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THE TRUTH ABOUT BANK RUNS

George G. Kaufman

FEDERAL RESERVE BANK OF CHICAGO

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Bank runs have a bad reputation. A shout of "run" strikes the same fear into most of us as a shout of "fire" in a crowded room. We immediately get up and progressively walk, jog, and finally run to the nearest exit even before finding out whether it is a false alarm or how bad the fire may be. After all, it is better to be safe than sorry. Indeed, a shout of "bank run" may evoke even greater fear. Not only will depositors walk, jog, and run to the affected bank to withdraw their funds, but depositors at other banks that are not subject to the same bad news may also run on their banks. This may occur because bank runs are frequently viewed as contagious. If my neighbor's bank is in trouble, maybe mine is also. Thus, a run on one bank is frequently believed capable not only of causing that bank to fail but also of causing the failure of a large number of other banks nationwide in domino fashion and of destabilizing the financial system if not the economy as a whole.¹ This belief is not uncommon even among students of banking. For example, a recent article in the Banking Law Journal warned that

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Bank failures are no longer isolated and self contained.... Today's bank failure is a crisis failure -- a failure that will spread to other banks and financial institutions even during economic prosperity. The spark that ignites the flames of failure may still be grounded in mismanagement or fraud, but by the time the regulators douse today's fires, they will have ravaged the credit relationships of banks, businesses and individuals from coast to coast and, possibly, around the world.²

Somewhat earlier, at the time of the Continental Illinois National Bank crisis in 1984, Comptroller of the Currency C. T. Conover argued in defense of the policy of guaranteeing the par value of all deposits and other liabilities of the bank and holding company that if the

Continental had failed and been treated in a way in which depositors and creditors were not made whole, we could very well have seen a national, if not an international, financial crisis the dimensions of which were difficult to imagine. None of us wanted to find out....³

Indeed, for many Americans, the term bank run conjures up images of the Great Depression. As a result, official public policy has directed in recent years at preventing as much as possible all and any runs on depository institutions.

This paper examines whether the reputation of bank runs is deserved or whether they have received a bum rap. In the process, the paper analyzes the causes of bank runs; examines the implications of runs for the bank(s) directly affected, other banks, the financial system, the community, and the national economy; reviews the history of bank runs; and explores alternative policy prescriptions for eliminating the potentially harmful effects of bank runs.

I

Banks are depository intermediaries that borrow funds from lenders and lend them to borrowers. They do this more efficient-

ly than the individual lenders and borrowers can do on their own. Their profits are derived from the values added by transforming the denomination, maturity (or term to repricing), credit quality, and so forth of the securities sold to lenders or bought from borrowers and assuming the associated risks. Contemporary banks typically raise most of their funds by selling short-term fixed-value debt securities (deposits), many of which contain put options exercisable by the depositor at par at any time. They invest their funds in securities that generally are not fixed-value and do not contain put options exercisable by the bank at par at any time. Thus, the banks assume the risk that the market value of their assets may decline to or below that of their deposit liabilities.

To protect themselves against having to bear the risk of any loss, depositors, like any other creditors, will, in the absence of federal deposit insurance, both monitor the risk/return profile of their banks' asset and liability portfolios and the amount of capital (equity and subordinated debt) that they hold. The poorer the risk/return profile and the smaller the capital base, the greater is the probability that a shock may wipe out a bank's capital and that depositors may experience a loss if the bank is not recapitalized or liquidated as soon as the market value of its net worth drops to zero. It appears reasonable to assume that the greater the probability that depositors place on this occurring, the more likely they are to withdraw their funds at the earlier of the deposits' maturity date or exercise date of the put option. The earlier the depositor is able to withdraw the deposit, the more likely is the depositor to receive the full

amount on time. As long as the cost of transferring deposits is smaller than the value of the ongoing banking relationship, the rational depositor will pursue a better-safe-than-sorry strategy. If a large number of a bank's depositors simultaneously assigned the same high probability of potential loss, the bank would experience large simultaneous requests for deposit withdrawals, that is, the bank would experience a run.

