or liquidation of its assets would be returned to them, after allowing for costs incurred.

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[19] The percentages are suggestive; they should be based on research findings. If book values are used, the percentages should be higher.

Conclusions

With a system of structured early intervention and resolution in place, deposits could be fully (100 percent) insured. Even though depositor runs do not pose a serious problem to the banking system or the economy, but rather can be beneficial for motivating and rewarding banks to operate prudently, a reason for 100 percent deposit insurance remains. At present, very large banks are seen as being "too-big-to-fail"—that is, to have costs imposed on depositors, should these banks fail. As a result, smaller banks are disadvantaged, giving rise to an inequity. Additional inequities are the imposition of deposit insurance premiums on all domestic deposits, even though only the first $100,000 is explicitly insured, and the exemption from deposit insurance of foreign-branch deposits, even though these deposits are de facto covered. These inequities could be eliminated with 100 percent explicit deposit insurance coverage. Of course, such coverage removes depositors as monitors and market disciplinarians of banks. But, as described above, the use of subordinated debt as part of capital, higher capital requirements, and structured early intervention and resolution would impose a more effective means of market discipline. It also would eliminate almost entirely the need for deposit insurance premiums and, for adequately capitalized banks, it would provide relief from close supervision by the banking authorities and from almost all current restrictions on assets and on banking activities.

Appendix Table[20]
Implications of Empirical Studies for the Effectiveness of Market Discipline of Bank Risk

Authors	Relationships estimated	Results	Results consistent with the effectiveness of market discipline
		MARKET FOR BANK EQUITY	
Beighley, Boyd and Jacobs (1975)	Share prices of bank stocks estimated as a function of (1) capital ratios, (2) earnings and growth of earnings, (3) asset size, and (4) loss rates.	Holding constant the influence of earnings, banks with higher capital ratios and lower loss rates tend to have higher share prices.	Yes
Pettway (1976)	Betas for individual banks (a measure of risk derived from stock prices) estimated as a function of the capital ratios of individual banks.	The coefficient on the capital ratio is negative for one year but insignificant for other years. The negative coefficient on the capital ratio indicates that investors consider banks with higher capital ratios to be less risky.	Yes
Pettway (1980)	For several large banks that failed, returns to shareholders are simulated for several years prior to their failure. Simulations are based on returns from holding stocks of large banks that did not fail.	On average, returns on the stocks of banks that failed declined relative to simulated returns two years before failure.	Yes
Brewer and Lee (1986)	Betas for individual banks are estimated as functions of ratios from balance sheets and income statements used by bank supervisors to reflect risk.	Some of the measures chosen to reflect risk have positive, significant regression coefficients.	Yes
Cornell and Shapiro (1986)	Returns to shareholders of 43 large banks are estimated as functions of the composition of their assets and liabilities in the years 1982–83.	The percentage that Latin American loans was of total assets had a significant, negative impact on returns in 1982. Energy loans had a negative impact in 1982–83. Loans purchased from Penn Square Bank had a negative impact on returns in the month in which that bank failed.	Yes

[20]Table 3, reproduced from W. Alton Gilbert, "Market Discipline of Bank Risk: Theory and Evidence," Federal Reserve Bank of St. Louise *Review*, January/February 1990, pp. 13–15.

Appendix Table continued
Implications of Empirical Studies for the Effectiveness of Market Discipline of Bank Risk

Authors	Relationships estimated	Results	Results consistent with the effectiveness of market discipline
	MARKET FOR BANK EQUITY continued		
Shome, Smith and Heggestad (1986)	Prices of bank stocks are estimated as a function of its earnings and capital ratios.	The coefficient on the capital ratio is positive and significant for some years, insignificant for other years.	Yes
Smirlock and Kaufold (1987)	Changes in stock prices of large banks at the time of the announcement by Mexico in 1982 of its moratorium on debt payments as a function of the ratio of Mexican debt to equity capital at individual banks.	Coefficient on the ratio of Mexican debt to equity capital is negative and significant. Banks were not required to disclose their Mexican debt at the time of the 1982 moratorium.	Yes
James (1989) and Cargill (1989)	Returns on holding the stock of BHCs estimated as a function of the change in the market value of the BHCs' loans to less-developed countries and dummy variables for individual banks and individual time periods.	The change in the market value of loans to less-developed countries has a positive, significant coefficient which is not significantly different from unity.	Yes
Randall (1989)	This is a case study of 40 BHCs that reported relatively large losses in the 1980s. For each BHC, a time period is designated when it began assuming relatively high risk and a time period when problems became public knowledge. Stock prices are compared to market averages before and after the problems became public knowledge.	Stock prices of the BHCs that reported relatively large losses declined relative to market average stock prices only after the problems became public knowledge, not during the periods in which the banks began assuming relatively high risk.	No
	MARKET FOR UNINSURED DEPOSITS		
	The interest rate on large denomination certificates of deposit is the dependent variable in each study.		
Crane (1976)	Identifies the determinants of the CD rate using factor analysis.	The factor that reflects profit rates and capital ratios is not a significant variable in explaining the CD rate.	No

Appendix Table continued
Implications of Empirical Studies for the Effectiveness of Market Discipline of Bank Risk

Authors	Relationships estimated	Results	Results consistent with the effectiveness of market discipline
Herzig-Marx and Weaver (1979)	Estimates CD rates as a function of variables used by bank supervisors to reflect risk.	Of bank risk variables, only the liquidity measure has a significant coefficient. Capital and loss ratios have insignificant coefficients.	No
Baer and Brewer (1986)	CD rate estimated as a function of variables used by bank supervisors to reflect risk, and separately, as functions of level and variability of the prices of bank stocks.	Coefficients on risk measures used by bank supervisors are not significant. Measures of the level and variability of stock prices help explain CD rates.	No
James (1987)	The average interest rates paid by 58 large banks on their large denomination deposits are estimated as functions of leverage, loan loss provision divided by total loans and the variance of stock returns.	Each of these measures of risk have positive, significant coefficients.	Yes
Hannan and Hanweck (1988)	CD rate is estimated as a function of (1) the variability of the ratio of income to assets, (2) the capital ratio and (3) bank assets.	These three variables have significant coefficients. CD rates tend to be higher at banks with more variable income and lower capital ratios, holding constant the influence of total assets.	Yes
James (1989)	Interest cost on large CDs estimated as a function of risk measures: domestic loans/capital, foreign loans/capital and the loan loss provision/total loans.	Interest cost positively related to the ratio of domestic loans to capital and the loan loss provision. The negative relation between interest cost and the ratio of foreign loans to capital is interpreted as evidence of an implicit government guarantee of foreign loans.	Yes

Appendix Table continued
Implications of Empirical Studies for the Effectiveness of Market Discipline of Bank Risk

Authors	Relationships estimated	Results	Results consistent with the effectiveness of market discipline
	MARKET FOR SUBORDINATED DEBT:		
	In each study the measure of the interest rate on the subordinated debt of banks is the rate on the subordinated debt minus the rate on long-term U.S. Treasury securities, called the rate premium.		
Pettway (1976)	The rate premium is estimated as a function of the capital ratio of banks and other independent variables.	The coefficient on the capital ratio is not significant.	No
Beighley (1977)	The rate premium is estimated as a function of several measures of risk, including a loss ratio and a leverage ratio.	The coefficients on the loss and leverage ratios are positive and significant.	Yes
Fraser and McCormack (1978)	The rate premium is estimated as a function of the capital ratio and the variability of profits divided by total assets.	Neither independent variable has a significant coefficient.	No
Herzig-Marx (1979)	The rate premium is estimated as a function of several measures of risk assumed by banks.	None of the risk measures have significant coefficients.	No
Avery, Belton and Goldberg (1988)	The rate premium is estimated as a function of risk measures derived from balance sheets and income statements and of the asset size of banks.	Coefficients on the risk measures derived from balance sheets and income statements are not significant.	No
Gorton and Santomero (1988)	Use data in Avery, Belton and Goldberg (1988) to derive a measure of the variance of assets of banks implied by a contingent claims valuation model. The measure of the variance of assets is estimated as a function of the risk measures derived from balance sheets and income statements.	Some of the risk measures derived from the balance sheets and income statements have significant coefficients.	Yes

References

American Bankers Association. 1990. *Federal Deposit Insurance: A Program for Reform.* Washington, DC, March.

Avery, Robert B., Terrence M. Belton, and Michael A. Goldberg. 1988. "Market Discipline in Regulating Bank Risk: New Evidence from the Capital Markets." *Journal of Money, Credit and Banking,* vol. 20 (November), pp. 597–610.

Baer, Herbert and Elijah Brewer. 1986. "Uninsured Deposits as a Source of Market Discipline: Some New Evidence." Federal Reserve Bank of Chicago *Economic Perspectives,* September/October, pp. 23–31.

Beighley, H. Prescott. 1977. "The Risk Perceptions of Bank Holding Company Debtholders." *Journal of Bank Research,* vol. 8 (Summer), pp. 85–93.

Beighley, H. Prescott, John H. Boyd, and Donald P. Jacobs. 1975. "Bank Equities and Investor Risk Perceptions: Some Entailments to Capital Adequacy Regulation." *Journal of Bank Research,* vol. 6 (Autumn), pp. 190–201.

Benston, George J. 1984. "Financial Disclosure and Bank Failure." Federal Reserve Bank of Atlanta *Economic Review,* March, pp. 5–12.

———. 1992. "The Purpose of Capital for Institutions with Government-Insured Deposits." *Journal of Financial Services Research,* vol. 5, pp. 369–84.

———. 1994. "Safety Nets and Moral Hazard in Banking." In *Financial Stability in a Changing Environment,* papers presented at a conference sponsored by the Bank of Japan (October 1993). London: Macmillan, forthcoming.

Benston, George J., Robert A. Eisenbeis, Paul M. Horvitz, Edward J. Kane, and George G. Kaufman. 1986. *Perspectives on Safe & Sound Banking, Past, Present, and Future.* A Study Commissioned by the American Bankers Association. Cambridge, MA: The MIT Press.

Benston, George J. and George G. Kaufman. 1988. *Risk and Solvency Regulation of Depository Institutions: Past Policies and Current Options.* Monograph Series in Finance and Economics, Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, Monograph 1988–1. A shorter version appears in William S. Haraf and Rose Marie Kushmeider, eds., *Restructuring Banking & Financial Services in America,* pp. 63–99. Washington, DC: American Enterprise Institute for Public Policy Research.

———. 1993a. "The Intellectual History of the Federal Deposit Insurance Corporation Improvement Act of 1991." In George G. Kaufman, ed., *Reforming American Financial Institutions and Markets,* pp. 1–17. Boston: Kluwer Academic Publishers.

———. 1993b. "Improving the FDIC Improvement Act: What Was Done and What Still Needs To Be Done to Fix the Deposit Insurance Problem." In George G. Kaufman, ed., *Reforming American Financial Institutions and Markets,* pp. 99–121. Boston: Kluwer Academic Publishers.

Black, Fischer and Myron Scholes. 1973. "The Pricing of Options and Corporate Liabilities." *Journal of Political Economy,* vol. 81, pp. 632–59.

Brewer, Elijah III and Cheng Few Lee. 1986. "How the Market Judges Bank Risk." Federal Reserve Bank of Chicago *Economic Perspectives,* November/December, pp. 25–31.

Calomiris, Charles W. and Charles M. Kahn. 1991. "The Role of Demandable Debt in Structuring Optimal Banking Arrangements." *The American Economic Review,* vol. 81 (June), pp. 497–513.

Cargill, Thomas F. 1989. "CAMEL Ratings and the CD Market." *Journal of Financial Services Research,* vol. 3, pp. 347–58.

Cook, Douglas O. and Lewis J. Spellman. 1991. "Federal financial guarantees and the occasional market pricing of default risk: Evidence from insured deposits." *Journal of Banking and Finance,* vol. 15, pp. 1113–30.

Cornell, Bradford and Alan C. Shapiro. 1986. "The Reaction of Bank Stock Prices to the International Debt Crisis." *Journal of Banking and Finance,* vol. 10 (March), pp. 55–73.

Crane, Dwight B. 1976. "A Study of Interest Rate Spreads in the 1974 CD Market." *Journal of Bank Research,* vol. 7 (Autumn), pp. 213–24.

Diamond, Douglas W. 1984. "Financial Intermediation and Delegated Monitoring." *Review of Economic Studies,* vol. 51, pp. 393–414.

Dwyer, Gerald P., Jr. and R. Alton Gilbert. 1989. "Bank Runs and Private Remedies." Federal Reserve Bank of St. Louis *Review*, May/June, pp. 43–61.

Ellis, David M. and Mark J. Flannery. 1992. "Does the Debt Market Assess Large Banks' Risk? Time Series Evidence from Money Center CDs." *Journal of Monetary Economics*, vol. 30, pp. 481–502.

Flannery, Mark J. 1994. "Debt Maturity and the Deadweight Cost of Leverage: Optimally Financing Banking Firms." *The American Economic Review*, vol. 84, forthcoming.

Fraser, Donald R. and J. Patrick McCormack. 1978. "Large Bank Failures and Investor Risk Perceptions: Evidence from the Debt Market." *Journal of Financial and Quantitative Analysis*, vol. 13 (September), pp. 527–32.

Furlong, Frederick T. 1984. "A View on Deposit Insurance Coverage." Federal Reserve Bank of San Francisco *Economic Review*, Spring, pp. 31–38.

Garten, Helen A. 1986. "Banking on the Market: Relying on Depositors to Control Bank Risks." *The Yale Journal on Regulation*, vol. 4, pp. 129–72.

———. 1988. "Still Banking on the Market: A Comment on the Failure of Market Discipline." *The Yale Journal on Regulation*, vol. 5, pp. 241–51.

Gilbert, R. Alton. 1989. "Payments System Risk: What Is It and What Will Happen If We Try To Reduce It?" Federal Reserve Bank of St. Louis *Review*, January/February, pp. 3–17.

———. 1990. "Market Discipline of Bank Risk: Theory and Evidence." Federal Reserve Bank of St. Louis *Review*, January/February, pp. 3–18.

Gorton, Gary and Anthony M. Santomero. 1988. "The Market's Evaluation of Bank Risk: A Methodological Approach." Proceedings of a Conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, May, pp. 202–18.

Hannan, Timothy H. and Gerald A. Hanweck. 1988. "Bank Insolvency Risk and the Market for Large Certificates of Deposit." *Journal of Money, Credit and Banking*, vol. 20 (May), pp. 203–11.

Herzig-Marx, Chayim. 1979. "Modeling the Market for Bank Debt Capital." Federal Reserve Bank of Chicago Staff Memoranda, no. 79–5.

Herzig-Marx, Chayim and Anne S. Weaver. 1979. "Bank Soundness and the Market for Large Negotiable Certificates of Deposit." Federal Reserve Bank of Chicago Staff Memoranda, no. 79–1.

Hirschhorn, Eric and David Zervos. 1990. "Policies to Change the Priority of Claimants: The Case of Depositor Preference Laws." *Journal of Financial Services Research*, vol. 4, pp. 111–25.

James, Christopher. 1987. "An Analysis of the Use of Loan Sales and Standby Letters of Credit by Commercial Banks." Federal Reserve Bank of San Francisco Working Paper no. 87–09, October.

———. 1989. "Empirical Evidence on the Implicit Government Guarantees of Bank Foreign Loan Exposure." Carnegie-Rochester Conference Series on Public Policy (Spring), pp. 129–61.

Jensen, Michael C. and William H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics*, vol. 3, pp. 305–60.

Jordan, Jerry. 1993. "A Market Approach to Banking Regulation." Address delivered to the Cato Institute Eleventh Annual Monetary Conference, Washington, D.C. Forthcoming, *The Cato Journal*.

Kane, Edward J. 1988. "How Market Forces Influence the Structure of Financial Regulation." In William S. Haraf and Rose Marie Kushmeider, eds., *Restructuring Banking & Financial Services in America*, pp. 343–82. Washington, DC: American Enterprise Institute for Public Policy Research.

———. 1992. "How Incentives-Incompatible Deposit-Insurance Funds Fail." In George G. Kaufman, ed., *Research in Financial Services: Private and Public Policy*, vol. 4, pp. 51–91. Greenwich CT: JAI Press.

Kaufman, George G. 1994. "Bank Contagion: A Review of the Theory and Evidence." *Journal of Financial Services Research*, vol. 8, pp. 135–160.

Keeley, Michael C. 1990. "Deposit Insurance, Risk and Market Power in Banking." *The American Economic Review*, vol. 80, pp. 1183–1200.

Macey, Jonathan R. and Elizabeth H. Garrett. 1988. "Market Discipline by Depositors: A

Summary of Theoretical and Empirical Arguments." *The Yale Journal on Regulation*, vol. 5, pp. 215–39.

Mantripragada, Krishna G. 1992. "Deposits as a Source of Market Discipline." *The Yale Journal on Regulation*, vol. 9, pp. 543–74.

Marcus, Alan and Israel Shaked. 1984. "The Valuation of FDIC Deposit Insurance Using Option-Pricing Estimates." *Journal of Money, Credit and Banking*, vol. 16, pp. 446–59.

Merton, Robert C. 1977. "An Analytic Derivation of the Cost of Deposit Insurance and Loan Guarantees: An Application of Modern Option Pricing Theory." *Journal of Banking and Finance*, vol. 1, pp. 439–52.

Merton, Robert C. and Zvi Bodie. 1993. "Deposit Insurance Reform: A Functional Approach." *Carnegie-Rochester Conference Series on Public Policy*, vol. 38, pp. 1–34.

Osterberg, William P. and James B. Thompson. 1991. "The effect of subordinated debt and surety bonds on the cost of capital for banks and the value of federal deposit insurance." *Journal of Banking and Finance*, vol. 15, pp. 939–53.

Pennacchi, George G. 1987. "A Reexamination of the Over- (or Under-) Pricing of Deposit Insurance." *Journal of Money, Credit and Banking*, vol. 19, pp. 340–60.

Pettway, Richard H. 1976. "Market Tests of Capital Adequacy of Large Commercial Banks." *Journal of Finance*, vol. 31 (June), pp. 865–75.

———. 1980. "Potential Insolvency, Market Efficiency, and Bank Regulation of Large Commercial Banks." *Journal of Financial and Quantitative Analysis*, vol. 15, pp. 219–36.

Pettway, Richard H. and Joseph F. Sinkey, Jr. 1980. "Establishing On-Site Bank Examination Priorities: An Early Warning System Using Accounting and Market Information." *Journal of Finance*, vol. 35, pp. 137–50.

Randall, Richard E. 1989. "Can the Market Evaluate Asset Quality Exposure in Banks?" *New England Economic Review*, July/August, pp. 3–24.

———. 1990. "The Need to Protect Depositors of Large Banks, and the Implications for Bank Powers and Ownership." *New England Economic Review*, September/October, pp. 63–75.

———. 1993. "Lessons from New England Bank Failures." *New England Economic Review*, May/June, pp. 13–38.

Ronn, Ehud I. and Avinash K. Verma. 1986. "Pricing Risk-Adjusted Deposit Insurance: An Option-Based Model." *Journal of Finance*, vol. 41, pp. 871–95.

Shadow Financial Regulatory Committee. 1989. "An Outline of a Program for Deposit Insurance and Regulatory Reform" (Statement No. 41, February 13). Reprinted in *Journal of Financial Services Research*, vol. 6, 1992, pp. S-78–S-82.

Shick, Richard A. and Lawrence F. Sherman. 1980. "Bank Stock Prices as an Early Warning System for Changes in Condition." *Journal of Bank Research*, vol. 11, pp. 136–46.

Shome, D. K., S. D. Smith, and A. A. Heggestad. 1986. "Capital Adequacy and the Valuation of Large Commercial Banking Organizations." *Journal of Financial Research*, vol. 9 (Winter), pp. 331–41.

Simons, Katerina and Stephen Cross. 1991. "Do Capital Markets Predict Problems in Large Commercial Banks?" *New England Economic Review*, May/June, pp. 51–56.

Smirlock, Michael and Howard Kaufold. 1987. "Bank Foreign Lending, Mandatory Disclosure Rules, and the Reaction of Bank Stock Prices to the Mexican Debt Crisis." *Journal of Business*, vol. 60 (July), pp. 347–64.

Smith, Clifford W. Jr. and Jerold B. Warner. 1979. "On Financial Contracting: An Analysis of Bond Covenants." *Journal of Financial Economics*, vol. 7, pp. 117–62.

Wall, Larry D. 1989. "A Plan for Reducing Future Deposit Insurance Losses: Puttable Subordinated Debt." Federal Reserve Bank of Atlanta *Economic Review*, July/August, pp. 2–17.

Market Discipline as a Regulator of Bank Risk

*Arthur J. Rolnick**

The collapse of the savings and loan industry and the failure of large numbers of commercial banks in the 1980s have generated a reexamination of bank regulation in the United States and a new banking act. Despite this increased attention, no consensus about how to reform the banking system has emerged. Instead, proposals range from eliminating deposit insurance and relying solely on market discipline to expanding deposit insurance and relying solely on bank regulators.

The banking reformers generally fall into one of two groups. The first believes the best way to correct the problem of banks taking on too much risk is to provide regulators with the right tools. Most in this group question the use of market discipline because they have little confidence that depositors can adequately monitor banks and they are concerned that runs on individual banks could easily turn into system-wide banking panics. The second group believes that market discipline is the best way to regulate banks. These reformers argue that market forces are far better than regulators at assessing and pricing bank risk and that the benefits of market discipline outweigh the costs associated with bank runs and banking panics.

The evidence, in my view, supports those in the pro-market group, although it does not support unfettered competition. On the one hand, history suggests that banking can be a very unstable industry and that this instability has had far-reaching effects on the rest of the economy.

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On the other hand, history shows that exclusive reliance on the regulatory approach can be costly and that market discipline can help regulate banks. A strong case exists for coinsurance as an effective way of introducing market discipline. Although coinsurance can be set up in a variety of ways, the system referred to here is one in which depositors are insured on a fixed percentage of their deposits. (For example, 80 percent of deposits in an account are insured, 20 percent uninsured.) Depositors thus have an incentive to monitor their banks; although a large part of their deposits is protected if their bank fails, some funds are at risk.

This paper begins with a review of the history of instability in banking and shows how federal deposit insurance ended this instability. While deposit insurance solved the instability problem in deposit banking, it created an incentive problem that recent experience suggests has been very costly. In the next-to-last section of the paper, an argument is made for some market discipline by examining depositor behavior prior to deposit insurance; arguments are then presented for coinsurance as a credible way to introduce that market discipline.

Banking Panics Eliminated . . .

Governments do not often find successful solutions to economic problems. Until recently, the deposit insurance system seemed to be one of the few exceptions. The problem was instability in banking: too many bank failures and costly banking panics. The government solution was federal deposit insurance, a program originally designed to protect small savers and to reduce the likelihood of banking panics.

Banking's Volatile Past

Instability in banking has a long history in the United States. Well before 1933, when Congress decided to provide federal deposit insurance, bank failures and subsequent losses to noteholders and depositors were common features in U.S. banking.

The most infamous period was known as the *Free Banking Era*, which began in 1837, shortly after the Second Bank of the United States lost its charter and began closing its branches around the country. The void was filled by a new type of bank charter that was permitted under free banking laws. Michigan was the first state to pass a law that allowed anyone to open a bank if that person met certain minimum requirements, one being that the notes of the bank had to be backed by state or federal bonds as specified in the law. By 1863, a majority of states had passed free banking laws, and hundreds of new banks were formed across the country. Many were short-lived and failed to pay off their

depositors in full. While experience varied among the states, with those in the West having the most bank failures, problems occurred in most of the free banking states.

Among the states studied by Rolnick and Weber (1983, 1988), Minnesota's experience appears to be one of the worst. Shortly after becoming a state in 1858, Minnesota passed a free banking law. Within a few months, the state had 16 new banks. By the summer of 1859, however, 11 of those banks had closed and nine had failed to pay off noteholders in full. In five cases, noteholders received less than 25 cents on the dollar.

Looking at the four states in the Rolnick-Weber sample, we can see that banking problems were not confined to Minnesota. The number of free banks chartered between 1838 and 1863 in New York, Wisconsin, Indiana, and Minnesota totaled 709. Of these, 339 closed within a few years after they had opened (some within a few months), and 104 of the 339 failed to pay their noteholders in full.

Neither the passage of the National Banking Act in 1863 nor the establishment of the Federal Reserve System in 1913 ended these problems. In fact, in some ways the problems grew worse. Banking panics associated with contractions in economic activity became a regular and disturbing feature of the U.S. economy.

The National Banking Act was an attempt by Congress to create a uniform national currency and a more stable banking environment than the state-run banking system. The areas regulated by the act included branching, capital and reserves, types of loans, and amounts lent to any single borrower. The act also provided for annual bank examinations that were generally regarded as more stringent than state bank examinations.

The act eventually succeeded in creating a uniform currency, but it failed to achieve the banking stability it was designed to create. While the number of bank failures was relatively modest over these years, in eight different years as many as 100 banks failed. And while systemwide banking problems had existed before 1863, they became more frequent during the national banking period (from 1863 to 1913).

According to Sprague (1910), major banking panics occurred throughout the national banking period. He identifies five panics, in the years 1873, 1884, 1890, 1893, and 1907. He claims that each originated with the failure of one or more large financial institutions in New York City, each occurred in the autumn, and each was associated with a large decline in real economic activity (Chari 1989). In three of these panics (1873, 1893, and 1907) suspension of convertibility of bank deposits into cash was widespread. Sprague describes the 1907 panic as the longest and most severe. Other historians have noted that it was the catalyst that led to the creation of the Federal Reserve System.

Recent studies of banking panics during the national banking

period find less evidence of systemwide problems than is reported by Sprague, but all find evidence of some general loss of confidence in the banking system. Sprague is somewhat vague about the definition of a banking panic: He suggests that you know it when you see it. Benston, Eisenbeis, Horvitz, Kane, and Kaufman (1986) give a more precise definition: A *banking panic* is a period of widespread bank runs and failures that is accompanied by a decline in total bank deposits and a net currency outflow from the banking system. Using this definition, they identify only three such occurrences during the national banking period (1878, 1893, and 1908) corresponding to only two of the periods Sprague identifies. Dwyer and Gilbert (1989), defining a panic as a period when banks suspend payments, also identify only three episodes (1873, 1893, and 1907), corresponding to three of the periods Sprague identifies.

Differences also arise between the work of Sprague and these more recent studies on the impact of banking panics on economic activity. Benston and his colleagues (1986, p. 59) argue that it was somewhat weaker than Sprague suggests. They find that the rate of bank failures between 1875 and 1920 was only modestly correlated with the rate of business failures, with an index of industrial production, and with an index of common stock prices. Dwyer and Gilbert (1989, pp. 53–54) find that the panics during the national banking period resulted, on average, in relatively small losses to depositors at failed banks and that the losses declined over time.

The debate on the effects of banking panics, however, is far from over. A very recent macroeconometric study of the impact of bank failures on economic activity during the national banking period (Grossman 1993) shows that bank failures had a substantial negative impact on aggregate economic activity. In addition, many think the banking problems of the 1920s and 1930s contributed to the Great Depression (Friedman and Schwartz 1963, Ch. 7; Bernanke 1983). The Federal Reserve System did not end banking instability; if anything, the problems got worse and the impact on economic activity appeared to be even greater. After the Fed was established in 1913, the United States experienced a large number of bank failures. In the 1920s, the United States lost roughly 6,000 of its 30,000 banks. Between 1930 and 1933, in the worst financial panic in U.S. history, it lost another 9,000 banks as real economic activity fell by one-third.

Deposit Insurance's Stabilizing Effect

The banking crisis of the early 1930s led Congress to establish a federal deposit insurance system. Deposit insurance was not a new idea. To the contrary, Congress had debated deposit insurance for roughly 50 years. But it took three separate banking panics between 1930 and 1933

to convince Congress that more than the Federal Reserve System was required to end the instability in banking.

Consequently, to build depositor confidence and help prevent panics, Congress established the Federal Deposit Insurance Corporation (FDIC). On January 1, 1934, the FDIC began insuring deposits up to $2,500 in banks that had chosen to become members of this new government corporation. Over the years, the fraction of total deposits that was insured gradually increased as more depositors chose insured commercial banks and as the maximum deposit coverage was increased. Today, the FDIC insures deposits up to $100,000 per account, and this insurance covers over 75 percent of all commercial bank deposits.

Federal deposit insurance brought stability to banking and an end to banking panics. It is difficult to say how many bank failures are acceptable, but the average annual number was relatively small until the 1980s. In the first five years of the deposit insurance system (1934 to 1939) commercial bank failures averaged just over 50 a year. Over the next five years, the average declined to 17, and after that, it did not get above 11 until 1982.[1] The history of the savings and loan (S&L) industry has been similar. It was not until after 1982 that more than just a handful of S&L failures occurred each year.[2]

Even when failures of both commercial banks and S&Ls increased sharply after 1982, the United States experienced only a few bank runs and no systemwide banking panic (Bentson and others 1986, Ch. 2). However, a price was paid for this success. The deposit insurance system, originally intended to protect only the small saver, was extended to protect virtually all bank depositors.

While some debate continues as to exactly when the full insurance coverage policy was adopted, all agree that it was well in place after regulators rescued the Continental Illinois Bank in the spring of 1984. Considered one of the premier banks in the country at the beginning of the 1980s, Continental took large losses on its energy loans. In the spring of 1984, a modern-day run on the bank took place when many of the uninsured depositors tried to electronically remove their funds from Continental. Fearing that the run on Continental could spill over to other troubled banks, the bank regulators stepped in and announced that all deposits would be protected by the FDIC. The run was halted, and a possible banking panic was averted. The bailout of Continental soon became known as an application of "too-big-to-fail": the policy that

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[1] Source: Federal Deposit Insurance Corporation.

[2] Problems with both commercial banks and S&Ls developed in the high-inflation, high-interest-rate environment of the 1970s and early 1980s, but they did not result in a significant increase in bank failures.

asserts that some large U.S. banks must be given preferential treatment to prevent them from going bankrupt.

The price of stopping the run on Continental turned out to be larger than one of extending protection to uninsured depositors at large banks. Smaller banks began to complain that they could not compete in the market for large deposits if depositors knew that uninsured accounts at large banks would be protected by the FDIC. So shortly after announcing the too-big-to-fail policy, regulators proclaimed that deposits at all banks would be protected. And so they were. Between 1985 and 1990, 99 percent of uninsured deposits at all failed banks were fully protected by the FDIC. In order to eliminate banking panics and to provide "a level playing field," regulators substantively changed the deposit insurance system from one that was intended only to protect small depositors to one that protects all depositors.

. . . *But Moral Hazard Introduced*

That insurance on 100 percent of deposits would work, in the sense of eliminating bank runs and banking panics, is rather obvious. A less obvious point is that while it corrects one problem inherent in deposit banking, it introduces another inherent in deposit insurance itself. Economic theory suggests a disconcerting side effect of deposit insurance: Profit-maximizing banks will take on the riskiest portfolio possible (Kareken and Wallace 1978; Kareken 1983). And recent experiences with both S&Ls and commercial banks have provided much support for this theory.

Most insurance has a costly side effect known in the insurance literature as *moral hazard*. Consider the following description of this problem (Boyd and Rolnick 1989, p. 4):

> People who are insured against a particular risk have an incentive to change their behavior. Consider the owners of a factory who purchase fire insurance. Prior to this purchase, they would have to bear the entire cost of a conflagration. Once insured, though, a great part of the cost will be borne by the insurance company. For a fixed annual fee the owners' concern about such a loss is significantly alleviated, which is the obvious benefit of insurance. Consequently, the insurance company should expect the insured to take more risks than they would have without the insurance. The insured can now afford to be a little less cautious about the disposing of flammable materials such as old paint cans or chemical containers. If the insurance company hopes to remain in business, it must take account of such behavioral changes when pricing and administering policies.

Federal deposit insurance suffers from the same problem of creating the wrong incentives. In fact, theory suggests it may suffer from an

extreme form of moral hazard. Depositors, once insured, have no reason to worry about the riskiness of their bank's portfolio. And riskier banks, therefore, do not have to pay higher rates to their depositors. Assuming that riskier portfolios yield higher returns than safer portfolios and that bank owners are risk neutral, or can readily diversify risk, we can show that banks will take on the riskiest portfolio possible.

To illustrate how deposit insurance distorts a bank's behavior toward risk, consider the hypothetical example of a Mr. Smith who, with $200,000 in cash, opens a new bank. We will assume Mr. Smith meets all the requirements to get a national bank charter from the Office of the Comptroller of the Currency, becomes a member of the FDIC, and opens the Smith National Bank with $100,000 in cash. At this point, Mr. Smith's and his bank's balance sheets look as follows:

Smith National Bank

Reserves	$100,000		
		Equity	$100,000

Mr. Smith's Balance Sheet

Cash	$100,000		
Bank Stock	$100,000		
		Net Worth	$200,000

Assume Mr. Smith offers a deposit rate somewhat above that of his competitors—say, 10 percent—and as a result attracts $900,000 in deposits. The balance sheet of Smith National Bank now becomes

Smith National Bank

Reserves	$1,000,000	Deposits	$900,000
		Equity	$100,000

while Mr. Smith's balance sheet remains unchanged.

Of course, leaving the bank's funds idle is no way to run a bank. To put this money to work, Mr. Smith heads to Las Vegas, finds the nearest casino with a roulette wheel, and bets the bank's $1,000,000 on black. To hedge his investment, Mr. Smith bets $100,000 of his own money on red. The balance sheets now become

Smith National Bank

A bet on black	$1,000,000	Deposits	$900,000
		Equity	$100,000

Mr. Smith's Balance Sheet

A bet on red	$100,000		
Bank Stock	$100,000		
		Net Worth	$200,000

From the bank's point of view the investment is risky, but for Mr. Smith the overall strategy has a very high expected return and is perfectly safe. (This example assumes only two possible outcomes: red or black.) Consider the financial result if the roulette wheel turns up the color red. Mr. Smith's bank goes bankrupt, the bank's assets are lost, and the bank stock is worthless. Depositors, however, are protected by the FDIC. Even the interest on the deposits is insured by the FDIC. And Mr. Smith has not lost any money because he had a perfect hedge. Since his own money was bet on red, his net worth is still $200,000.

Now consider the equally likely outcome that the roulette wheel turns up the color black. On the one hand, Mr. Smith loses his bet and $100,000 of his own money. On the other hand, the new balance sheets show Mr. Smith's net worth is up by a factor of more than five.

Smith National Bank

Cash from bet on black, less $90,000 in interest payments	$1,910,000	Deposits	$900,000
		Equity	$1,010,000

Mr. Smith's Balance Sheet

A bet on red	$0		
Bank Stock	$1,010,000		
		Net Worth	$1,010,000

The point here is that 100 percent deposit insurance creates an incentive for bank owners to take on much more risk than they would otherwise. Under the assumption that owners can perfectly hedge bank risk (or, equivalently, that owners are risk neutral because their bank

stock is only a small percentage of their wealth), banks will take on the riskiest portfolio possible. The effect is essentially heads the banker wins, tails the taxpayers lose; depositors are indifferent because they receive the same return regardless of the outcome.

Some might argue that this is an extreme example, because bankers probably would not be allowed to bet their funds in Las Vegas. But I submit that some of the loans and direct investments that banks are permitted to make are at least as risky as Mr. Smith's portfolio strategy. Others might argue that while the owners of banks may have an incentive to bet the bank, the managers of banks do not. Managers value job security, they are risk averse, and they cannot hedge their risk so readily. Hence bank management will be an important force countervailing the incentive effects of moral hazard. This is not certain. If bank owners want bank management to take risky portfolios, they can easily provide their managers with the proper incentives to take on that risk—high salaries, performance bonuses, and generous severance packages.

Regardless of how extreme these assumptions are, most would agree that a theory should be ultimately judged on how well it confronts the data. Based on this criterion, the theory underlying the effects of moral hazard does quite well.

The most overwhelming evidence supporting this theory has been provided by the behavior of the S&L industry. With the passage of the Monetary Control Act of 1980 and the Garn–St Germain Act of 1982, virtually all deposits at S&Ls became insured and S&Ls were given carte blanche to invest in high-return, high-risk portfolios. And they did so with a vengeance. (In fact, some regulators at the time actually encouraged S&Ls to take risks, as if they needed such encouragement.) In less than six years, the S&L industry was in serious trouble. By 1988, close to one-half of all S&Ls were thought to be bankrupt or near-bankrupt; losses that eventually will be borne by taxpayers are now estimated at $200 billion in today's dollars.