Depositors, of course, could be correct or incorrect in their assessment of a bank's financial strength. The implication of the run both for the bank and for the depositors depends in large part on the correctness of the depositors' assessment.⁴ If the depositors underestimated a bank's financial integrity and ignite a run on an economically solvent bank, defined as a bank with assets having a current market value exceeding that of its liabilities, the major problem is that the bank is likely to require additional liquidity quickly to meet the deposit withdrawals successfully. It can obtain the necessary liquidity by borrowing (including the sale of new deposits), by selling assets, or by a combination of the two. If other banks, including those that gained the deposits withdrawn, believe that the affected bank is economically solvent, it is in their mutual interest to recycle the funds quickly at market rates of interest either by lending to the bank or by purchasing the bank's assets. If a central bank exists, it is also in society's interest for the bank to assist in the speedy recycling through appropriate use of the discount window or open market operations. In this scenario, the bank would not encounter a serious liquidity problem. The run will do little harm to the affected bank, other

banks, or the economy, although it would produce a relatively small social cost by increasing uncertainty and causing depositors to expend shoe leather on transferring funds.

In the absence of organized assistance from other banks or the central bank, the bank will be forced to tap the financial markets and may encounter liquidity problems. The less developed are these markets, the higher will be the interest rates at which the bank can borrow funds quickly and the lower will be the prices at which the bank can sell assets quickly. The adverse consequences of the bank run will be more severe. The affected bank may incur "fire-sale" losses, defined as the sale of assets at below the price they could be sold at given normal search time for the highest bidder or as borrowing at a higher rate than if normal search time were available, in obtaining the necessary liquidity in time. At some point, the bank may be driven into fire-sale insolvency, where for the moment the market value of its assets is less than that of its deposits, although this would not be true if assets were valued at equilibrium prices based on more normal search times. The liquidity problem has begotten a solvency problem, even if only a temporary one.

Unless such a bank is declared legally insolvent by the regulatory authorities as soon as it is economically insolvent, those depositors who ran fastest to withdraw their funds from the bank first would benefit most as they would receive payment in full. Those who ran slowest would be harmed the most as they would be unlikely to receive full or timely payment. Indeed, one of the major reasons for the bank to be declared legally insolvent as soon as it is economically insolvent is to ensure

that all depositors are treated fairly and are permitted to share alike in the distribution of the remaining assets. Such protection of creditors is the major rationale underlying the bankruptcy laws for nonbanking firms. In this scenario, a bank run could drive an economically solvent bank into economic, albeit fire-sale, insolvency. Losses will accrue to shareholders and possibly to depositors and uncertainty will be greater. Because the economic/social cost of appropriate public policy is smaller than the economic/social cost of requiring the institution to be recapitalized, sold, or liquidated, it would not be in society's best interests to treat a fire-sale insolvency in the same fashion as a regular insolvency. Thus, under most circumstances, a run will not drive an economic bank into economic insolvency.

If the depositors were correct in their assessment of the bank and it was insolvent on the basis of equilibrium market values so that it could not under current conditions expect to meet all its deposit claims successfully, the fastest depositors would again benefit relative to slower depositors until the bank were declared legally insolvent and closed. An open insolvent bank can continue to pay deposit claims as long as the bank has sufficient remaining assets to sell or can promise sufficiently high interest rates to attract new deposits. However, in the absence of federal deposit insurance, an insolvent bank could not be expected to borrow from other banks that were aware of its financial predicament and thereby would be endangering their own funds. Nor would the central bank enhance social welfare by providing the liquidity to maintain in operation an economically

insolvent bank which used the newly borrowed funds to pay the outflows to previous depositors. Although the run may increase the bank's losses by forcing progressively greater fire-sale losses from the sale of progressively less liquid assets, in this case the run is the result of the insolvency, not the cause.

The effects of a bank run on other banks and beyond depends upon the response of depositors to the new information about the financial condition of the bank or banks that gave rise to the initial run. Individual depositors have three choices when they withdraw their funds from the bank. They can:

1. redeposit at another bank that is perceived by them to be safer;
2. purchase a financial security or real asset that is perceived by them to be safer, e.g., a Treasury security; or
3. hold the funds in the form of currency outside the banking system.