The evidence supporting the effects of moral hazard is not confined to the S&L industry. Commercial banks also had their share of problems, once the policy of 100 percent deposit protection was in place. As noted earlier, prior to the 1980s, relatively few banks failed. During the 1980s, that record changed dramatically. In 1982 and 1983, 42 and 48 banks closed, respectively. Between 1984 and 1988, the average annual number of bank failures exceeded 144. By 1988, several of the largest banks in the United States were believed to be in at least some financial trouble. And by 1990, the FDIC was estimated to have a negative net worth of roughly $70 billion.[3]

A comparison to the Great Depression is useful to create some

[3] Source: Federal Deposit Insurance Corporation.

perspective on the size of this financial debacle. Consider that for the six-year period starting in 1930 and ending in 1935, the following losses occurred:

Losses to depositors of closed banks	$1.4 billion
Losses to owners of closed banks	1.3
Net loan charge-offs in operating banks	4.0
Total	$6.7 billion

Source: Federal Deposit Insurance Corporation (1940, p. 66).

After adjusting for inflation, the $6.7 billion total is less than 25 percent of the estimated cost of the S&L bailout. Based on per capita real loss, the $6.7 billion is still only one-half the loss of the S&L bailout.

A Solution

The history of banking under 100 percent deposit insurance yields two lessons. As argued above, one lesson is that moral hazard is more than just a theory. The other lesson is that despite a host of regulatory agencies and well-intentioned bank regulators, the regulatory system failed to contain the moral hazard induced by 100 percent deposit insurance. The $200 billion S&L taxpayer bailout and an insolvent FDIC are overwhelming evidence of that regulatory failure.

While ways may be found to improve the regulatory system, they are all likely to fail without the aid of market discipline. A problem with leaving the containment of moral hazard solely up to the regulatory system is that measuring risk is difficult. Moreover, even if regulators could somehow measure risk, they have no way of knowing how much risk is optimal. Consequently, either regulators will force banks to take too little risk (and the public will complain about a credit crunch) or they will allow banks to take too much risk (and taxpayers will face another large bailout).

Regulation Will Fail

To make these arguments about the regulatory reform approach to moral hazard more concrete, consider two specific reforms that are part of the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA). The first is to base capital requirements on risk. Under FDICIA, banks that hold riskier portfolios are required to hold more capital. This seems like a good idea, because a private insurance company would probably operate this way. But a private insurance company also has to make a profit and thus would assess risk accordingly. Without a genuine profit test, how are regulators to make these calculations? Even if they could assess the risk, how are they to set the

capital requirements to achieve the right amount of risk? They have no way of knowing the right amount of risk without a profit test. So the answer to these questions is, they cannot.

The early closure reform also raises some disturbing issues. *Early closure* means that banks will be closed before their net worth becomes negative. Again, this is a reform that appears sound. If banks could be closed early, they would have little incentive to take on a risky portfolio. Consider what early closure would mean for Mr. Smith's bank. Regulators would have to close the bank before the roulette wheel was spun; owners would not share in the winnings. (It is interesting to note that at this point, the bank would have a capital-to-asset ratio of 10 percent and a very high expected net worth.) The success of the early closure policy, however, is based on a questionable assumption: Regulators can monitor banks closely enough to close banks in time. This assumes not only that regulators have detailed and timely information, but also that the value of banking loans and investments changes in a smooth and continuous way. Generally speaking, the latter is not true because the value of bank loans can change very sharply over short periods of time. Moreover, unlike the roulette wheel bet, the market value of a bank loan is often difficult to assess. As a result, unless the regulators are virtually running the bank, a provision for early closure will not contain moral hazard.

Market Discipline Has Succeeded

Thus, relying solely on regulators either will fail to control moral hazard—and banks will take on too much risk—or will result in excessive regulation—and banks will take on too little risk. Some might argue that this is the best to be hoped for and that regulators must be relied on to manage this problem. This argument favors the regulatory approach because it assumes that the market (that is, depositors) cannot be relied on to discipline banks' behavior toward risk. Under this view, depositors are believed to be uninformed and hence unable to discipline banks. History, however, reveals a much different view of the uninsured depositor, one that shows that market discipline can be an effective regulator of bank risk.

Evidence from the free banking period (from 1837 to 1863) dispels the view that the public was ignorant of how banks invested funds. The liabilities of free banks were bank notes that, like checks today, served as a medium of exchange within the local area. Holders of free bank notes, like uninsured depositors, faced the risk that the value of a free bank's assets might not be sufficient to redeem its notes in lawful money. How informed any particular noteholder was, of course, is difficult to know. What is known is that information on individual banks and the riskiness of the investments and loans was readily available. In Minnesota's free banking years (from 1858 to 1863), for example, the

public was regularly informed by local newspapers about the quality of the bonds that Minnesota free banks used to back their notes.[4] Local newspapers also ran articles on each bank, including facts about the character of the bank officers and the nature of their nonbank businesses within the state. In most of the major cities in the United States, newspapers known as *bank note reporters* became very popular. These papers gave the most recent discounts for bank notes traded in the major money centers around the country. They also listed banks whose notes had been counterfeited, banks whose notes were no longer trading at par, and banks that had closed. Well before Congress decided the federal government should protect holders of bank liabilities, the private market found ways to inform the public and help them to assess the riskiness of bank liabilities.

Another example of private markets revealing information about the riskiness of banks can be found in the 1920s. A study of interest rates paid by state-chartered banks in New York City (Rolnick 1987) shows that banks with the riskier portfolios, other things equal, paid the higher deposit rates. The public did not have to be very sophisticated to distinguish between high-risk and low-risk banks; if depositors wanted relative safety, they just had to find the banks that offered the lower deposit rates. And, on average, they would have been correct: A greater percentage of the high-risk banks failed during the Great Depression. This is no different from the way the bond markets work today. The public can readily distinguish between a junk bond and a safe bond by its price; that is, higher-risk bonds sell at a lower price and at an expected higher rate of return than lower-risk bonds. And studies of financial markets consistently find a close positive correlation between risk and return.

The public's ability to discipline bank behavior toward risk goes beyond requiring risk-adjusted deposit rates. Given the nature of many deposit accounts, the public can withdraw funds from a bank on very short notice. While bank runs generally have a bad reputation in the banking literature, they surely act as powerful incentives to prevent banks from taking on too much risk.[5] Just knowing depositors have the ability to withdraw their funds on short notice creates an incentive for banks to invest in relatively safe and liquid assets. The question of how much risk a bank should incur (a question I would argue regulators cannot answer) is answered by the interaction between the bank's desire to make a profit and its depositors' willingness to trade safety for return.

Finally, evidence under the limited deposit insurance system in effect prior to the 1980s suggests that with at least some uninsured

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[4] Banks that backed their notes with railroad bonds were known in the press as the *railroad banks*. Pictures of railroads actually appeared on some of the notes of these banks.

[5] See Kaufman (1988) and Calomiris and Kahn (1991) for the exceptions.

depositors, banks were much safer than they were after Congress and regulators adopted 100 percent insurance. One has to be somewhat cautious about making this argument, though, because other factors may have caused this outcome. For example, the public may always have thought that big banks were too big to fail. Or regulations that had the effect of limiting bank competition and creating monopoly rents could also have served to constrain moral hazard (Keeley 1990).

The issue, then, is not whether the market can discipline bank behavior, for surely it can. The issue is how willing policymakers are to trade off one problem, moral hazard, for another, banking panics. Once the system moves credibly away from 100 percent deposit insurance coverage, it introduces the possibility of bank runs and therefore some probability of a banking panic. I have argued that the cost of moral hazard substantially exceeds the estimated direct costs of the banking problems in the 1930s. This is at least one argument in favor of introducing some market discipline. Another argument is that the Federal Reserve System is much better prepared today to contain banking panics than it was in the 1930s.

Ultimately, therefore, the issue turns into two questions: How should market discipline be introduced? How much of that discipline is optimal?

Coinsurance Is a Good Choice

The deposit insurance system can be reformed in several ways to reintroduce market discipline. A serious obstacle to effective reform, a dilemma known as *time inconsistency*, led Boyd and Rolnick (1989) to recommend coinsurance.[6]

I favor coinsurance over enforcement of the explicit insurance limits in place today because it is a more credible policy. The limited success of the commitment to have large depositors take large losses is symptomatic of the time inconsistency dilemma: A policy that is best for the long run may not be best for the short run and vice versa (Boyd and Rolnick 1989, p. 12):

> Consider the dilemma as it arises with deposit insurance. Once a bank is on the verge of failing, it often appears that the best policy is to protect all depositors, both insured and uninsured. The FDIC can protect all depositors by arranging the purchase and assumption of a troubled bank by a healthy one. For decades this approach was often used because it minimized the FDIC's cost of handling a failing bank. This was the low-cost method, at least partly because in a purchase and assumption transaction the charter value is

[6] See also Kydland and Prescott (1977).

captured by the FDIC. This approach (or publicly announcing that all depositors will be protected) has the additional advantage that actual or potential bank runs are halted, allowing the reorganization to proceed in an orderly manner.

While such policies may indeed minimize the cost of any particular bank closure, they do not necessarily represent the best long-run policy. That's because the uninsured depositors will learn over time that, whatever is the announced policy, their deposits are actually safe. When that happens, "uninsured depositors" no longer care about bank risk and market discipline is lost. Consequently, there are more bank failures than there would have been, had uninsured depositors not been protected.

Any attempt to reintroduce market discipline, therefore, must be *time consistent*. That is, a credible commitment must be made that uninsured depositors will not be protected by the FDIC or any other government agency, even uninsured depositors at large banks.

Coinsurance is a system in which depositors' coverage is some fixed percentage of their deposits. For example, depositors could be insured for up to 80 percent of their deposits. Then, if their bank should fail, depositors could lose up to 20 percent of their funds. Depositors would have a stake in how their bank invests its assets. To be competitive with banks that hold safe portfolios, banks that hold risky ones would have to offer their depositors a higher rate of return. Assuming depositors are risk averse, hold a nontrivial portion of their wealth in bank deposits, and cannot hedge this risk, coinsurance would help contain moral hazard. No longer would banks—representing the preferences of both owners and depositors—have an incentive to invest in the most risky portfolio.

With coinsurance, as opposed to the current $100,000 insured maximum, such a commitment can be made credible because the losses to any one depositor, including other banks, would be limited to some fraction of their deposits. Losses at failing large banks, for example, would be spread across all depositors, and any depositor's loss would be bounded by the coinsurance percentage. The probability of large bank failures causing widespread bank runs throughout the banking system would, therefore, be less than if all uninsured deposits beyond some fixed limit were at risk; thus, little rationale would remain for protecting uninsured depositors.

One last issue needs to be addressed. How much coinsurance is optimal? I do not pretend to know the answer to this question, but an advantage to using coinsurance to introduce market discipline is that it can be phased in. Regulators can observe the risk premium that develops in the market for bank deposits as the coinsured limit is decreased and pick the risk premium they judge to be appropriate against other market measures of risk.

Conclusion

The lessons from the financial debacle of the 1980s seem clear. The moral hazard problem created by 100 percent deposit insurance is not just a theory; it has had costly, real world consequences. Our policy of relying solely on regulators to manage this problem has been a mistake.

The arguments for introducing some market discipline are compelling. While this could be done in different ways, coinsurance is the way most likely to succeed.

References

Benston, George J., Robert A. Eisenbeis, Paul M. Horvitz, Edward J. Kane, and George G. Kaufman. 1986. *Perspectives on Safe & Sound Banking: Past, Present and Future.* Cambridge, Mass.: The MIT Press.

Bernanke, Ben S. 1983. "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression." *The American Economic Review*, vol. 73 (June), pp. 257–76.

Boyd, John H. and Arthur J. Rolnick. 1989. "A Case for Reforming Federal Deposit Insurance." Federal Reserve Bank of Minneapolis *1988 Annual Report*, pp. 3–15.

Calomiris, Charles W. and Charles M. Kahn. 1991. "The Role of Demandable Debt in Structuring Optimal Banking Arrangements." *The American Economic Review*, vol. 81 (June), pp. 497–513.

Chari, V.V. 1989. "Banking without Deposit Insurance or Bank Panics: Lessons from a Model of the U.S. National Banking System." Federal Reserve Bank of Minneapolis *Quarterly Review*, vol. 13 (Summer), pp. 3–19.

Dwyer, Gerald P., Jr. and R. Alton Gilbert. 1989. "Bank Runs and Private Remedies." Federal Reserve Bank of St. Louis *Review*, May/June, pp. 43–61.

Federal Deposit Insurance Corporation. *Annual Report*. 1940.

Friedman, Milton and Anna J. Schwartz. 1963. *A Monetary History of the United States, 1867–1960.* Princeton, N.J.: Princeton University Press.

Grossman, Richard S. 1993. "The Macroeconomic Consequences of Bank Failures under the National Banking System." *Explorations in Economic History*, vol. 30 (July), pp. 294–320.

Kareken, John H. 1983. "Deposit Insurance Reform or Deregulation Is the Cart, Not the Horse." Federal Reserve Bank of Minneapolis *Quarterly Review*, vol. 7 (Spring), pp. 1–9.

Kareken, John H. and Neil Wallace. 1978. "Deposit Insurance and Bank Regulation: A Partial Equilibrium Exposition." *Journal of Business*, vol. 51 (July), pp. 413–38.

Kaufman, George G. 1988. "The Truth about Bank Runs." In Catherine England and Thomas F. Huertas, eds., *The Financial Services Revolution: Policy Directions for the Future*, pp. 9–40. Boston: Kluwer Academic Press.

Keeley, Michael C. 1990. "Deposit Insurance, Risk, and Market Power in Banking." *The American Economic Review*, vol. 80 (December), pp. 1183-1200.

Kydland, Finn E. and Edward C. Prescott. 1977. "Rules rather than Discretion: The Inconsistency of Optimal Plans." *Journal of Political Economy*, vol. 85 (June), pp. 473–91.

Rolnick, Arthur J. 1987. "The Benefits of Bank Deposit Rate Ceilings: New Evidence on Bank Rates and Risk in the 1920s." Federal Reserve Bank of Minneapolis *Quarterly Review*, vol. 11 (Summer), pp. 1–18.

Rolnick, Arthur J. and Warren E. Weber. 1983. "New Evidence on the Free Banking Era." *The American Economic Review*, vol. 73 (December), pp. 1080–91.

———. 1988. "Explaining the Demand for Free Bank Notes." *Journal of Monetary Economics*, vol. 21 (January), pp. 47–71.

Sprague, O. M. W. 1910. *History of Crises under the National Banking System.* Report by the National Monetary Commission to the U.S. Senate. 61st Cong., 2nd sess., S. Doc. 538. Washington, D.C.: Government Printing Office.

The Functional Approach to Deposit Insurance and Regulation

*James L. Pierce**

Conventional wisdom contends that in order to assure financial stability, commercial banks require an elaborate federal regulatory and insurance structure and direct access to the central bank. Nonbank financial institutions apparently pose no threat and, therefore, merit less regulatory attention, no insurance, and no direct access to the central bank. Until relatively recently, the conventional wisdom was rarely challenged, and to this day it is viewed as bad form in some circles to ask why banks receive special attention.

The conventional approach to deposit insurance and bank regulation takes as given the deposit insurance and regulatory structure put into place in the early 1930s. Thus, it is assumed that commercial banks, operating with low net worth, will continue to issue federally insured or guaranteed liabilities (deposits) to support a host of risky and difficult-to-evaluate activities. In effect, it is also assumed that deposit insurance will continue to provide a valuable subsidy to banks, one that requires extensive regulation and supervision to limit bank risk (Merton 1977). Repairs in the institutional structure may be needed from time to time, such as provision for early supervisory intervention in an effort to limit the Federal Deposit Insurance Corporation's credit exposure, but the basic structure is left unchanged. And proposals will continue to be made for improvements, subject to the constraint that basic institutional arrangements remain unchanged. For example, most of the papers at this symposium are concerned with improvements: the use of bank regulation to control cycles in risky lending, and methods to achieve risk-sharing between the federal authority and private agents. These

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papers, and many others like them, take current institutional arrangements as given and seek improvements on the margin. This approach can be productive, but it cannot solve problems that emerge from the institutional setting itself.

This paper argues that the fixed-institutions approach is inadequate to deal with the issues faced by public policymakers charged with responsibility for protecting financial stability and efficiency. It is necessary to take an approach in which certain crucial economic functions are the issue, not the preservation of existing institutional arrangements. In the functional approach, changes in institutional and regulatory arrangements are fair game. Those who champion the functional approach are subject to criticisms of impracticality, but it is those who cling to existing institutions who are the impractical ones. In economic matters, institutional form should follow function; attempts to force functions to follow preconceived and inflexible forms can be counterproductive.

In the modern, highly integrated financial environment in which nonbanks provide bank-like services and banks provide nonbanking services, why are banks singled out for special attention? What unique and crucial functions do banks perform that merit the attention and protection that are lavished upon them? And if their unique and crucial functions can be identified, is it necessary or desirable to have these functions combined with all the non-unique and non-crucial activities that banks pursue?

A technological revolution has stripped banks of their pivotal position in the financial system. Banks currently do virtually nothing that is not also done either by markets or by nonbank institutions. For example, the commercial paper market provides for the short-term financing needs of major corporations, and money market funds provide safe transactions accounts to households and institutional investors,[1] while commercial finance companies provide loans to small and medium-sized businesses.[2] From the functional perspective it would be just as appropriate for the Boston Fed to have a symposium entitled "Safeguarding the commercial paper market, finance companies, and money funds in an environment of financial cycles" as it is to emphasize protecting banks.

The federal government refuses to confront the implications of the technological revolution that has integrated financial markets and institutions. It continues to pursue policies designed to retain resources in banking organizations at the same time that profitable opportunities in

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[1] Because money funds are not allowed direct access to the payments system, they must work jointly with banks.

[2] Currently, about 8 percent of outstanding business debt is owed to finance companies, while 12 percent is owed to commercial banks. With one-quarter the assets of banks, finance companies are able to provide more than two-thirds the business loans of banks.

the industry are shrinking.[3] In efforts to increase profitability, the government grants greater powers to banking organizations while continuing to protect them. This, in effect, spreads the federal safety net under a growing number of activities. It is presumed that regulatory and supervisory vigilance can be depended upon to hold the system together. For example, it is assumed optimistically that recent statutory changes have solved problems that developed in the 1980s and early 1990s. While these statutory changes did strengthen regulation, progressive weakening of the provisions is bound to occur as the government continues to strive to aid bank profitability. More generally, to rely on government regulators to provide the glue holding everything together is to be optimistic in the extreme. One has only to recall the savings and loan (S&L) debacle to appreciate the potential costs of such reliance.

Attempts to maintain the existing institutional structure will result in an increasing share of the financial system being protected by the federal safety net and subjected to regulation. Banking organizations will continue to have incentives to assume risk and not manage it well. We can look forward to many future symposia and conferences on cycles in bank risk and in bank failures. To maintain the status quo is a dangerous approach that ultimately could make the S&L debacle seem insignificant.

The Functional Approach

When bank regulation and deposit insurance are viewed functionally rather than in terms of current institutional arrangements, the system can be greatly improved and simplified. The economic and social objectives upon which current regulation and government deposit insurance are based can be better attained by adopting a functional approach, while the extent of regulation and market interference can be drastically reduced. Perhaps most important, the kind of breakdown in the regulatory and political process that produced the S&L debacle could not occur in the reformed structure.

Historically, commercial banks deserved government protection and needed regulation because they performed and uniquely combined two important economic functions: (1) provision of transactions accounts and payment services; and (2) origination and holding of loans that are difficult for third parties to evaluate because of the need for detailed information about the borrower and because of the need for monitoring.

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[3] Bank profitability has been helped temporarily by a favorably sloped yield curve. This good fortune cannot be expected to last.

The monetary and payment services provided by banks have economic value because of economies of scale in gathering and processing information and transactions. Banks provide transactions accounts from which agents make and receive payments, they verify the ability of agents to make good on transactions commitments, they take care of accounting for transactions, and they guarantee certain transactions. Much of the efficiency gained from pooling transactions in banks would be lost if agents had to monitor banks for their ability to make good on transactions accounts and transactions services. Sellers would have to verify not only the ability of buyers to cover transactions but also the solvency of buyers' banks. Buyers would have to monitor their banks to assure that their checks and funds transfers are honored. It is difficult to imagine that the volume of transactions in a modern economy could be sustained if agents had to engage in extensive monitoring of their banks for safety of transactions accounts and payments. The deadweight loss of this monitoring is avoided if transactions accounts and payments are made safe.

Historically, banks used transactions account liabilities to support the origination and holding of business loans, whose values are difficult to evaluate without information that is costly to obtain. These loans often involve continuous monitoring of performance. By their nature, these loans are difficult to sell on secondary markets and have no observable price. With asymmetric information an important component, these loans tend to be highly illiquid. Following the convenient convention of Merton and Bodie (1993), these loans will be called "opaque."

Only about 25 percent of bank liabilities now are transactions accounts; they are no longer the primary means of supporting loans. Saving and time accounts, negotiable CDs, Eurodollars, and other liabilities are now the primary sources of bank funds, accounting in total for about 75 percent of bank liabilities. With transactions accounts supplying ever less of the funds used for bank loans, concerns over the safety of these accounts can be separated from concerns over the quality of bank lending. For regulatory purposes, monetary functions can be separated from conventional lending functions even though both might be available within a bank. This allows a tremendous simplification in the way that banks are regulated. Separation is the cornerstone of the functional approach. Note that money funds flourish without the ability to hold opaque assets, and finance companies flourish without offering transactions accounts. Thus, the ability to perform both of the functions in the same institutions is not a necessary condition for survival.

The safety of the monetary–payments system can be achieved through government insurance of transactions accounts and of funds transfers. But protection of the monetary–payments function does not require the kind of regulation and insurance of banks that is practiced

currently. It is neither necessary nor desirable to regulate all activities of banks or to insure time accounts and other deposit liabilities, in order to protect their monetary–payments services.

It is important to note that provision of monetary–payment services and of opaque loans comprises a relatively small part of commercial bank activities. As indicated above, only about 25 percent of bank liabilities are transactions balances. Furthermore, only about 14 percent of bank assets are devoted to commercial and industrial loans—the "opaque" loans described above—while government securities and mortgage loans account for 24 percent and 27 percent of assets, respectively.

There is a growing awareness that it is unreasonable to attempt to protect the viability of lightly capitalized institutions granting loans to foreign governments and financing highly leveraged transactions and commercial real estate development, just because these institutions provide certain important functions. Why not use public policy to assure provision of the desired functions, rather than try to regulate and control institutions that pursue a variety of activities, including those of interest? If the goal is to have a safe monetary–payments system and provision of opaque loans, then public policy should pursue these goals directly rather than trying to force them into the mold of existing institutions.

Proposals to pursue such a functional approach began to appear in the mid 1980s, and they continue to be made.[4] The approach is slowly winning converts, and it recently received a strong endorsement from the bipartisan National Commission on Financial Institution Reform, Recovery and Enforcement, appointed to investigate the causes of the S&L debacle and to recommend reforms in the insurance and regulatory structure for banks (1993).

The various proposals differ in detail but not in substance. All recommend that insured transactions accounts be backed by safe assets. This could be accomplished in various ways: Banks could simply be required to hold short-term government securities as collateral for transactions accounts, or they could be required to establish the equivalent of a money market fund. This paper presents the case for requiring that insured monetary–payments services be provided by corporations that operate as money market funds with capital.

Institutions providing transactions accounts and payment services backed by safe assets are sometimes referred to as "narrow banks." That term will not be used here because it is nondescriptive and it tends to distort perceptions of what the reforms entail. The proposed institutions

[4] See, for example, Tobin (1986); Pierce (1986, 1991); Kareken (1986); Litan (1987); Gorton and Pennacchi (1992); and Merton and Bodie (1993).

are more like money funds than banks, and there is nothing narrow about the financial services firms housing these institutions.

With the monetary–payments system rendered safe, the rest of what is now banking would be left to the market. No bank liability other than transactions accounts would receive federal insurance or guarantees, and all special regulation and supervision of banks unrelated to their transactions account business would end.

A Proposal in the Spirit of the Functional Approach

It is convenient to consider a specific proposal, so that various issues and criticisms can be discussed productively. The proposal outlined below is one advanced in a recent book (Pierce 1991) and the one embraced by the National Commission on Financial Institution Reform, Recovery and Enforcement (1993). It is designed to deal with the various issues and criticisms that will be discussed after the proposal is presented.

The proposal focuses directly on monetary and financial functions. Banks continue to exist as one type of business providing these functions, but banking's internal structure is changed in a manner that protects banks' monetary activities while subjecting all their other activities to market discipline. This is accomplished by isolating monetary activities from all others within banking or other financial service organizations.

Monetary Service Companies

The purpose here is to isolate, insure, and protect monetary functions while eliminating insurance and protection for all other functions. Monetary services would be provided in legally separate monetary service companies that could be operated within banks or other financial service organizations. These highly regulated, separately capitalized companies would offer federally insured transactions accounts accessible for third-party transactions using checks, electronic transfers, or cash withdrawals in the form of either currency or orders to pay a third party.

Monetary service companies would be highly restricted concerning the assets that they could hold. They would be limited to purchases of the same sorts of short-term, highly marketable, and highly rated instruments that are in the portfolios of today's money market mutual funds. These include short-term Treasury securities, highly rated commercial paper, and similar instruments. Unlike money market funds, however, the monetary service companies would have a capital base and enjoy federal insurance for all their liabilities.

Rules of operation and standards of licensing for these companies would be established and enforced by the Federal Reserve System, which would also be authorized to supervise these institutions and to approve mergers and acquisitions in which they are involved. The Federal Reserve also would administer the federal insurance program for monetary service companies through its subsidiary, the Federal Deposit Insurance Corporation (FDIC). Because monetary service companies would hold only highly liquid market securities, their condition would be marked to market daily. They would be subject to risk-based capital standards and risk-based insurance premiums in a system of vigorous and effective regulation and supervision. With risk easily controlled, the "market discipline" of uninsured depositors would not be required. Accounts would be insured without limit as to size, allowing large payroll and other activities to be fully insured.

Entry into the monetary services business would be open to all who met the minimum standards. Thus, banks could operate their transactions account and payment services business through separately capitalized monetary service companies. Similarly, money market mutual funds could convert to stock form and operate as monetary service companies. Furthermore, any collection of individuals or any corporate entity could operate a separately capitalized company, provided they met the licensing and operating standards.

Crucial to establishing and operating a monetary service company would be the explicit and ironclad restriction that it not lend to its owners. It could provide transactions accounts and payment services to its owners on the same basis as for other customers, but that is all. Thus, a monetary service company might be owned and operated by a bank, pay dividends, and receive capital injections, but it could not lend money to the bank, buy its market obligations such as CDs, or in any other way be involved in providing funds to it. The same restrictions, backed by stiff criminal and civil penalties for willful violation, would apply to transactions with any other owner, be it a bank holding company, securities firm, insurance company, retailer, manufacturer, private individual, or whatever. These restrictions would eliminate conflicts of interest and help maintain the effective corporate separateness that would protect monetary service companies against failure of their owners. The Federal Reserve would promulgate regulatory safeguards to prevent confusion by the public in distinguishing between the insured accounts at monetary service companies and the uninsured liabilities of institutions with which these companies might be affiliated.

To guarantee separateness and thereby ensure that the fortunes of their owners and affiliates would not impinge on the fortunes of monetary service companies, legislation would establish that no monetary service company is responsible for the debts of related entities. For example, if it were part of a bank holding company, the creditors of the

parent company or its nonmonetary affiliates would have no claim on it. The same restrictions would hold if it were part of some other financial conglomerate. Failure of any other entity could not threaten the monetary service company. This approach is similar to the way that regulations in many states now protect insurance companies against attacks by creditors of companies affiliated with the insurance companies in a financial conglomerate. Federal laws would provide ironclad protection for monetary service companies.

With separateness established, a monetary service company would be free to operate offices wherever it chose. A banking organization, retailer, or other corporation could run such a company in the same location where it offered other services. Further, a monetary service company would be free to share personnel, information, data processing, and expertise with its affiliates, in order to exploit any synergies and efficiencies. However, to protect it from being operated as a "loss leader" by its owners or affiliates in order to attract customers to other products, the Federal Reserve would be empowered to close a monetary service company if it incurred chronic losses. The Fed would also be authorized to promulgate regulations concerning allocations of overhead and other expenses, to set minimum capital standards, and to limit dividend payments when such action was required to meet these standards.

Along with its supervisory functions, the Federal Reserve would be authorized to impose reserve requirements on the liabilities of monetary service companies, just as it currently imposes reserve requirements on transactions accounts of banks and thrifts. The Fed would also be required to make the discount window available to these companies and to allow them access to its check clearing and electronic funds transfer systems. In effect, the Federal Reserve's current special relationship with banks would be transferred to the monetary service companies. The Fed's ability to conduct monetary policy would not be weakened in any way.

Nothing in this proposal would prevent a business from operating an uninsured money market fund or other institution that allowed customers to withdraw their money by check or wire transfer. The object is not to make all checkable assets safe but rather to offer the public a totally safe alternative.

Financial Service Companies

All activities other than those of monetary service companies would be conducted by financial service companies, without the regulation and supervision imposed on today's banks. It is convenient to think of financial service companies as operating in tandem with monetary service companies within a banking or financial conglomerate, but the

actual corporate structures would be left up to the owners. Perhaps the easiest way to appreciate what financial service companies could do is to start with conventional banking organizations. They could operate their transactions account and payment services through monetary service companies. What remained would form the nucleus of financial service companies, which would operate side by side with monetary service companies. Banks' savings and time accounts, plus their other liabilities, would be obligations of financial service companies.[5] Banks' lending to business and consumers and all of their other existing financial services would be executed by financial service companies. To this nucleus would be added the authority to offer all kinds of insurance, as well as full securities underwriting, brokerage, and mutual funds, along with any other financial service the companies chose. Thus, they would be able to provide a complete range of financial services, except for insured monetary services. A financial service company could own a monetary service company; the two could share facilities, personnel, and information; they could even operate side by side in the same offices; but the monetary service company would be insulated from the fortunes of its owners. Bank holding companies as such would disappear and be replaced by the corporate umbrellas containing monetary service companies and financial service companies.

Financial service companies have been described here as banking organizations legally, but not physically, separated from monetary functions and augmented by other financial activities, but they could begin as insurance companies or securities firms. In effect, financial service companies would be financial conglomerates, where the nonmonetary part of banks and thrifts is joined with insurance, securities, mutual fund, and other financial activities.

Financial service companies would be regulated in the same way that nonbank providers of financial services are currently regulated. Federal laws concerning antitrust, securities regulation, and truth in lending would apply to them, as would state laws, including those that regulate insurance companies. The massive and cumbersome regulatory apparatus that currently governs banks and bank holding companies would be eliminated. The Office of the Comptroller of the Currency and the Office of Thrift Supervision would disappear, as would the regulatory functions of the Federal Reserve and the FDIC relating to activities apart from those of monetary service companies. Federal statutes and regulations concerning bank holding companies would also be eliminated.

So much regulation could be eliminated primarily because none of the liabilities issued by financial service companies would be insured;

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[5] Thus, about 25 percent of current banking activity would go to monetary service companies and 75 percent to financial service companies.

there would be no federal guarantee or protection against failure. The government would be taken out of the business of protecting holders of nonmonetary liabilities issued by what are now banks and thrifts, and it would not be responsible for the "safety and soundness" of financial service companies.

Financial service companies would have access to the Federal Reserve's discount window on an emergency basis in order to allow them to honor credit lines and to handle problems in rolling over their liabilities in the event of a severe loss of liquidity. This would allow the central bank to exercise its powers as lender of last resort when a clear emergency was involved. But the discount window would not be available to bail out insolvent institutions.

It is important to appreciate that this division of functions between monetary and all other financial services would not be obtrusive to the public. From a legal and regulatory perspective, the structure of banking would be fundamentally altered. But institutions called banks could continue to operate, providing the services they currently offer plus many more. These new banks would look much the same to the general public as their current banks. Deposits and withdrawals could be made for a wide variety of accounts; loans and other financial services would be available. Transactions accounts would function the same way as currently. The differences would be that business transactions accounts would earn interest, no upper limit would be imposed on insured balances, and the accounts would be the liabilities of banks' monetary service companies, which could invest only in short-term marketable instruments. Customers could make deposits into time accounts, purchase mutual funds, and acquire other assets in the same offices, even use the same teller—human or electronic—for monetary service company and financial service company business. Funds placed with banks' financial service companies would be at risk, however, and customers would have to be clearly informed that this is the case. Banks could use the same offices to provide credit ranging from car and mortgage loans to various kinds of loans to business. This credit would not be funded by insured transactions accounts, however, but by time accounts and other liabilities issued by banks' financial service companies.

Nothing in the proposal requires institutions offering these various services to be called banks. They could call themselves whatever they wanted and provide whatever combination of services they found attractive. The only restriction would be that if an institution wanted to offer insured transactions accounts and use the Federal Reserve's funds transfer system, it would be required to do so through a separate, regulated monetary service company.

The Importance of a Transition Period

The functional approach appears radical because it would abandon a regulatory approach that has been in place for 60 years. It could be phased in, however, over several years and in such a non-radical fashion as to be acceptable to all but arch protectors of the status quo.

A period of transition would be needed to give depository institutions and regulators time to adjust to the new environment. Nothing is radical about such a transition; in fact, several proposals to improve existing regulation and supervision, including those made at this symposium, could become steps in the transition to a world of functional regulation.

The transition is described here in some detail in order to demonstrate how mild it can be.[6] It involves a gradual introduction of risk to depositors and other creditors of banks,[7] and a gradual shift of activities out of protected banks and into unprotected financial service companies. A first step would be to get rid of the doctrine of too-big-to-fail by gradually imposing "coinsurance" for *all* banks, in which the costs of bank failures are shared between the FDIC and large, uninsured depositors.[8] The costs would include losses from FDIC payouts when banks are closed and the expenses of arranging takeovers. The potential loss for large depositors is initially small; they could lose a maximum of 10 percent of the principal and interest owed to them by a failed bank. This is a risk exposure low enough to avoid a massive outcry from large depositors, yet large enough to induce them to extract interest rate premiums and increased equity positions from risky banks in exchange.

All types of deposits currently covered by insurance would initially continue to enjoy protection, but the insurance limit would be on a per depositor basis—initially retained at $100,000—and rigorously enforced; any balances in excess of the limit would be subject to coinsurance. Transactions accounts would be the exception. For them, insurance would be extended beyond the limit applied to other accounts, provided that the bank secured balances in a transactions account in excess of that limit by low-risk, short-term market securities of the type to be allowed for monetary service companies. Institutions that set up separately capitalized monetary service companies would have the transactions accounts in these companies insured without limit. They would be

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[6] For more detail, see Pierce (1991).

[7] While the introduction of risk could be made through holders of subordinated debt, it is more direct and more in the spirit of transition to make large deposit accounts the subordinated debt.

[8] As an indication of how noncontroversial coinsurance is, except among regulators, it has been proposed by the American Bankers Association, which opposes imposition of the doctrine of too-big-to-fail. See American Bankers Association (1990).

allowed to pay interest on their business accounts, giving businesses incentive to shift funds out of their non-interest-bearing transactions accounts at banks and into monetary service companies.

Over time, the extent of coinsurance would be increased gradually until accounts with balances in excess of the insurance limit—except for secured transactions accounts and accounts at monetary service companies—would be totally at risk. The insurance limit would also be gradually reduced to zero. At that point, secured transactions accounts and monetary service company liabilities would be the only insured accounts at banks (and thrifts). The process could be spread out over a decade or more, but ultimately depositors and other creditors of banks would assume responsibility for all the principal and interest owed them. The risk exposure for the FDIC would be reduced commensurately.

The proposed transition also would involve exploiting and gradually altering the holding company structure for banks, to encourage a division of activities between monetary and financial service companies. The essential first step would be to attain corporate separateness between banks and all other elements of their holding companies. This would be done by ending Federal Reserve regulation of parent holding companies and their nonbank affiliates, including elimination of capital requirements for holding companies and an end to the stricture that parent companies and nonbank affiliates serve as "sources of strength" for affiliated banks. Further, creditors of parent companies and nonbank affiliates would be at risk—the FDIC would expend no funds in their behalf—and they would not be responsible for the obligations of banking affiliates or their subsidiaries. To protect banks against other constituents of these holding companies, the Federal Reserve would continue to police transactions between banks and these constituents, and penalties would be increased for violations of sections 23A and 23B of the Federal Reserve Act, including the imposition of criminal penalties for willful violation of the limits on these transactions.