Which of these they choose to do depends on their analysis of the situation. If depositors' fears are restricted only to the bank or small number of banks perceived to be in financial difficulties that may wipe out the banks' capital, they are likely to redeposit the funds immediately in other nearby banks that are perceived not to be affected by the same states of nature and thus to be in safer financial condition. The net result is primarily a transfer of deposits and reserves from Bank A to, say, Bank B with no change in aggregate reserves, deposits, and credit. This is not to imply that in this scenario simultaneous runs may not occur on groups of banks, particularly if they are

subject to the same actual or perceived market conditions. Regional contagion may occur. But this only involves a larger and more widespread churning of funds within the aggregate banking system. As long as depositors perceive some safe banks in which to redeposit, total deposits would remain basically unchanged and national or systemwide failure contagion may be ruled out. Some small contraction in deposits would occur if banks increased their excess reserves to protect themselves better against runs. Nevertheless, bank runs will not seriously destabilize the financial system. However, unless Bank A is able to regain the lost deposits quickly or is able to finance the deposit loss by the sale of investment securities, some loan customers may be forced to transfer to another bank and would be inconvenienced. Although the evidence is not strong, this cost may be expected to be relatively minor both in private and social terms.

If depositors question the financial viability of all the banks in their market area, they may use their deposits to purchase securities that they perceive to be safer substitutes, such as U.S. Treasury securities. In this "flight to quality" scenario, ownership of the deposits are transferred to the seller of the securities, who now has the option of keeping the balances in the buyer's bank, transferring them to another bank, or withdrawing currency. Because security transactions are likely to be larger transactions, the seller may be expected both to have a wider range of available banks and to be unlikely to want to hold the balance in the form of currency outside the banking

system. Except for drug trafficking, currency is basically used to finance smaller transactions.⁵

The wider the range of banks available to the seller of the security, the greater is the probability of finding a safe bank, and the more likely it is that the funds will be transferred from the buyer's bank to the seller's bank. This represents an indirect redeposit and is equivalent to the earlier direct redeposit scenario in terms of its effect on total deposits in the banking system. There will, however, be other effects. The demand for riskless securities will push up the price and lower the yield on federal government securities relative to private securities. This may reasonably be expected to discourage private investment without automatically increasing public spending. At the same time, the churning of deposits among banks may be expected to be greater than with direct redeposits. This will further increase uncertainty in the economy and reinforce any downward pressures on economic activity. In addition, it will also require increased recycling of funds by the deposit gaining banks and/or the central bank. But the costs of these effects are of a substantially smaller magnitude than those associated with nationwide systemic bank failures.

If depositors and sellers of safe securities both fear the insolvency of all banks, they will not redeposit in other banks but will hold their balances as currency. The run is then not on one bank but on the banking system. The flight to currency is equivalent to a drain of reserves from the banking system and will both ignite a multiple contraction in money and credit and increase the number and seriousness of bank fire-sale insolven-

cies. In this scenario, unless offset by an injection of reserves by the central bank equal to the currency drain, the failures will be contagious nationwide, tumbling otherwise innocent solvent banks in domino fashion, breaking long-standing bank-customer loan relationships, destabilizing the financial sector, and adversely affecting aggregate economic activity. This is the feared crisis or panic scenario that is vividly spelled out in money and banking textbooks. The private and social costs of a system-wide run are very high and of justifiably great public policy concern. Nevertheless, the process by which runs on individual banks turn into runs on the banking system has only rarely been considered rigorously in the literature. Most writers do not seriously question that it occurs almost automatically and have accepted it as a matter of faith. For example, John Kareken has recently written:

...there is... [an] argument: that the failure of a bank, unlike the failure of any company not engaged in banking, has third party effects. I have always had difficulty with that argument; I have never been able to understand as well as I would have liked why there are third-party effects.... The third-party effects of a bank failure may be real or imagined. Whichever, there is reason enough for me to go on to how banks ought to be regulated.⁶

Unfortunately, the process by which and under what conditions runs on individual banks do turn into runs on the banking system are too important to be ignored. Likewise, the statement that the first automatically leads to the second is too important to be left to faith. They need to be analyzed carefully. It is evident that completely different public policies would be appropriate if runs on individual banks endanger the entire system than if they do not.