With corporate separateness firmly in place, bank holding companies would gradually be granted new powers, such as full securities activities and the ability to offer general forms of insurance. But these activities would have to be conducted by nonbank subsidiaries and not by the banks themselves. The new subsidiaries (financial service companies) would not be regulated by the Federal Reserve or by any other banking regulator. They would be treated exactly as nonbank financial institutions are treated today. The new subsidiaries would not be covered by the federal safety net, so their creditors would be at risk. By law, these creditors would have no claim on the bank or banks in the holding company. As these changes were taking place, existing securities firms and insurance companies would be allowed to acquire or establish banks through bank holding companies. These firms also

would receive no protection from the safety net, and their creditors would have no claim on the banks in the holding companies.

Along with these changes, banks and bank holding companies would receive increasing incentives to shift existing nonmonetary activities into unprotected and unregulated holding company subsidiaries, which would be allowed to share facilities and personnel with monetary activities. Any nonmonetary business conducted by monetary service companies, the regulated and protected part of banks (and thrifts) and their subsidiaries, would be subjected over time to substantial and rising capital requirements issued by their primary regulator, the Federal Reserve. These requirements could be avoided by shifting the activities into separate, unregulated, and unprotected holding company subsidiaries or financial service companies. By gradually raising the capital requirements to onerous levels, nonmonetary activities would be forced out of the regulated and protected part of existing banks. At some point—perhaps as long as a decade after the process began—holding companies would be required to shift any remaining nonmonetary activities to unprotected and unregulated subsidiaries. Monetary and financial services would become functionally separated within their banks and their holding company structures.

Over time, banks (and thrifts) would be subjected to increasing market discipline, and a growing number of financial dealings would be conducted by holding company subsidiaries that did not enjoy government protection and were not under the jurisdiction of banking regulators. Progress could be relatively slow and orderly, allowing ample opportunity for adjustment and verification that monetary and credit stability is preserved. The transition could be slowed down or speeded up as conditions warrant. When the transition was complete, owners of financial service companies could own what have become monetary service companies, but these companies would be tightly regulated, notably with ironclad restrictions on financial transactions with affiliates and owners. By this time, the banking regulators would have nothing left to do. The bank and thrift regulatory agencies would then be eliminated, with the regulation and federal insurance of monetary service companies consolidated in the Federal Reserve System.

Possible Problems with the Functional Approach

For the functional approach to have a chance of adoption, it is necessary to convince skeptics in government that it will not generate major problems. Three possible problems will be discussed. The first and easiest is the possibility that the supply of "opaque" credit would dry up if a bank could not use insured deposit accounts to fund these loans. Second is the specter of the 1930s: Would the functional approach

increase the chances of panic and financial collapse? Third, would the assertion that non-transaction-account liabilities are at risk prove to be empty, because the federal government would come to the assistance of major "banking" organizations even if their liabilities were not insured? That is, would the doctrine of too-big-to-fail prevail?

The Supply of Business Loans

It is possible that information-intensive loans requiring extensive monitoring would become more costly if banks could no longer fund these loans with insured liabilities. But it is far from obvious that this would be the case. Commercial finance companies do not have federally insured liabilities, yet they are currently competitive with commercial banks as a source of business credit. This suggests that it would be profitable for financial service companies to offer business loans on roughly the same terms as those currently available in the market.

It is neither possible nor desirable to guarantee that "opaque" loans would be no more costly under the functional approach than under current arrangements. If private markets do not provide a sufficient quantity of business loans to meet society's needs, then the appropriate response is to provide direct subsidies. It is not appropriate to continue insurance of bank deposits in an attempt to maintain bank lending to business. Banks have devoted a declining share of assets to business loans and are likely to continue to do so, even with insured deposits.

It would be little better to provide insurance for bank accounts if these are placed either in safe assets or business loans. This would do little to control risk because a business loan could be defined arbitrarily. Certainly it could not be guaranteed that the business loans supported by insured accounts would be the kind of opaque loans that are considered important.

Finally, it might be argued that small banks, which are more attuned than large banks to the needs of medium-size and small customers, must have deposit insurance in order to survive. They would be unable to compete with large institutions if their liabilities were at risk. No evidence supports this argument. Many small banks are in far better condition than the largest banks. These small institutions could raise uninsured funds from their local markets, and by pooling resources they could even tap national and international markets.

Financial Crises: Silent Runs, Panics, and Crashes

Those who fear or distrust the functional approach seem to believe that substitution of market discipline for government-imposed prudential regulation of banks' lending and other financial service activities would produce financial instability. According to this argument, "credit

cycles" and the misallocation of credit would become more pronounced when concerns for the safety and soundness of banks' nonmonetary activities are left to the market. Furthermore, deprived of deposit insurance and the doctrine of "too-big-to-fail," large creditors at formerly protected banks would engage in "silent runs" at the first sign of trouble, producing panics and crashes. If these events were likely to arise as a consequence of the functional approach, it would be irresponsible to propose it. Instead, this paper will argue that such calamities actually would be less likely under the functional approach than they are today.

Monetarists take the position that financial crises are a consequence of bank runs in which flights to currency deprive the banking system of reserves (Friedman and Schwartz 1963; Schwartz 1986). The solution to the bank-crisis problem is straightforward: The central bank must act as lender of last resort and be the ultimate source of liquidity. With an effective central bank, 1930s-type banking panics and collapses of the money stock (and opaque credit) will not occur. Monetarists recognize that panics can develop in individual financial markets, but they consider these "pseudo financial crises" to be of relatively little importance because they have no particular consequences for the quantity of money.

The functional approach scores high on the monetarist scale for promoting financial stability. Banks' monetary functions are completely protected by deposit insurance. Should bank runs occur even with this protection, nothing in the functional approach would prevent the Federal Reserve from stabilizing reserves and the quantity of money.

Other economists are more concerned than are monetarists about crises in important financial markets (Minsky 1972; Kindleberger 1978; Hubbard 1991). Even in the absence of a banking panic, a breakdown in the commercial paper market or in the stock market can cause "panic" and a "flight to quality." Borrowers with serious asymmetric-information problems (that is, those with opaque loans) will have to pay relatively high interest rates and may be rationed out of the market, with deleterious effects on real economic activity (Mishkin 1991; Diamond 1991). While these kinds of crises are unlikely to have the devastating effects of crises that involve damage to the nation's monetary and payment system, a good case can be made for central bank intervention to soften their effects. Nothing in the functional approach prevents the Federal Reserve from providing liquidity should a crisis hit the commercial paper or stock markets, just as it has done in the past.

Historically, banking crises have been harmful, not only because of their destructive effects on the monetary and payments system, but also because banks' ability to deal in opaque loans was impaired (Bernanke 1983; Calomiris and Gorton 1991). The functional approach might appear to leave solvent financial service companies that hold assets

whose values are difficult to ascertain susceptible to "silent runs." Unable to roll over maturing debt because creditors lose faith (flight to quality), financial service companies might be forced to sell their opaque assets at substantial discounts, forcing otherwise solvent institutions into bankruptcy. This could have adverse consequences for borrowers with asymmetric-information problems who cannot easily shift to other lenders.

Under the functional approach, financial service companies are allowed to fail. This will provide incentive for financial service companies to adopt safeguards to protect themselves against silent runs. They will have incentive to arrange for credit lines with other financial service companies, to avoid bunching of maturities for liabilities and to extend them, to hold liquid assets, and to engage in cross guarantees. These actions lessen the effect of a temporary loss of confidence by creditors. It should be noted that finance companies, which receive no federal insurance or guarantees, now use these safeguards with considerable success.

But what if creditors lose faith in financial service companies generally, and many of them experience silent runs? Should creditors lose faith in them in general and demand payment when their credits mature, the money has to go someplace, and it is highly unlikely even during a panic that these creditors will demand currency. If they do, the Federal Reserve must supply it, offsetting the negative effect on reserves through open market purchases. It is more likely, however, that these funds will be shifted to other uses, and one likely place is the safe accounts at monetary service companies. They will take this money and use at least part of it to purchase the securities being issued by solvent financial service companies. Thus, some of the funds are recycled to the place where they started. Should this recycling prove inadequate, the central bank should engage in open-market operations to ease general liquidity pressures when a "flight to quality" occurs, and it should use monetary service companies as conduits for channeling funds to solvent financial service companies that are experiencing liquidity problems. The monetary service companies borrow from the Federal Reserve and use the proceeds to buy market instruments issued by financial service companies. It is important that this conduit function of monetary service companies not be extended beyond purchasing instruments that meet their ordinary standards for investments. But the Federal Reserve could extend credit directly on an emergency basis to solvent institutions that do not have high ratings for their money market instruments or cannot market these instruments at all.

While the Federal Reserve is more than capable of averting liquidity crises, such crises are less likely to occur under the proposed restructuring than in today's banking system. Currently, large banks are able to market vast amounts of very short-term debt at favorable terms because

these liabilities receive implicit guarantees from the government. Creditors have far too little incentive to monitor these institutions because the regulators are doing the job for them. Furthermore, they limit risk by extending credit for short periods of time. Should problems begin to surface, creditors can probably get their money out before a bank goes under. But the shorter the maturity of a bank's liabilities, the more quickly it can be wiped out by silent runs. This is what happened to Continental Illinois.

Institutions must be allowed to fail, in order to encourage the market discipline that limits the scope of failures. But with recycling available from monetary service companies, and ultimately backed up by the Fed, systemic risk is eliminated. The failure of one financial service company has no particular bearing on the viability of others. Market discipline is likely to do a better job of controlling failures than is government regulation because, among other reasons, market participants have greater incentives to perform well. To give an important example, financial service companies facing significant risk would not be allowed by creditors to operate at the capital ratios allowed today's banks (Merton 1977; Merton and Bodie 1993). Furthermore, it is unlikely that private creditors would tolerate the stampedes into loans to less developed countries, into energy and real estate lending, into financing of highly leveraged transactions, and into commercial real estate development that have been tolerated by government regulators.

While regulation of risky activities should be left to those who bear the risk, a role remains for government intervention during times of panic and distress. But the intervention should not entail attempts to perpetually indemnify agents against risk. The existing institutional approach is bringing more and more risky activities under the federal safety net and this increases the chances of ultimate collapse. The functional approach seeks to distribute risk to those able and willing to manage it, thereby reducing the chance of ultimate debacle.

Dealing with the "Time-Inconsistency" Problem: Too-Big-To-Fail

A potential problem with attempts to impose market discipline is that the government may not be able to commit credibly to the abandonment of its doctrine of too-big-to-fail (Goodfriend 1993). A potential "time-inconsistency" problem remains, within which it could be socially optimal for the government to renege on its threat to allow large financial service companies to fail. Private agents are aware of this prospect and would not apply sufficient discipline because under certain circumstances they would be bailed out. In some respects the problem is similar to the one encountered by governments that lack credibility in containing inflation. The solution is the same: Credibility had to be

earned by continuing to contain inflation, and credibility has to be earned by allowing large institutions to fail.

At most, creditors of major institutions should be protected only when it can be demonstrated that such action would head off a major, widespread panic and that the benefits of such an action would exceed the negative reputational effects of reneging on the threat to allow major institutions to fail. With the burden of proof on those who seek to provide protection, too-big-to-fail would be rarely invoked. Absent such proof, financial service companies would be allowed to fail. If regulators could be depended upon to play fair and only impose too-big-to-fail when the resulting benefits obviously exceed the cost, the time inconsistency problem would be unlikely to have much of a stunting effect on market discipline. Unfortunately, a "Chicken Little" mentality appears to exist among regulators, who see the sky as always in danger of falling.

It is to be hoped that the functional approach would produce a "cultural" change in regulators. By assuring the safety of the monetary–payments system, the functional approach deals with the primary reason for fearing failure of major banks. With money and payments safe, nothing is "special" about noninsured banks; the government should care no more about the failure of a major bank than it does about the failure of a major finance company or manufacturer. Bailing out a major financial service company should occur no more frequently than bailing out an auto company, a defense contractor, or a city. If the problem can be reduced to infrequent, politically motivated interventions, it is unlikely to prove major.

The Burden of Proof

I think I can speak for other proponents of the functional approach when indicating frustration over the lack of serious discussion of the issues by proponents of the status quo. If the functional approach is impractical or fatally flawed, then its critics should be able to provide clear and compelling explanations as to why. The functional approach will never get anywhere without the support of the Federal Reserve System, support that the Fed apparently is not willing to give. The Fed should accept the burden of proof to explain, if it can, why the functional approach cannot work. While the Fed may have no obligation to respond to the proposals of academics, it does owe the National Commission on Financial Institution Reform, Recovery and Enforcement the courtesy of a response to its 1993 recommendation that the functional approach be adopted.

The Federal Reserve should explain why it cannot deal with problems it foresees with the functional approach; why it cannot develop closure rules to protect the payments system; why the doctrine

of corporate separateness will not work; why the discount window and open market operations will be insufficient to deal with silent runs and other panics; why it is desirable to protect creditors at major banking institutions; and why the Federal Reserve cannot withstand political pressures to bail out failed institutions. It is my guess that the Federal Reserve would be hard-pressed to come up with a set of "whys" that would withstand careful scrutiny.

A Response to Purists

The functional approach has been criticized because it proposes a role for government in the monetary–payments system without proving that a role is justified (Flannery 1992, 1993). After all, money market funds devoted to short-term government securities provide safe accounts without the need for government interference, and private payments systems such as CHIPS achieve low risk through cross-guarantees.

Huge improvements can be made in the current process without dealing with the issues raised by purists—issues that can be dealt with later. The functional approach offers a rational and stable system. Perverse incentives and distortions in resource allocation are eliminated, too-big-to-fail is gone, and the Comptroller of the Currency and the Office of Thrift Supervision are eliminated, while the regulatory and supervisory activities of the FDIC and the Fed are reduced to supervising and insuring the equivalent of money funds. All of this is accomplished while the monetary–payments system remains safe, the public retains the ability to hold federally insured accounts, and the Federal Reserve retains the ability to intervene in times of panic. After the transition is complete and after it has been demonstrated that the system is stable, it will be time to examine whether the federal presence should be reduced even more.

References

American Bankers Association. 1990. *Federal Deposit Insurance: A Program For Reform.* Washington, D.C., March.

Bernanke, Ben. 1983. "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression." *The American Economic Review*, vol. 73, (June), pp. 257–76.

Calomiris, Charles and Gary Gorton. 1991. "Asymmetric Information and Financial Crisis: A Historical Perspective." In R. G. Hubbard, ed., *Financial Markets and Financial Crises.* Chicago: University of Chicago Press.

Diamond, Douglas W. 1991. "Monitoring and Reputation: The Choice between Bank Loans and Directly Placed Debt." *Journal of Political Economy*, vol. 99, no. 4, pp. 689–721.

Flannery, Mark J. 1992. "Review of *The Future of Banking*, by James L. Pierce." *Journal of Finance*, vol. 47, no. 1, pp. 417–20.

———. 1993. "Deposit Insurance Reform: a Functional Approach. A Comment." *Carnegie-Rochester Conference Series on Public Policy*, no. 38, June.

Friedman, Milton and Anna J. Schwartz. 1971. *A Monetary History of the United States, 1867–1960*. Princeton, NJ: Princeton University Press.

Gorton, Gary and George Pennacchi. 1992. "Money Market Funds and Finance Companies: Are They the Banks of the Future?" In M. Klausner and L. White, eds., *Structural Change in Banking*. Homewood, IL: Irwin.

Hubbard, R. Glenn, ed. 1991. *Financial Markets and Financial Crises*. Chicago, IL: University of Chicago Press.

Kareken, John H. 1986. "Federal Bank Regulatory Policy: A Description and Some Observations." *Journal of Business*, vol. 59, no. 1, pp. pp. 3–48.

Kindleberger, Charles. 1978. *Manias, Panics, and Crashes*. New York: Basic Books.

Litan, Robert E. 1987. *What Should Banks Do?* Washington, D.C.: The Brookings Institution.

Merton, Robert C. 1977. "An Analytical Derivation of the Cost of Deposit Insurance and Loan Guarantees: An Application of Modern Option Pricing Theory." *Journal of Banking and Finance*, vol. 1, no. 1 (June), pp. 3–11.

Merton, Robert C. and Zvi Bodie. 1993. "Deposit Insurance Reform: a Functional Approach." *Carnegie-Rochester Conference Series on Public Policy*, no. 38, June.

Minsky, Hyman. 1972. "Financial Stability Revisited: The Economics of Disaster." In *Reappraisal of the Federal Reserve Discount Mechanism*, vol. 3. Washington, D.C.: Board of Governors of the Federal Reserve System.

Mishkin, Frederic S. 1991. "Asymmetric Information and Financial Crises: A Historical Perspective." In R. Glenn Hubbard, ed., *Financial Markets and Financial Crises*. Chicago, IL: University of Chicago Press.

National Commission on Financial Institution Reform, Recovery and Enforcement. 1993. *Origins and Causes of the S&L Debacle: A Blueprint for Reform*. Washington, D.C.: Government Printing Office, July.

Pierce, James L. 1986. "Financial Reform in the United States and the Financial System of the Future." In Yoshi Suzuki and Hiroshi Yomo, eds., *Financial Innovation and Monetary Policy: Asia and the West; Proceedings of the Second International Conference Held by the Bank of Japan*. Tokyo: University of Tokyo Press.

———. 1991. *The Future of Banking*. New Haven: Yale University Press.

Schwartz, Anna. 1986. "Real and Pseudo-Financial Crises." In F. Capie and G. Wood, eds., *Financial Crises and the World Banking System*. New York: St. Martin's Press.

Tobin, James. 1986. "Financial Innovation and Deregulation in Perspective." In Yoshi Suzuki and Hiroshi Yomo, eds., *Financial Innovation and Monetary Policy: Asia and the West; Proceedings of the Second International Conference Held by the Bank of Japan*. Tokyo: University of Tokyo Press.

Discussant Comments

*Robert E. Litan**

Given my recent change in jobs, I am compelled to begin with a disclaimer that is stronger than usual. What I am about to say represents my personal views only and not those of the Clinton Administration or the Justice Department. And even with this disclaimer, I may get in trouble.

In addressing the issues discussed by these papers today, I feel a little like the man in the story who simply refers to his jokes by their numbers, and because everyone has heard them so often, they are expected to laugh. The same is true for all of you and the ideas for changes in bank structure. You have heard them all before: narrow banking is number 1, of course; universal banking, number 2; financial holding company, number 3, and so on. We could quit right now and take a vote on which number you would prefer; I even think I could guess the outcome.

So what is really new about the discussion we are having today? Well, one new thing is that I am not part of the game any more. At least temporarily, I have taken a time-out to worry about antitrust issues in the economy and will spend only a small part of my time worrying about banking. But while you will not have me to kick around any longer about narrow banking, you now have Jim Pierce. The idea has not gone away.

The second thing that appears to be new is that nothing is likely to happen on the legislative horizon in the United States to alter bank structure much, at least not for the next three years. If we had held this conference back in 1991, we would have been debating the far-reaching financial holding company concept proposed by the Bush Treasury. But

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that effort failed, as we all know. And now the Clinton Treasury has announced that this session it will support only a modest interstate branching bill, one that would "Douglasize" the McFadden Act but would not address the so-called "bank powers" issues. At least not now.[1]

The Proposals for Change

Today we are left to consider how not to repeat the 1980s; that is, how not to let the rate of bank and thrift failures get nearly out of hand. This seems like a mundane assignment, but the diversity of views represented in our papers suggests that it is more challenging than it might first appear.

Safeguarding Banks from Financial Cycles

Richard Randall begins by reminding us what went wrong in the 1980s that led to so many thrift and bank failures. His basic theme is that regulators failed to prevent excessive concentration of risks in time. Whether it was lending to less developed countries, leveraged buyout lending, or commercial real estate, banks and thrifts got carried away and when exogenous events turned sour or, in Randall's terminology, financial cycles hit with hurricane force, banks and thrifts were too exposed and many got washed away.

Randall suggests that the challenge for the future is to prevent such excessive concentration of risk-taking again—for future financial hurricanes will surely occur. He asks the fundamental question, are we going to rely on the market to do that, or are we going to rely on the regulators? Now in asking that question, Randall has implicitly ruled out an alternative approach for dealing with future financial hurricanes, namely more insurance or, equivalent in the banking context, higher capital standards. In fact, if we go toward the road of greater market discipline, in essence we would get higher capital, at least for those institutions that concentrate their risk-taking.

But Randall is skeptical of greater market discipline for a different reason: in his opinion, market participants—depositors, shareholders, and creditors—have not proved able to forecast as well as regulators. An example, by the way, that would have supported Randall's case, one that I am surprised he did not mention, is that in the quarter before Bank of New England failed, the shareholders of Bank of New England were buying its stock. I mean insiders, the management, were buying the

[1] Since these remarks were made, the outlook for congressional passage of an interstate branching bill before the end of the 1994 session has brightened considerably.

stock. Even the insiders did not know the bank was failing, whether because they were ill-informed or because they were unable to forecast as well as the regulators.

Market Discipline and Higher Levels of Capital

George Benston contests Randall's view about market discipline. But whether he or Randall is correct about the ability of market participants to warn of future danger has nothing to do with the demands that market participants almost certainly would make, in a world where deposit insurance was less generous, for depositories to have more capital than they have now. And precisely because they would have more capital, they would be less prone to failure.

For proof, you need simply look to the 1980s. Compare the handful of finance companies that failed with the thousands of banks and thrifts that failed. It is true that one large finance company, Westinghouse, had problems and has appeared to survive only on the strength of its well-capitalized parent. But this example only demonstrates how important it is that lending activity be backed by capital somewhere in an organization. And Westinghouse's creditors would not have continued doing business with the finance company, had the entire organization not been adequately capitalized. Without question, if we move in the direction of market discipline we get more capital. What is wrong with that?

In short, even if market participants could not discipline depositories against excessive concentration of risk more effectively than regulators, the experience of the 1980s suggests that a stronger dose of market discipline could be useful in inducing depositories to be better capitalized. And all this would occur without regulators forcing banks to increase their capital.

The only possible objection to stronger capitalization for depositories is that it would raise the cost of lending and thus constrain economic growth. I am not sure I agree with this objection, for several reasons. First, as Benston has pointed out, if higher capital comes in the form of subordinated debt, with tax-deductible interest payments, any increase in capital costs will be mitigated. Second, as Fed research has discovered, more strongly capitalized banks tend to have lower deposit interest costs. So, it is not clear that higher capital is necessarily associated with a cost penalty. And even if higher capitalization raised lending rates, that increase would come about only because some portion of the current deposit insurance subsidy would have been removed. The result would be a more rational allocation of capital.

Nevertheless, Randall has a point when he states that regulators could do a better job in the future of warning banks of the dangers of excessively concentrating their risks, whether in particular types of lending, trading activity, or derivatives exposure. I also agree with him

that these warnings are best conveyed on a case-by-case, judgmental basis rather than on the basis of any hard-and-fast rules. In addition, alarm bells should go off when a bank expands its risks in any one area very rapidly.

Dangers of Exclusive Reliance on Regulation

I see no harm in the regulators trying, at least at the margin, to dissuade banks from going over the edge. But I believe it would be a big mistake to rely exclusively on better supervision to prevent the dangers of future bank problems. Just as financial cycles have contributed to bank failures, political cycles have deeply affected bank and thrift regulation in the past and inevitably will do so in the future. We just came through a political cycle where things were too lax. Politicians got upset and told the regulators they were too lenient, so they came down hard on banks. When the regulators tightened up, the politicians got upset because the regulators were too tough.

Randall tells us that regulators should be trusted to take the punch bowl away when the party gets going, and that may happen. But you can bet that when they do so, they will be criticized by many in Congress and perhaps by officials in the executive branch for dampening the recovery. Similarly, when banks start dropping, regulators will be excoriated for being too lax. You cannot just assume that regulators are going to be immune to this political pressure. This leads to a case for having more market discipline, because you cannot believe the regulators are going to be as perfect as you would wish.

Coinsurance

So, a strong case remains for injecting more market discipline. The three papers give us three options. Rolnick argues for protection for depositors through coinsurance. The problem here is a familiar one, namely, that any coinsurance plan entails the risk of runs. Whether one wants to accept this risk becomes something of a question of faith. My religion tells me that this is a risk that policymakers may be able to tolerate in the case of small banks, but it is simply not realistic in the case of large banks.

I know the familiar arguments: that a run is not a problem as long as depositors put their money back into some bank, and that the Federal Reserve can stop any systemic run by lending freely. The problem is that the Federal Reserve would not be enthusiastic about having to lend, if it were forced to do so, to hundreds of banks facing a potential run. Private sector participants may discount the worst case. For public policymakers, it is the other way around: The worst case is what scares them. To them this is not disaster myopia; if anything, policymakers

inevitably will tend to give more weight to the risk of worst case losses than may be justified. Therefore, I do not think that coinsurance for large banks is at all credible. In sum, relying on depositor discipline when the crunch really comes is like being willing to jump over an abyss; you might succeed, but you are understandably unwilling to take the leap. At least I am, and I suspect most Fed officials are too, in the real world.

Subordinated Debt

A second source of discipline, favored by Benston, is subordinated debt. In my view, this option clearly dominates depositor discipline because subordinated debt holders cannot run until their instruments mature. Facing a huge potential loss and a modest upside gain, subordinated debt holders are going to exercise a rather conservative influence on the bank. In fact, this option makes so much sense that I cannot understand why our regulators do not require all large banks, or at least those with access to the capital markets, to maintain some portion of their Tier II capital in the form of subordinated debt. It should be mandatory for large banks. I would not worry about the small banks, which may not be able to sell subordinated debt.

Randall may be right that subordinated debt holders are not better monitors than the regulators. But he may be wrong as well, especially as banks are forced to disclose their assets and liabilities on a marked-to-market basis. If the Basle Accord is the only thing holding us back from imposing a subordinated debt requirement, then we ought to go ahead and do this now, alone.

Narrow Banking

This brings me to the third market-based alternative, which is narrow banking, or monetary service companies, if you will. Now, some may question this characterization but, in fact, narrow banking is the ultimate market solution to the banking problem, since it would require all lending to be supported by uninsured funds and thus to a market test. In effect, this option would totally remove the deposit insurance subsidy from lending. In addition, narrow banking would remove supervision of lending and put it in the market and, in the process, remove the political cycle problem from the lending process. We take away the bank supervisors and let the market do their work for us.

I know there are objections to narrow banking and without belaboring them, I think Pierce handles them. The big objection to narrow banking is the one that Pierce talks about, the Chicken Little problem. What are you going to do about the potential risk of a run in the commercial paper market that is backing all these loans and the

monetary service company world? This is an easy thing to answer. Suppose you have a run on, say, "Chase Manhattan Financial" in the narrow bank world; in my opinion, no obvious justification exists for bailing out the uninsured creditors of this hypothetical outfit. The question is, will the run spread to other commercial paper holders in other well-financed or well-capitalized companies? If you are worried about that, the Fed has a very easy solution. It can use open market operations it has always used, to drive down the T-bill rate and widen up a gap between T-bills and commercial paper rates; then people will come back and buy commercial paper of other well-financed companies. The Fed does not have to bail out anybody's creditors. All it has to do is engage in generalized liquidity support of the kind that it practices all the time.

Two more political objections, however, stand between narrow banking and reality: First, what to do about Community Reinvestment Act requirements? These could be imposed on the holding company, but would still be a problem. Also, the adjustment costs of a shift to narrow banking would be large, and I would therefore implement any narrow banking requirement slowly. Narrow banking may seem too radical, with too much reliance on market discipline and perhaps too much disruption to existing lending relationships.

These fears can be handled through appropriate transition measures, although I disagree with Pierce that the way to transition is to provide coinsurance because, in my opinion, coinsurance for large banks entails a danger of runs. Instead, I would implement the transition by requiring a gradually increasing portion of the existing loans on the balance sheets of banks to be transferred to uninsured affiliates. I would not tamper with the insurance on the right-hand side of the balance sheet. I would gradually force the banks to move their assets, other than commercial paper and Treasury bills, to the uninsured affiliate. This could be done over a five- or ten-year period. That is one key difference between us.

A second difference is that I am not sure I would impose narrow banking on small banks. This is purely a political judgment. Small banks provide a lot of loans to small businesses, and narrow banking would generate an increase in the cost of funds for small business, perhaps on the order of 50 basis points. I would take 50 basis points as an acceptable cost, but politically this may be a problem. If small business wants to go to small banks, then it should be permitted to go to small banks. I would not impose narrow banking on small banks. In other words, I would not mandate it for all banks. I would start out with narrow banking as only a voluntary requirement, for institutions that want broader powers. The broader powers would be the benefit associated with converting to a narrow bank.

Cross-Guarantees

A final option, cross-guarantees, which Bert Ely can speak to, deserves discussion. This is another form of private discipline, but by agents of banks as insurers. This is the notion of, in effect, replacing the monopolistic Federal Deposit Insurance Corporation, which is the current government insurer, with a series of syndicates or private insurers that would be capitalized by existing banks and also by nonbanks. Plus, to protect against the possibility of a run on the system, the Fed would still be there as a backstop source of liquidity for this entire program. The idea or the motivation here clearly is to provide market discipline by people who have their money on the line in a way the FDIC does not. You would essentially break down the monopoly in supervision that you now have with the FDIC or the bank supervision system at large.

In effect, the proposal for cross-guarantees is designed to break the regulators' monopoly as a supervisor. But this option also poses several problems. First, since the Fed would backstop the system for liquidity purposes, the syndicates would have to be regulated. This in turn would probably require an examination of the health of the banks supporting them. So, you could end up with the existing bank supervision system backstopping another private supervision system. I am not sure what would be gained in the end.

And, as a practical matter, the syndicates might force banks to have higher capital or move to narrow banking. My own experience with attempting to form a business insuring commercial loans of banks suggests that private actors are very skittish about insuring lending portfolios of banks, which they view as blind asset pools. The lesson is that private people will not willingly insure anybody unless the banks have a lot more capital and a lot more liquid assets and a lot fewer loans; in other words, unless they look more like narrow banks. The reality is that if you end up in a world where you are going to rely on private insurers, I think it will look very much like the one I have already, in essence, endorsed, which is a world with higher capital requirements or narrow banks. This may not be such a bad outcome.

Conclusion

The bottom line is that I would try to combine the proposals of Benston and Randall. A mandatory requirement of subordinated debt for large banks is the most practical and realistic proposal for now. I also would try Randall's proposal for having regulators attempt to warn of excessive risk concentrations. Those measures together would give us an improved system, but I still have a fondness in my heart for my slimmed-down form of narrow banking, even though it might not be politically palatable now. As a voluntary quid pro quo for broader powers, it might be, however.

Discussant Comments

*R. Alton Gilbert**

We have heard four proposals for changing bank supervision and regulation. As a discussant of these papers, I now give my opinion on who won: that is, which speaker made the best case for his proposal.

To judge the entries, I turn to the assignment for the participants at this symposium: "The focus of the symposium will be to examine the likely effectiveness of various proposals for change in the context of financial cycles and the role of banking in the economy." With this focus, the clear winner is Richard Randall. In his proposal, supervisors would assume authority and responsibility to stop boom and bust cycles in the operation of the financial system by limiting risk concentrations in bank portfolios. The contest is not very interesting, however, because Randall wins by default. The other speakers did not discuss the implications of their proposals for financial cycles and the role of banking in the economy, and that is too bad. Advocates for reform proposals should be expected to discuss all of the important implications of their proposals.

Regulation based on capital requirements or on depositor discipline may make bank lending procyclical. Problems with credit quality tend to reduce bank capital when economic activity declines, constraining bank lending under systems of bank regulation based on capital. Under a system of regulation that relied on depositor discipline, depositors would tend to withdraw deposits or require higher risk premiums during periods of declines in economic activity. These implications of regulation, whether based on capital requirements or on depositor discipline, need further exploration.

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Before comparing the proposals, I will mention one way in which they are similar: Not one emphasized interstate banking or expanded powers as important safeguards for the banking system. This similarity is striking, given the importance of interstate banking and expanded powers in much of the current discussion of banking reform in the United States. The authors should be asked to defend the assumption, implicit in their proposals, that their proposed reforms are more important than interstate banking and expanded powers for safeguarding the future of the banking industry. If they are correct, much of the emphasis in the current discussion of banking issues in the United States has the wrong focus.

To make the search for a winner more interesting, let us narrow the basis for the best proposal to the implications for banking risk. In comparing the four proposals, it is useful to divide them into two groups, with the first three papers in one group, the last paper in a second group. The papers by Randall, Benston, and Rolnick retain at least some form of deposit insurance for time and savings deposits, whereas the paper by Pierce calls for restricting deposit insurance to transactions accounts only. Each of the first three papers has a unique set of problems, however.

Supervisory Safeguards

First, the problems with Randall's paper. His assumptions about the basic cause of the banking risk problem make his paper unique in this symposium and in the literature on banking risk. The cause is not moral hazard, created by deposit insurance. Instead, banks are subject to financial cycles of boom and bust because of the irrational animal spirits of business people, who get caught up in investment euphoria. We cannot rely on market participants to discipline the risk assumed by banks, because all market participants are subject to the same irrational animal spirits as the bankers. It is the role of bank supervisors, with their more sober judgment, to stop the cycles of boom and bust by telling bankers when they are beginning to hold dangerous asset concentrations in their portfolios and by forcing the bankers to change their lending patterns.

Randall's world view and his proposal have sweeping policy implications. According to his view, there is no reason to limit the power and authority of bank supervisors to banks. Capitalism is unstable; financial cycles of boom and bust damage the economy. Supervisors should be given power over all lenders, all forms of financial intermediation, in order to impose their more sober judgment. This expanded supervisory role disturbs me in considering Randall's proposal, given the abundant evidence in this country, and around the world, that

market participants do a better job of allocating resources than government agents.

Increased Capital Requirements

In his proposal, Benston endorses depositor discipline in principle but concludes that supervisors will not actually place uninsured depositors at risk. As an alternative to depositor discipline, Benston endorses higher capital requirements, with subordinated debt included with equity as capital. Supervisors would enforce capital requirements through a system of structured early intervention and resolution that would impose progressively more severe sanctions on banks with lower capital ratios.

The regulatory scheme for enforcing capital requirements in Benston's proposal is similar to the system of prompt corrective actions mandated by the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA). Moreover, banks tended to behave as though such a system was in force even prior to passage of FDICIA.[1] The aspect of Benston's proposal that is assumed to enhance the effectiveness of market discipline is the level of the capital requirement necessary to qualify for minimal supervisory scrutiny: capital (including subordinated debt) equal to at least 10 percent of assets.[2] What is missing in Benston's proposal is evidence that this proposed threshold for well-capitalized banks would have the assumed effects on the market discipline of banks.

Coinsurance

And now the Rolnick proposal: a system of coinsurance, in which depositors' insurance coverage would be some fixed percentage of their deposits. Depositors would have a stake in how a bank invests its assets, he writes, and banks that held riskier portfolios would have to offer these depositors a higher rate of return. To accept the Rolnick proposal, however, it must be assumed that the Fed will always act with the wisdom and skill necessary to deal with any systemic bank runs. This assumption makes me uncomfortable.

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[1] See Gilbert (1991, 1992b, and 1993) and Randall (1993).

[2] It is not possible to make a direct comparison between the capital requirement proposed by Benston and the current capital ratios required of "well capitalized" banks under FDICIA. Benston's capital ratio is calculated by summing equity and subordinated debt, and dividing that sum by total assets. Under FDICIA, as implemented by the federal bank supervisors, the capital measure that includes at least part of a bank's subordinated debt is divided by a risk-weighted measure of total assets.

Is there a better way? Can we have a safe payments system, with no risk to the government and no government intervention in the allocation of credit by the private sector? This question brings us to the Pierce proposal, which seems to be the solution.

Narrow Banking

Pierce's proposal falls under the general category commonly called "narrow banking." Table 1 lists what appear to be the assumptions that underlie such proposals. The first three assumptions separate the narrow banking advocates from the laissez-faire banking advocates, who would have no role for government in regulating banks. Most criticisms of the narrow banking idea have focused on the fifth assumption. For instance, Randall believes that the government has a vital role in regulating bank risk-taking. Benston has commented on a loss of economies of scope in banking under the narrow banking proposals.