Which of the above three scenarios is most likely to occur depends on the nature of the initial shock that causes the loss of confidence in one or more banks and the institutional arrangements in place at the time. A review of U.S. history before the establishment of the FDIC in 1934 indicates that, at least, the national contagion scenario has not occurred very frequently.⁷ If a net currency drain is a prerequisite for such a scenario, then analysis of annual data suggests that it is likely to have occurred in only four periods -- 1878, 1893, 1908, and 1929-33 -- when currency increased relative to bank deposits concurrent with a decrease in total deposits (money). Further analysis suggests that nationwide bank contagion was probable in only two of these periods -- 1893 and 1929-33.⁸ In 1893, nearly 500 banks failed and between 1929 and 1933 the total number of commercial banks declined by 40 percent from some 25,000 to 14,000.

In the other years, the story was quite different. From the end of the Civil War through 1919, there were only eight years besides 1893 in which more than 100 banks failed and none in which more than 200 banks failed. This is despite there being about 10,000 banks by 1895, 20,000 by 1905, and 30,000, twice the current number of banks, by 1920. Indeed, the bank failure rate in this period averaged below that for nonbanks, although the annual variance was higher. Losses to depositors in the aggregate were also small. The FDIC estimated that such losses averaged only 0.20 percent of total deposits at all banks

annually, although individual depositors at failed institutions suffered considerably greater losses.

While the number of bank failures jumped sharply to near 600 a year in the 1920s, the failed banks were for the most part small agricultural banks in small towns in the plains states and had little impact on banks elsewhere or on the aggregate economy.⁹ Similar to today, most of these failures reflected the severe problems in agriculture from a continuing sharp decline in commodity and land prices after an even sharper runup. Ninety percent of the banks that failed in this period had capital of less than \$100,000, had loans and investments of less than \$1,000,000, and were located in towns of less than 5,000 in population. Even after adjusting for the sixfold increase in prices since that period, these were Ma and Pa banks by any measure and were unlikely to have been diversified greatly or managed professionally. It appears that much of the current fear of bank failures, at least in the United States, stems from the harrowing but rather unique experience of the Great Depression.

Although, until the 1920s, the number of bank failures was quite small, financial articles and history books are awash with stories of bank runs and document them convincingly. Thus it appears that bank runs did not automatically lead to bank failures. Indeed, a study for the American Bankers Association in the late 1920s was summarized by a reviewer as relegating "the run as a real reason for [bank] suspensions ... to a position of minor importance. It is found to be an effect of banking difficulties rather than a cause as a general proposition which is contrary to the fixed ideas of the public and even many

bankers".¹⁰ The evidence also suggests that the primary direction of causation was from problems in the real sector to problems in banking and not the other way around. That is, both bank runs and bank failures were the effect and not the cause of aggregate economic contractions and hardships.¹¹ This suggests that almost all bank runs were of the first two types, involving either direct or indirect redeposits. They did not develop into runs on the system. Nevertheless, because the accounts also tell of financial panics at the same times and losses experienced by shareholders and some depositors and loan customers of the failed banks, the bank runs were not harmless.

The reasons for the failure of the runs on individual banks or groups of banks to lead, with only infrequent if any exception, to runs on all banks, despite the absence of an FDIC, appear to be explained by the combined effect of greater market discipline on bank management and more timely closure of individual banks when they became economically insolvent. Both of these effects served to put banks in shape to weather most runs successfully. With all their deposits at risk, depositors had greater incentives to be concerned about the goings-on at their banks, to monitor their operations more carefully, and to exert discipline by either withdrawing their deposits or charging a higher interest rate for them if the banks' portfolios became too risky or their capital bases too small. The very threat of a run served as a powerful source of market discipline. At the turn of the century, capital ratios at banks were close to 25 percent and effectively even higher as shareholders at national banks and some state banks were subject to double liability up to the

initial par value of the shares so that there was ex-post settling up in case of losses at failed banks. The data suggest that, although they were not fully effective, assessments were made on shareholders of failed banks and at least some funds were collected. The inability to pursue shareholders across state jurisdictions appears to have been a major barrier to fuller collections.