I will address the fourth assumption, which I have not seen discussed by critics of narrow banking proposals. To aid in a discussion of possible connections between payments services and credit risk, I will use the balance sheet of a hypothetical monetary service company, as proposed by Pierce. The company has $100 in transactions deposit liabilities, which are fully insured by the Federal Deposit Insurance Corporation (Table 2). Assets of the monetary service company include $10 in reserves to meet reserve requirements, and $93 in high-quality, liquid securities, which are marked to market values each day. The company has some equity to absorb possible changes in the market value of the securities. It pledges its reserves and securities to the FDIC, in return for insurance of its deposit liabilities. Full government insurance of the transactions deposits of each monetary service company

Table 1
Assumptions That Underlie Narrow Banking Proposals

1. Fractional reserve banks, with deposits payable on demand, are vulnerable to runs by depositors.
2. Disruptions in the operation of a nation's payments system disrupt its economic activity.
3. A valid reason for government regulation of banks is to avoid disruptions in the operation of the payments system.
4. The government can ensure safe operation of the payments system without assuming risk by insuring all transactions deposits, but not time and savings deposits, and requiring collateral against the transactions deposits.
5. These narrow banking restrictions will not diminish the efficiency of intermediation. Elimination of federal insurance of time and savings deposits and elimination of supervision of banking risk actually would make intermediation more efficient.

Table 2
Monetary Service Company

Reserves	$ 10	Transactions deposits	$100
Securities	93	Equity	3
	$103		$103

makes the payments system safe, and the value of their assets protects the deposit insurance fund.

Pierce emphasizes a functional approach to bank regulation, with regulation focused on the functions of banks that are important for public policy. I will follow that emphasis by focusing on the functions of the monetary service companies. Their customers would use their deposits for making payments, and the companies would process the payment orders of their customers. Monetary service companies would need some mechanism for settling for the value of payment orders cleared among themselves. Banks hold deposits with each other for purposes of settling the payment orders of the deposit customers. Monetary service companies would also hold balances with each other, for the same purpose.

A monetary service company, therefore, could not perform its basic functions with the balance sheet in Table 2, since it includes no balances at other banks. Table 3 presents a modified balance sheet, with $10 of securities shifted to balances due from banks. If the FDIC would permit the monetary service company to meet its pledging requirements by pledging its balances due from banks, the FDIC must deal with some issues in supervising credit risk. If the company holds its balances with other monetary service companies covered by these narrow banking restrictions, no credit risk issues would arise. Many banks, however, hold balances due from foreign banks, which they use in settling foreign exchange transactions. The monetary service company could suffer a loss from the failure of one of the foreign banks with which it holds balances. Thus, a company involved in offering foreign exchange services

Table 3
Monetary Service Company

Reserves	$ 10	Transactions deposits	$100
Balances due from banks	10		
Securities	83	Equity	3
	$103		$103

Table 4
Monetary Service Company

Start of day:			
Reserves	$ 10	Transactions deposits	
		Big Co.	$ 5
		Others	95
Balance due from banks	10		
Securities	83	Equity	3
	$103		$103
Noon:			
Reserves	$ 0	Transactions deposits	
		Big Co.	$ −5
		Others	95
Balance due from banks	10		
Securities	83	Equity	3
	$ 93		$ 93

to its customers, an important function in the payments system, would assume some credit risk by holding balances due from foreign banks.

There are ways to protect the FDIC from this credit risk. Perhaps the management of the monetary service companies could convince the FDIC that this risk exposure is not a problem, since they hold balances with the strongest foreign banks, and their capital is more than adequate to cover any reasonable losses. Such analysis by the FDIC, however, sounds like traditional bank supervision, and the narrow banking proposal was supposed to make analysis of credit risk by the supervisors unnecessary.

Table 4 illustrates another aspect of credit risk assumed by a monetary service company. The table specifies the balance sheet of the company by time of day. At the beginning of the day, the balance sheet is like that in Table 3, except that transactions deposits are divided between one customer called Big Co., with an opening balance of $5, and others whose opening balances sum to $95. Given this balance sheet at the start of the day, the government is protected from losses due to its insurance of transactions accounts, since the market value of cash plus securities exceeds the value of transactions deposits.

But now consider the balance sheet at noon. Big Co. has made a payment of $10 and the monetary service company has a reserve outflow of $10, leaving the transactions account of Big Co. overdrawn by $5. Big Co. anticipates an inflow of cash that will make the balance in its account positive by the end of the day. The monetary service company allows Big Co. to overdraw its account during the day as a service that permits Big Co. to hold an end-of-day balance that is small, relative to

the dollar value of transactions that flow through its transactions account.

Major banks in the United States have developed systems to track the demand deposit balances of their business customers throughout the business day, and those customers that the banks consider to have good credit ratings are permitted to overdraw their demand deposit accounts during the day, as illustrated for Big Co. in Table 4. Bank credit officers are actively involved during the business day in determining which customers may overdraw their accounts, and by how much. Freedom to temporarily overdraw demand accounts gives customers greater freedom in cash management than would be available under a requirement of no intraday credit.

The monetary service company assumes credit risk by allowing Big Co. to overdraw its demand account at noon. At that time, the sum of cash and securities ($93) is less than the $95 of transactions balances of other customers. If Big Co. never repays the $5 overdraft, the monetary service company fails, and the government loses $2.

One obvious solution would be to forbid customer overdrafts at monetary service companies. That prohibition, however, would be almost impossible for the FDIC to enforce. And if, somehow, the FDIC could enforce a prohibition on overdrafts of customer transactions deposit accounts, that change would have a major impact on the nature of business cash management.

Suppose the FDIC concludes that it is not possible or appropriate to prohibit customer overdrafts at monetary service companies. How can the FDIC protect itself from exposure to losses? Perhaps the management can convince the FDIC that it uses a system that permits overdrafts only by customers of the highest credit rating, and that its capital is more than adequate to cover any losses. Such analysis by the FDIC, however, sounds like traditional bank supervision, and the narrow banking proposal was supposed to make traditional bank supervision unnecessary.

A monetary service company that offers foreign exchange services would assume credit risk not evident from these balance sheets. I assume that monetary service companies would engage in foreign exchange transactions, since foreign exchange is an important aspect of the payments system, payment from one currency to another. A company active in the foreign exchange market would have outstanding transactions to settle tomorrow, the next day, and so on into the future. If, for some reason, the FDIC took possession of this monetary service company today, would it make the payments tomorrow that would be necessary to settle the foreign exchange transactions? I think it would make those payments, because of its commitment to protecting the operation of the payments system.

There are risks to the FDIC in assuming responsibility to settle the

foreign exchange transactions, and yet the monetary service company provides no collateral to cover that risk.[3] Perhaps the monetary service company and the FDIC could come to terms on the amount of additional collateral it would hold to cover the risk inherent in settling foreign exchange transactions. The company would finance the addition to collateral by issuing more capital or uninsured debt. To determine the appropriate amount of additional capital, the FDIC would assess the nature of management practices in conducting foreign exchange transactions and choosing counterparties. This, however, sounds like traditional bank supervision, and the narrow banking proposal was supposed to eliminate the need for traditional bank supervision.

Conclusion

This analysis eliminates Pierce's proposal as a winner, since it does not deliver what was promised: It does not protect the payments system, eliminate government risk, and eliminate the need for supervision by government agents of the credit risk assumed by banks. This leaves me again with the first three candidates as possible winners. The options are as follows:

(1) Greater authority and responsibility for bank supervisors to use their judgment in dealing with banking risk (Randall proposal);
(2) A system for the enforcement of capital requirements that is not much different from what we have now (Benston proposal); and
(3) Coinsurance (the Rolnick proposal).

My chosen winner among these options is the coinsurance proposal. That proposal would enhance market discipline of banks, because it would change the options of supervisors in ways that make a complete bailout of the uninsured depositors of large banks less likely. If supervisors have to choose between liquidation of one of our largest banks, under the current limits on deposit insurance coverage, and a bailout of uninsured depositors, the supervisors will tend to choose the bailout. Liquidation would be too disruptive. Closing a bank with a high percentage of all deposit accounts covered by deposit insurance would be less disruptive to the banking system than liquidation under current limits on coverage. Coinsurance changes the options of supervisors in a way that makes the choice of the bailout less likely.

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[3] See Gilbert (1992a) for an analysis of the risk assumed by banks in settling foreign exchange transactions.

References

Gilbert, R. Alton. 1991. "Supervision of Undercapitalized Banks: Is There a Case for Change?" Federal Reserve Bank of St. Louis *Review* (May/June), pp. 16–30.

———. 1992a. "Implications of Netting Arrangements for Bank Risk in Settling Foreign Exchange Transactions." Federal Reserve Bank of St. Louis *Review* (January/February), pp. 3–16.

———. 1992b. "The Effect of Legislating Prompt Corrective Action on the Bank Insurance Fund." Federal Reserve Bank of St. Louis *Review* (July/August), pp. 3–22.

———. 1993. "Implications of Annual Examinations for the Bank Insurance Fund." Federal Reserve Bank of St. Louis *Review* (January/February), pp. 35–52.

Randall, Richard E. 1993. "Lessons from New England Bank Failures." *New England Economic Review*, May/June, pp. 13–38.

General Discussion

*Summarized by Richard E. Randall**

Introductory Remarks by the Moderator

Federal Reserve Governor John P. LaWare began the discussion by offering some deliberately provocative statements to stimulate debate.[1] Noting that discussions of banking reform have tended to focus on the issue of deposit insurance and its effects on the banking system, he described deposit insurance as arguably the most negative legislative blow ever struck at the banking system. Deposit insurance provided the rationale for the subsequent overregulation of banks and their use by Congress for social goals. The original purpose of deposit insurance, to protect solvent banks from the contagion of consumer runs on insolvent banks, was well served; and no taxpayer money has ever been lost as a result of problems in the commercial banking system. However, the sorry spectacle of the thrift debacle prompted Congress to impose greater constraints on the commercial banks.

Governor LaWare sees the Federal Deposit Insurance Corporation Improvement Act (FDICIA) and its provisions for early intervention and prompt corrective action as the culmination of the trend toward overregulation. In an environment of vocal vilification of the concept of "too-big-to-fail," orderly and less costly resolution of failing banks was made more difficult, while Draconian recovery programs were imposed on struggling banks.

Governor LaWare posed the following questions:

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[1] Governor LaWare made it clear that he was speaking for himself and not the Federal Reserve Board.

- Does deposit insurance foster moral hazard? Is risk-taking in the banking system greater than it was before deposit insurance?
- In connection with Richard Randall's proposal, how do we determine concentration limits? Is concentration per se the real problem, or is it the relaxation of pricing and terms on loans that is needed to increase market share?
- Are banks runs truly a thing of the past? LaWare noted that the proximate cause of closing Bank of New England was a run by *insured* depositors that depleted deposits by over $1 billion in a day and a half.
- Is a policy of too-big-to-fail inappropriate where failure would destabilize the financial system and impair the viability of other institutions? What is wrong with resolving failed banks with purchase and assumption transactions, which protect the large depositors, if it makes for a more orderly resolution of the banks?
- Would the integration of banks, securities firms, and insurance companies in financial service holding companies or even in universal bank structures tend to protect or further expose banks?

What limits will markets put on capital? Everybody makes the observation that if we just had more capital we would not have to worry. In the 1920s, the average capitalization of the commercial banks in the United States was between 12 and 15 percent of assets. Nonetheless, in 1924 in the midst of a developing boom economy over 600 banks failed. Capital alone is not the final answer. How far can we go in mandating higher capital standards? Demands for returns on capital are a limiting factor, so will not the market ultimately decide how much capital a bank can have?

Governor LaWare also invited comment on his own proposal to eliminate moral hazard: make deposit insurance voluntary on the part of the depositor. Depositors could buy as much insurance as they think necessary to protect their accounts, but they would pay the premiums directly. The premium would be "risk-based," reflecting the condition of the bank. The market would soon impose its discipline on bank managements, because deposits would move out of banks with poor condition ratings.

Bert Ely, banking consultant, questioned Governor LaWare about the possibility that with voluntary deposit insurance, "free rider" depositors in large banks deemed too-big-to-fail would let others pay insurance premiums, while they relied on the assumption that they would have time to bail out when a serious problem arose. The governor's response was that the failure of a reasonably large bank, with uninsured depositors taking losses, would end such behavior.

Summary of the General Discussion

The following is a summary of the general discussion as well as the question periods that followed each presentation. The material has been organized under subject headings, and comments are not necessarily in chronological order.

Financial Cycles and Bank Asset Concentrations

Lynn Browne of the Boston Fed raised the question of whether the equivalent of the LDC lending situation could take place in the future. How likely is it that several of the largest banks will make the same bets, as suggested in Randall's paper? She cited examples of many banks racing into the same activity, suggesting a type of herd mentality could occur again. She noted that her concern was for areas of concentration involving several banks, rather than a particularly high concentration involving only a single bank.

John LaWare reinforced this point, citing the current scramble by so many financial institutions into consumer finance. He deplored the emphasis put on market share, with the consequence that credit standards are lowered. Bert Ely saw the herd effect most clearly with regard to financial markets generally, with assets moving outside the banking system in part because of constraining bank regulations.

Alex Pollock of the Federal Home Loan Bank of Chicago cited Charles Kindleberger's work on financial crises as evidence that we do not have long to wait for the next one. The risks in banking are substantial and largely opaque to the public. But if banks were required to fully disclose all risks in some detail, they would soon divide their assets and corresponding liabilities into risk classes. The result would be what Jim Pierce calls a functional bank but Pollock prefers to call collateralized money. Richard Aspinwall of Chase Manhattan Bank, on the other hand, asserted that the process of securitization has already made banks less opaque with respect to risk characteristics. It remains to be seen, however, whether supervisors have the resolve to react promptly to capital deficiencies.

Robert Listfield of BEI Golembe referred back to Randall's paper and the evidence that five separate events within a decade caused about two-thirds of the failures of U.S. banks (as measured by assets). Listfield was concerned, not about isolated random failures, but about times when systemic risks threaten large segments of the banking industry or other key financial industries or markets. Coinsurance would not have inhibited lending in the boom phase of the New England cycle, but it would have produced a major flight of deposits to banks in a stronger region, once the New England banking problems surfaced. Banks are special because they can either contribute to the health of an economy or

destroy it. Countercyclical actions can help, but the rules of FDICIA, tied as they are to capital ratios, can destroy the banks they are designed to save. We can expect more such cycles in the future, and we must smooth the peaks if banks are to have a soft landing when the cycle turns.

LaWare questioned whether this was the responsibility of the supervisors or the bankers. Listfield replied, again using New England as an example, that bank supervisors should have developed the evidence that the market was moving into a feeding frenzy in commercial real estate development. They should have been more proactive in stopping this activity, not because of the actions of any one bank, but because a collection of institutions were moving in a direction that jeopardized them all. Individual banks cannot see the broader picture that is visible to the supervisors—if they are looking for it.

Genie Short of the Dallas Fed noted that in the early 1980s, the large Texas banks were funded through Euromarket CDs issued under lines of credit provided by New York banks, whereby the contract became null and void overnight should the borrowing bank use the discount window. With this safety valve, the New York banks did not require higher rates despite the obvious energy problems of the Texas banks. This broken link between those taking the risk and those paying for it enabled the Texas banks to move aggressively into the real estate market.

Robert Eisenbeis of the University of North Carolina suggested that highly improbable events sometimes happen and damage banks. Just because such events occur does not necessarily mean that the market failed to identify and price the risk. He questioned whether we should try always to have systems in place to prevent such unlikely events. George Benston of Emory University ran through the list of recent financial cycles that caused bank failures and concluded, with hindsight, that they were all predictable. But it would be very difficult to persuade market participants that they were being foolish for supporting booming activities. One answer is diversification, because you do not know where the next hit is coming from; you just know it will come. Another answer is to have enough capital to absorb the loss.

Frederick Furlong of the San Francisco Fed puzzled over the question of whether something inherent in the nature of banks draws many of them to the same risky areas. They shun diversification, for some reason. One explanation for this herd instinct is that banks know that if they all get in the same trouble at once, they will be protected. Bert Ely suggested that the bankers were acting rationally, for regulated institutions. Business strategies in unregulated industries focus on differentiation. Until we get away from one-size-fits-all regulation, we will continue to see the herd effect. Richard Randall of the Boston Fed suggested that more intensive competitive pressures on banks in recent years had much to do with so many banks focusing on the same risky activities.

Supervisory Intervention against Certain Asset Concentrations

Richard Randall was questioned by some participants about how to distinguish dangerous asset concentrations, how bank supervisors were defining concentrations for FDICIA capital provisions, and how supervisors could pursue an interventionist policy in the face of political pressures or when supervisory actions were curtailing bank profits. Randall stressed that the delineation of potentially harmful concentrations was too complex to be reduced to a formula for capital adequacy purposes, and Edward Ettin of the Board of Governors staff confirmed that the regulatory agencies had not been able to do that. Randall argued that some asset categories are inherently riskier than others and that we must be particularly concerned about concentrations in these types of assets, construction and development loans being an obvious example.

Lending terms and underwriting standards are also important, but more difficult to monitor than concentrations. When a bank that has never had more than 3 percent of loans financing construction and development suddenly has more than 25 percent, as often happened in New England in the 1985–89 period, it is time for some supervisory involvement, Randall declared. Some concentrations in banks with long-standing niche lending situations might be tolerated, while they would be inappropriate where many banks are competing for assets with the same type of risk. Supervisors need to identify the more important risk concentrations and then examine the underlying economic factors that will govern the risks in these areas in the future.

Jane D'Arista of Boston University's Center for Banking Law commented favorably on Randall's proposal, but preferred quantitative lending constraints to the kind of flexible decision-making on the part of supervisors called for in his paper. She suggested borrowing from the macro prudential policies of European central banks two decades ago, where specific sector limits were set. Banks then would have to convince supervisors that they could safely exceed such limitations. She also cited the rapid growth in derivatives as an area of concentration risk that should receive close attention.