Nevertheless, the threat of such assessments probably provided greater incentives for shareholders to monitor their banks and exert pressure on management to operate prudently to avoid failure. They already had strong incentives to do so for two reasons. One, with higher capital ratios, shareholders had more of their own funds at stake and two, the relatively swift closure of failed banks did not give them a free second or third chance to recoup their losses using the depositors' funds.

In the absence of deposit insurance, knowledgeable lenders, including other banks, would not be likely to place their funds in banks they perceived to be economically insolvent. Indeed, they would act as quickly as possible to withdraw any remaining funds that they may have had on deposit at such a bank. Under these conditions, it did not take long for the bank to fail to meet a payment either by running out of currency or by not meeting its end of day debt to the clearing house. The bank was forced to suspend operations and subject itself to examination by the authorities to determine whether it was illiquid but solvent (defined to include satisfying minimum capital requirements) or illiquid and insolvent (or solvent but with less than minimum required capital). If the former, it was permitted to reopen.

If the latter, it was required to recapitalize itself or be liquidated. Thus, liquidity served as an effective constraint to the continued operation of economically insolvent institutions.¹²

A recent book by Lawrence White on banking in Scotland in the first half of the 1800s is of interest with respect to the importance of capital to banks and bank customers.¹³ Bank shareholders were subject to unlimited personal liability. For example, when the Fife Bank failed in 1829, each holder of a 50 pound sterling share was assessed 5,500 pounds. In effect, the shareholders were general partners. This served to protect depositors and greatly diminished the incentive for bank runs. Bank failures and panics were infrequent and, when they did occur, losses to depositors were insignificant. White quotes one contemporary observer as saying "a run upon any bank, such as happens in England sometimes, or a panic, are terms the meaning of which is hardly understood in Scotland."¹⁴

There is also evidence that depositors and noteholders in the United States cared about the financial condition of their banks and carefully scrutinized bank balance sheets. Arthur Rolnick and his colleagues at the Federal Reserve Bank of Minneapolis have shown that this clearly happened before the Civil War.¹⁵ Thomas Huertas and his colleagues at Citicorp have demonstrated the importance of bank capital to depositors by noting that Citibank in its earlier days prospered in periods of general financial distress by maintaining higher than average capital ratios and providing depositors with a relatively safe haven.¹⁶ Lastly, an analysis of balance sheets suggests that banks took, at least, less interest rate risk before the

establishment of the FDIC. Although some short-term loans were more or less automatically rolled over at maturity, they were repriced at the new market interest rate, making them equivalent to floating rate loans.¹⁷

The incentive structure for market discipline by private parties appears to have worked reasonably well. Many banks were in a condition to survive runs when they occurred through the sale of liquid assets and/or borrowing from others, including other banks that believed in their solvency. The recycling of funds from deposit gaining to deposit losing banks was generally undertaken under the leadership of the local clearing house, which had a strong and direct stake in the survival of its member banks.¹⁸ This facility acted to save solvent but illiquid banks and to prevent a run on one bank from setting off runs on its other member banks. In case of a run on one of its member banks, the clearing house examined the bank and if it determined the bank to be solvent arranged for loans from the other member banks. It also published the current balance sheet of its member banks in the aggregate to publicize their solvency and ability to satisfy all claims in full and on time. In emergencies, banks would suspend converting deposits into currency or specie (and earlier currency into specie), although they continued to provide all other services, including making loans. At these times, the clearing house would often issue certificates on itself to its member banks to assist in the clearing process and, on occasion, also issued certificates in small denominations for its member banks to distribute to the public as a temporary replacement for currency. In this way, solvent banks were provided with time to

work out their liquidity problems and avoid fire-sale insolvencies. The evidence strongly suggests that the clearing houses were successful more often than they were not.¹⁹