Philip Bartholomew of the Office of the Comptroller of the Currency acknowledged that we live in a world of cycles and speculative bubbles, and that we need to learn to supervise banks in that context. This involves a different supervisory posture when bubbles are inflating than after they burst. Bartholomew believes the agencies can develop appropriate measures of concentration, but questioned how the supervisors are to convince the management of overconcentrated banks to back off, at a time when cash flows are strong and the herd mentality prevalent. Randall indicated that one approach could be speeches by agency heads and other forms of "jawboning." His preference, however, is for direct pressure on the most concentrated and aggressive banks—a shoot-the-

leaders approach. This would involve senior supervisory officials accompanying examiners to meetings, first with senior bank management and then with directors. Interagency cohesiveness among the regulators would be essential. While a little pounding on the table may be necessary, most banks will acquiesce. If they do not, supervisors will have to have the authority for formal enforcement action. Supervisors should have well-developed and coordinated policies, procedures, and training programs. Their policies, as well as the history of the recent boom and bust cycles they are reacting to, must be generally understood by the industry, the Administration, and the Congress.

Relevance of the Thrift Experience

John LaWare suggested that recent problems in depository institutions stemmed in large part from the regulatory environment. This was particularly true of the thrifts, which existed in a highly protected environment until they were thrust into a new environment without a clue as to how to respond. Richard Syron, President of the Boston Fed, questioned whether the thrift industry problem has implications for the Federal Deposit Insurance Corporation (FDIC), since thrift behavior and regulation differed significantly from that of banks. George Kaufman, from Loyola's College of Business, put much of the blame on regulatory forbearance, which FDICIA was designed to combat.

James Pierce of the University of California at Berkeley sees at least one lesson in the savings and loan debacle. The thrift industry had lost its economic function, but the government tried to keep the resources in that industry through increasingly desperate methods. This introduced great moral hazard and fostered the entry of new participants into the industry, including many contractors. Now banking is losing its economic function as others provide traditional banking products just as cheaply, yet the government is continuing to restrict the powers of banks and bank holding companies. We must not replay the savings and loan problem with the banks. The thrift industry repeatedly said that not one dollar of taxpayer money had been spent in backing its deposit insurance fund. In the same vein, the full faith and credit of the government is behind the FDIC. That has value so, in that sense, taxpayer money is being used to support the banks.

Randall noted again that the banking industry absorbs deposit insurance losses. Taxpayer dollars would become involved only when the whole banking system was so weakened that it could no longer absorb the losses. This occurred in the thrift industry, but it is not the case with the banking industry. Bert Ely challenged Pierce's comparison of banks to thrifts, which he characterized as a disaster waiting to happen. Ely does not see the banking function as dead or obsolete, but asserts that it is being strangled by government.

The Federal Deposit Insurance Corporation Improvement Act (FDICIA)

George Kaufman spoke in defense of FDICIA. He indicated that in selling to Congress the concepts of early intervention and prompt corrective action, his intent, and that of other members of the Shadow Financial Regulatory Group, was to codify what supervisors should be doing. He noted that they had been doing the right thing 90 percent of the time, but that lapses had occurred. He cited Penn Square Bank and Bank of New England as examples of lapses that necessitated making appropriate actions mandatory. He is disappointed in the supervisory response; the proponents thought at the time that supervisors would welcome the law to deflect political or industry pressure to forbear.

Kaufman noted that the Act is having the intended effect: uninsured depositors took losses in only 10 percent of failures in 1991, 50 percent in 1992, and in 1993 to date, nearly 100 percent. The signal is filtering through to the market. Capital ratios have improved tremendously, partly because of economic conditions conducive to profitability, but also because of market discipline. According to Kaufman, the experience cited by LaWare of numerous failures in the 1920s of banks with high capital ratios involved mostly very small banks. It is rare for economic capital to be depleted quickly, so strong capital ratios are very important. Kaufman is disappointed that supervisors specified such low capital thresholds in carrying out FDICIA provisions.

LaWare responded that supervisors like the additional authority to close banks before they become insolvent. The problem is that often they have little choice but to close banks when their capital gets down to 2 percent, even when they can be resuscitated.

Richard Syron argued that earlier closure of Bank of New England would not have reduced the loss to the FDIC. Kaufman responded that prompt corrective action is intended to prevent firms from getting into Bank of New England's condition in the first place. Syron replied that to do that, one would have had to focus on loan concentrations, because if one focused on capital ratios, intervention would have come quite late.

George Benston argued for greater disclosure so that the public can decide when loan concentrations become unreasonable. In addition to loan concentration numbers, he advocated disclosing banks' CAMEL ratings.[2] Richard Randall pointed out that commercial real estate concentrations were publicly identifiable from bank condition reports in each of the regional real estate cycles of the 1980s. Also, the CAMEL

[2] Bank supervisory ratings based on Capital, Asset quality, Management, Earnings and Liquidity.

ratings did not reflect the developing problems until about the time that they were reported in the newspapers.

Bert Ely suggested that higher capital standards increase the incentive to securitize lower-risk assets, thus increasing the proportion of higher-risk assets on bank balance sheets. George Benston replied that investors, particularly acquirers of subordinated debt, will price the risk and thereby influence the level of risk-taking bankers choose. Benston would like to see capital requirements as high as 15 to 20 percent of assets.

Hal Scott of Harvard Law School questioned imposing much higher capital ratios on U.S. banks as compared to Japanese banks. Benston cited the NAFTA debate, arguing that U.S. consumers should not subsidize U.S. banks (by tolerating lower capital ratios) so that they can compete with foreign banks that are being subsidized by their taxpayers.

Paul Horvitz of the University of Houston argued for the strict rules of FDICIA, indicating that forbearance seldom works. He acknowledged that two or three of the largest banks in the country might have been closed in the 1980s, had FDICIA rules been in place, but he suggested that with clear rules, the banks might not have gotten into such a situation. He cited congressionally mandated forbearance by the FDIC on about 300 banks in the mid 1980s, expressing the view that the agencies did not do well in selecting banks likely to recover if given more time.

John LaWare objected to the word "forbearance": the use of supervisory discretion by the banking agencies is clearly distinguishable from the notorious regulatory forbearance of the savings and loan problem. He stated that without the leeway to deal with the LDC crisis in the way that we did, we would have experienced a much more serious financial crisis. Imposition of write-downs on LDC loans in 1982 and 1983 on the basis of perceived collectibility would have wiped out the capital of perhaps the 10 largest banks in the country.

Robert Eisenbeis argued that it was not valid to judge the FDICIA rules on the basis of what might have happened in a past situation, without considering the effect of penalties and potential consequences of risk-taking in averting the problem. He also referred to an earlier study by Allan Berger of the Federal Reserve Board staff that associated high profitability with high capital. Eisenbeis inferred that the profitability of Japanese banks currently is low because of very low capital levels.

Market Discipline

Hal Scott contested a statement by George Benston that uninsured depositors in U.S. banks do not take hits, noting that they did lose in the majority of failures in 1992. Benston speculated that in a future Continental-size failure the authorities would not allow depositors to take losses.

Edward Kane of Boston College recommended distinguishing be-

tween coinsurance and reinsurance and establishing when "too-big-to-fail" began to imply essentially unlimited deposit insurance. Arthur Rolnick of the Minneapolis Fed replied that this was so at least from the time of the Continental failure. Both Benston and Rolnick emphasized that the authorities should impose substantial "haircuts" on uninsured depositors in future failures of large banks.

Myron Kwast of the Federal Reserve Board staff reported that, based on surveys, the percentage of U.S. households with potentially uninsured bank deposits has risen from about 2 percent to over 5.5 percent in 10 years. While this suggests that the potential for market discipline has been increasing, Kwast recommended that we learn more about the characteristics of these uninsured depositors before relying on them for market discipline.

Hal Scott interpreted Kwast's report of increased holdings of uninsured deposits by households during a decade of severe banking problems as evidence of just how secure the current deposit insurance system makes people feel, and how much stability it provides the economy. He sees it as a warning that making radical changes in the system could be disruptive. Maybe these people are foolish for having kept their money in U.S. banks these past 10 years, but imagine the alternative, had they all decided to take their funds out. Rolnick responded that we must consider how the nature of uninsured depositors would change as we increased the likelihood of their taking losses. We have given too much security to depositors at the expense of the taxpayer; moral hazard must be taken seriously.

Subordinated Debt and Coinsurance

James Pierce elicited from George Benston assurances that subordinated debtholders would, in effect, be designated loss-takers for the purpose of stimulating market discipline. They would have no protection except the cushion provided by stockholders and covenants such as restrictions on dividends or the power to replace the board of directors. Philip Bartholomew noted that the market for subordinated debt of small banks is very limited.

Robert Eisenbeis sees little marginal benefit in terms of market discipline in having small depositors at risk. He noted the point made by Arthur Rolnick, that imposing heavy hits on larger depositors might simply tempt supervisors to keep large banks open. If this is indeed the case, then Eisenbeis suggested that this implies that the basic deposit insurance coverage is too low, not too high. Alton Gilbert of the St. Louis Fed argued that, with coinsurance, the bulk of the deposits are insured by the government-backed fund, and this implies government supervision. If this supervision proves to be so bad that large losses occur, it is not inappropriate for the government to be at risk.

The Risk in Functional Banking

Robert Eisenbeis questioned the wisdom of creating a riskless asset by providing full deposit insurance for transaction accounts in monetary service companies. We need some form of riskless asset in the economy, but why not let Treasury bills serve that function? James Pierce responded that his proposal accomplishes a great deal, including the elimination of the need for most supervisory functions by the creation of a federally insured money fund. Twenty years from now, consideration can be given to eliminating that government guarantee. While the functional bank would not totally be riskless, the risk can be priced and is therefore insurable.

Jane D'Arista suggested that, by acquiring commercial paper, the monetary service companies would be funding finance companies that make opaque loans in competition with banks (financial service companies under Pierce's proposal). The finance companies require credit enhancements on their paper from the banks, which currently benefit from deposit insurance. She asks who will coinsure in the future. Pierce is not concerned that private entities will coinsure each other. The monetary service companies will not be able to give credit enhancements. He considers these essentially liquidity enhancements, and notes the importance of access to the discount window.

In response to a question by Bert Ely, Pierce indicated that a financial institution that holds opaque loans was probably insurable, but the federal government need not be the insurer. No externality prevents the private funding of opaque loans. Hal Scott wondered what the functional banking scheme would do to the cost of credit for firms that currently borrow from banks. Pierce suggested that, on the basis of finance company interest rates and the downward trend in the volume of opaque loans, the implications for the cost of credit would not be great.

Hal Scott also raised the issue of potential failures of the "broader banks," or financial service companies in Pierce's parlance. They could experience runs in non-transaction accounts and average people would lose money, giving rise to pressure on Congress for a bailout. Robert Litan of the U.S. Department of Justice saw this as a lesser problem than a run on the commercial paper market. To avoid the small savers problem, financial service companies could be required to issue their liabilities in larger units, at least initially, so as to be funded by institutional investors.

Effects of Functional Banking on the Payments Mechanism

Under James Pierce's functional banking proposal, monetary service companies would hold all transaction accounts, fully insured by the

FDIC, but they would be allowed to take only very limited risks. Pierce envisions that such corporations not be allowed to incur daylight overdrafts. Alton Gilbert argued that you cannot just prohibit daylight overdrafts without making radical changes in corporate cash management.

Edward Ettin agreed with Gilbert but suggested that the risks of losses on daylight overdrafts are insurable. Pierce prefers to avoid having monetary service companies grant daylight overdrafts because the risks would necessitate regulatory review. For the same reason, he does not think such companies should be involved in settling foreign exchange transactions. Sheila Tschinkel of the Atlanta Fed reminded the group that all transactions are ultimately settled through the banking system.

Runs on Banks

George Benston asserted that the banking *system* is not dependent upon the confidence of depositors, even though individual banks may be. People are going to put their money somewhere. Even if they shift to currency, the central bank could offset such a move. It is only a run to gold that creates a problem.

George Kaufman worries about runs to currency by small depositors, and therefore he would limit coinsurance to amounts above some minimum level, say $10,000. The large banks do not need deposit insurance protection over $100,000, because large depositors will not run to currency. Large depositors impose market discipline, and the losses incurred in large bank failures have been very small. They would be still lower if troubled banks were closed before their capital reached zero.

The Lender of Last Resort

Robert Eisenbeis made the point that providing liquidity to banks through the discount window does not necessarily relate today to protecting the level of the money supply or to preventing sustained runs on institutions, but, rather, seems more related to protecting the flow of transactions through the payments system. Markets are becoming more global, and all transactions must clear against good balances. Government intervention in financial markets, such as occurred when Chrysler's problems led to concern about the commercial paper market, is a separate issue and not related to clearing specific transactions. James Pierce's functional banking proposal does not address this distinction between settling payments system transactions and meeting more fundamental liquidity needs.

Richard Aspinwall questioned whether the lender of last resort was truly accessible to large banks with liquidity problems in 1990 and early

1991. In this period of anxiety over bank solvency, large banks borrowing at the window would have been assumed to be in trouble and subject to runs.

George Benston questioned whether there should be a lender of last resort. Open market operations can deal with a systemwide liquidity crisis, while individual banks that cannot manage to borrow in the private market should be allowed to fail. If banks had that possibility to worry about, they would behave differently.

Private Deposit Insurance

Bert Ely's answer to a problem that affects many banks in a particular region at the same time is his cross-guarantee proposal, whereby the various guarantors price the risk for individual banks. Guarantors would have strong incentives to watch the whole financial marketplace through their syndicate agents, and they would price the option on their capital so as to promptly raise the cost of credit going into speculative bubbles. Ely noted that the private insurance proposal cannot be implemented until a critical mass of subscribers has been achieved. He also stressed that large institutions would be allowed to fail, even though one objective is to avoid destabilizing failures.

Richard Aspinwall thought that Robert Litan had not adequately presented the case against private insurance in his discussion. Several participants had already referred to inadequate capital in the banking industry, so the proposal to establish syndicates so that banks can insure each other sounds like a financial shell game. Also, enormous conflicting incentives would be created, whereby large banks would not criticize each others' practices for fear of return criticism. Risk would shift from the government to the private sector, but it would not stay there for very long.

Edward Kane argued that we need not and should not seek to pick a single device to rely on for bank safety. Private reinsurance, coinsurance, collateralized deposits, uninsured deposits, and subordinated debt could all contribute at the margin. He maintained that government supervisory efficiency could be substantially enhanced by assigning the first tier of depositor losses to a coinsuring private entity (a "surety"). This would put at risk an entity whose debt and stock values would depend squarely on capital-market estimates of the quality of bank supervision.

Kane noted that such private coinsurance is essentially a performance bond and that the bond need not be provided only (if at all) by syndicates made up of banks. Locating the proactive supervisory activities of bank examination and insurance eligibility in the private sector would put healthy pressure on federal regulators to better manage their second-tier risk exposure. Capital-market monitoring of surety debt and stock value would make more transparent the conse-

quences of politically or bureaucratically driven forbearance decisions. Kane saw promise in performance bonding over subordinated debt, because the bonding company would have its own supervisory force and receive better whistle-blowing information on risk-taking as a result of the regular interaction between the bonding agents and the banks.

A Concentrated Banking System

One of the discussants had complained that the symposium papers did not address sufficiently the subjects of interstate branching and broader banking powers. Randall observed that branching and expanded powers imply greater concentration of the banking or financial services industries. He stated that it would be prudent to develop a better understanding of financial cycles and ways to control them before adopting changes that would accelerate the trend toward concentration.

John LaWare challenged this view by citing a lower failure rate in such highly concentrated banking industries as those of Canada, England, and other large European countries. James Pierce would add Japan to the list but cautioned against drawing inferences from the bank mortality rates in these countries, because behind-the-scenes arrangements are made to keep the banks whole. He warned that in a highly concentrated banking system a very large troubled bank might be able to push the government around.

Calls for a Broader Focus

Jane D'Arista argued that the symposium papers focused too narrowly on only a part of the financial system, particularly with respect to financial guarantees. She noted that we have developed a broader system of guarantees relating to securities, insurance, and pensions in addition to bank deposits. She proposed that the government provide limited protection against the failure of financial institutions directly to each individual, by Social Security number, and allow the individual to decide how to allocate the amount. The limit might be $100,000 or some other number. In addition, all transaction balances at banks would be fully guaranteed.

Edward Ettin raised the possibility of a broader safety net, one that might to some extent encompass the life insurance, securities, and pension industries. He noted that deposit insurance is constantly in the way, creating moral hazard, ensuring that future calamities involving banks will arise, and conflicting with allowing banks into new activities. Nonetheless, it is becoming more difficult to distinguish banks from other financial institutions, and Ettin is concerned that some of the problems that gave rise to the safety net for banks have shifted elsewhere. We should be thinking about the potential for systemic risk

arising from the activities of other financial institutions. This implies thinking about limited supervision and discount window access for certain nonbanks to minimize systemic risk concerns, but without extending the federal safety net or regulation unnecessarily.

In the context of the functional bank proposal, Myron Kwast is concerned not only about payments and settlement, but about the public good externalities of the financial intermediation function. He notes that this function is moving to all kinds of institutions. What remains in the banking system would be segregated from the narrow banks and normal access to the discount window. Kwast questions how you limit access to the discount window for functions considered important to the public interest.

James Pierce responded that you first have to address the argument that systemic problems can be handled with monetary policy. Systemic problems that cannot be handled in this way may be susceptible to the provision of ample liquidity through the discount window. He would have no trouble with lending to insurance companies in an emergency, as long as rules were well defined. This is consistent with the functional approach he advocated in his paper.

Arthur Rolnick suggested that the term systemic risk may be overused, calling attention to work by George Kaufman on the rarity of bank panics and the question of whether bank runs are good or bad. Rolnick asked whether failures of banks or other financial institutions represent market failures, and indicated that we should start talking about solutions only to the extent that they do. He doubts that we have seen a market failure in the insurance industry, and suggested that even in the banking industry, what occurred may have been less a market failure than something of a more political nature.

Relationship between Bank Failures and the Real Economy

Robert Eisenbeis suggested that we started out being concerned about the implications of systemic bank failures for the real economy, and now need to consider ways to protect the banking system from real sector problems. Bert Ely argued that feedback of the real economy to the banking system arose because a lot of mispriced credit flowed out of the banks, thrifts, and insurance companies into the real sector, causing overbuilding and speculation. Once the bubble burst, the problems came back on the financial system, so a circularity exists between banking and the real economy.

Philip Bartholomew observed that many bank failures have occurred recently in several foreign countries. Situations such as those in Norway, Sweden, and Finland amounted to the virtual failure of the whole system, and have created real problems in getting the economy back on its feet.

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