Indeed, their very success appears to have been a major contributor to their decline, the establishment of the Federal Reserve System, and, ironically, to the most costly failure of the banking system. Although the clearing houses performed well, some of their actions, such as the distribution of certificates, were technically illegal but undertaken with the tacit approval of the authorities. This made some parties uneasy and they preferred a completely legal and aboveboard process. At the same time, because the financial system did not work perfectly and runs occurred that, although not necessarily nationally contagious, were highly visible and did induce significant social and private costs, ways were sought for improving the structure. This finally resulted in the establishment of the Federal Reserve System to serve as a national clearing house. The system was intended to expedite the recycling of funds to banks losing deposits as a result of runs from banks gaining the deposits by having direct access to the reserves of all banks in the country and to issue legal certificates in the form of currency. The liquidity role of the clearing houses at the time of crises was thereby transferred to the Fed and the houses restricted their operations to the mechanics of clearing and paying interbank claims in the normal course of business. Contrary to expectations, the Fed, in part because it did not have the same direct incentives as the clearing houses to maintain the solvency

of the banks, failed to perform as well as the clearing houses in dealing with the bank runs from 1929 through 1933.²⁰

III

In the pre-FDIC scenario described above, bank runs had both good and bad effects. The good effect was the strong market discipline exerted on bank management to steer a prudent course and to avoid the substantial penalties for failure. The bad effect was their potential for contagion and damage to other innocent banks, the financial system and the national economy. The costs of any severe crisis, however infrequent, are great enough that, the perceived immediate benefits from preventing a recurrence dominate, at least at the moment, the costs of distorting incentives that may have their unfortunate effects some time in the future. Thus it was with the introduction of FDIC in 1934. The bad effect of bank runs was effectively removed. But, less visibly, the good effects were significantly weakened. It is only in recent years, when the economic, institutional, and technological environments combined to reduce the costs and increase the payoffs for risk taking, that the implications of the distortion in incentives became generally visible.²¹ On net, it appears that bank runs do not deserve the bad reputation they have received. They did a dirty job in maintaining market discipline. But someone had to do it! Eliminating dirty jobs per se does not eliminate the problems that give rise to these jobs.

In today's environment, the market discipline problem is still there. The authorities have been unable to develop clean ways of dealing with it effectively and are unwilling to assume

"dirtier" ways. As a result, because the consequences of the distortion introduced by deposit insurance have become so costly in dollar terms, the authorities have preferred to delay recording the costs in the hope that conditions would reverse and the costs decline or disappear. Economically insolvent institutions were not closed and near-failed institutions were not required to recapitalize. But the incentive structure was not changed. As a result, the strategy of buying time has been, on the whole, counterproductive. Although it is not difficult to look back over time and to point to occasions where insolvent or near-insolvent institutions have improved their performance substantially when given additional time, this does not imply they can do so on average in the future. If one assumes that markets are efficient and impound the consensus of all available current information, there will be close to a 50-50 ex-ante probability of an independent event improving or worsening a bank's performance.²²

Moreover, because the penalties for failure have been postponed, and thereby weakened, the bank is likely to take greater risks than otherwise and the odds of success become even less favorable.²³ Thus, such a policy served primarily to increase further the unbooked but very real losses accrued. In light of the large number of recent failures of depository institutions and the large associated losses, whether booked or not, which are estimated to exceed \$30 billion for savings and loan associations alone, changes in public policy are urgently required to protect the safety and efficiency of the banking system and to reduce the cost to the insurance agencies directly

and the U. S. Treasury and taxpayer indirectly. These changes need to correct the distortions in the incentive structure for risk taking introduced by the current structure of federal deposit insurance. Delay in reforming the system will only increase instability and the associated costs further.

IV

As noted, and as is well known today thanks to previous research, the present structure of deposit insurance changes the incentive structure of insured depositors in ways that increase the basic exposure of individual depository institutions, increase the likelihood of losses by the insurance agency, and decrease equitable treatment of institutions in the payment of insurance premiums.²⁴ It does so in three ways.

One, insurance of any type makes the insured unintentionally somewhat less careful because the costs or penalties from loss are perceived to be less than if uninsured. For banks, deposit insurance makes depositors less careful about evaluating and monitoring the financial integrity of their banks, at least up to the de jure \$100,000 maximum amount of the insurance, and thereby reduces the degree of market discipline that they exert. The increase in account coverage from the original \$2,500 in 1934 to the present \$100,000 and, in particular, the sharp jump from \$40,000 to \$100,000 in 1980 far exceed the magnitude of the increase that could be justified by inflation to protect a constant definition of "small" depositor. On the other hand, the increases in coverage made it easier and cheaper for larger depositors to divide up their funds among different institutions in fully insured chunks with or without the help of brokers.

What do depositors believe that banks that are paying up to 150 basis points above the national average on insured deposits are doing with their funds and why should they care? As a result, insured banks are less restrained in increasing their risk exposure and, with the help of technological advances, risk prone banks can expand quickly by attracting funds from beyond local markets.²⁵ It is unlikely that in the absence of deposit insurance commercial banks could operate with capital-asset ratios of only six percent and thrift institutions with ratios barely above zero.

Two, premiums for federal deposit insurance are a constant proportion of the total domestic deposits of the insured bank rather than proportional to the risk exposure of the institutions. Thus, risky institutions pay no more for the same insurance coverage than do less risky institutions. Because losses on risky opportunities are, on average, larger than losses on less risky opportunities, a flat rate premium structure results in inequitable treatment of insured banks. Moreover, because the expected revenue payoff on risky opportunities is greater than on less risky opportunities, while the cost of, at least, de jure insured funds to finance these ventures does not increase proportionately, the expected net income payoff will also be greater to the bank for risky ventures. This provides a strong incentive for insured banks to increase their risk exposures. As, by definition, few of the bigger bets are likely to pay off, the insurance agency is likely to absorb greater losses from the greater risk exposures of the banks. Before federal deposit insurance, riskier banks had to pay higher

interest rates for funding riskier ventures and the opportunity for higher net returns on such ventures was reduced.

Three, because depositors need not be concerned about the safety of their funds up to the de jure maximum amount insured, federal deposit insurance permits banks that are economically insolvent but not yet legally declared insolvent and closed to attract funds not only to meet deposit losses but to make additional loans and investments and to expand in size. Thus, the managers/owners of these institutions are able to continue in operation for an indefinite time and are likely to increase their losses further.²⁶ Indeed, they can use the newly attracted insured deposits to meet deposit outflows, interest on deposits, and even payrolls. This has been the experience of many insolvent savings and loan associations since the late 1970s. Before federal deposit insurance such operations were referred to as "Ponzi" schemes and viewed with disdain.

A recent study of the cost to FSLIC of all savings and loan associations that were merged with financial assistance or liquidated between 1982 and 1985 reported that the most important determinant was the delay between the date that an institution became insolvent on the basis of generally accepted accounting practices (GAAP) and the date that it was declared insolvent and closed by FSLIC. The average delay was almost five months and cost FSLIC about \$300,000 per month per institution.²⁷ Similarly, an article in the American Banker reported that it cost the FSLIC, on average, 15 percent of a failed association's assets in 1984 to close or merge it. In 1985, this figure had risen to 25 percent.²⁸

The article also described the deterioration in the net worth of a sample of the worst savings and loan associations that had been taken over by FSLIC and were being operated by a management appointed by and responsible to the Federal Home Loan Bank Board under a management consignment program in hopes of reversing their performance. They did not. The Sunrise Savings and Loan in Boynton Beach, Florida was liquidated in October 1986 about one year after it was placed in the program. During this period, its net worth declined from \$-38 million on \$1.5 billion of assets to \$-368 million. Similarly, the Southern California Savings and Loan in Beverly Hills experienced a decline in net worth from \$-57 million to \$-218 million on \$1.1 billion in assets in the one year ending June 1986 in which it was in the program. The Bell Savings and Loan Association in San Mateo, California had its net worth decline from \$-23 million to \$-257 million on \$1.4 billion in assets in about the same period. Two caveats are in order. On the one hand, the new management very likely recognized previously unbooked losses that should have been recognized sooner so that the initial net worth was overstated. On the other hand, the net worth data reported is computed on the basis of GAAP, which allows numerous procedures of dubious economic meaning that may have been used by the new managers to increase reported net worth above its market value or even tangible value.

In contrast, if institutions could be closed precisely at the instant that the market value of their net worth declines to zero, there would be no losses to depositors and therefore no losses either to the deposit insurance agency.²⁹ The term

"closed" is often misinterpreted. To the public, it conjures up images of physically boarding up an institution so that it disappears as a provider of banking services to the community. Financially, of course, closing a bank refers only to closing down the old shareholders and senior management unless they recapitalize the bank themselves. Recapitalization can also occur through sale or merger. Only if these alternatives fail will the bank be liquidated and closed physically. As a result, it is more accurate to use the term reorganized rather than closed.

V

Although the incentive-for-risk-taking problem arises from federal deposit insurance, abolition of federal insurance is not the solution. Some minimum federal deposit insurance, although not necessarily as great as \$100,000 per account, is necessary in the current political and organizational structure of the financial system, in which Federal Reserve actions are sufficiently uncertain, to preserve the stability of the system as a whole by eliminating the need for depositors to withdraw funds in the form of currency from all institutions simultaneously. That is, to prevent depositors from running on the system. Thus, reform of the insurance structure is the more promising approach. Most recommendations to date have dealt with attempting to correct problems one and two -- the moral hazard from insurance per se and the increased risk incentive from flat premiums.³⁰

The proposed solutions go in two opposite directions. One direction focuses on increased regulatory and legislative discipline to limit an institution's potential risk exposure.

The other direction attempts to rely on market mechanisms to achieve the same result more efficiently. To intensify the degree of market discipline exerted by depositors, these proposals have favored rolling back the de jure \$100,000 maximum deposit insurance or at least not increasing it further de facto or de jure. They note that for thrift institutions, where all deposits are in effect fully insured as almost are in denominations of \$100,000 or less, depositor market discipline is effectively nonexistent. To reduce the rewards to banks for risk taking, the market-oriented proposals suggest scaling insurance premiums (or capital requirements) to a bank's risk exposure. But substantial opposition has developed to both sets of proposals, which, regardless of the academic merits of the plans, have cast doubt on early implementation.³¹

Less attention has been focused on solutions to problem three -- the increased risk incentive from capital forbearance.³² If institutions were recapitalized, sold, merged, or, as a last resort, liquidated at the point that the market value of their net worths are equal to zero, the reductions in market discipline from both shareholders and depositors would be greatly counteracted and, therefore, the incentives for risk taking by the institutions greatly reduced.³³ Any such closure/reorganization rule would need to be both clearly enunciated and strictly enforced.

In addition, because, except for major fraud, losses to the deposit insurance agencies would be effectively eliminated because no losses accrue to depositors, timely reorganization/closure offers three further significant bonuses

that may increase its attractiveness and thereby its adoption. One, assuming the current structure of federal deposit insurance, the effective elimination of losses from bank failures reduces the need for insurance premiums other than for paying the FDIC's and FSLIC's operational expenses, including upgraded and more frequent monitoring of insured institutions and the development of accurate market value accounting systems. The authority to close banks should be transferred from the chartering agencies, which bear none of the dollar costs of delayed bank closures and frequently fear official recognition of a failure as a blot on their records, to the insurance agency, which bears the full cost of such hits.³⁴ The FDIC and FSLIC may then be viewed as unusual insurance firms that can determine the magnitude and timing of their own losses through controlling the outcomes of the insured events.³⁵ This makes it clear that federal deposit insurance is not really insurance but a guaranty. Thus, to the extent that insurance premiums are required and intended to be actuarially fair to cover the insurance agencies' expected losses, they need to be scaled to the difficulty of monitoring the activities of the bank and public policy with respect to the timing of closure rather than to the riskiness of the particular activities or the bank. Activity risk and difficulty of monitoring may or may not be correlated. This weakens the theoretical case for risk sensitive insurance premiums.³⁶

Two, the risk characteristics of banks would be unimportant. There would be little justification for regulating or legislating the nature of the activities in which banks may or may not engage solely on considerations of risk. Activity restrictions based

on other considerations, such as excess concentration, conflicts of interest, or the undesirability of bringing the activity under the surveillance of bank regulators, would remain. Nevertheless, to a large extent, many restrictions on bank activities have been justified on risk. These would include the Glass-Steagall prohibitions on full-line securities activities, insurance underwriting, and some nonfinancial activities. How much risk a bank wishes to assume could now be left up to its own management, who may be expected to be sensitive to the penalties for failure. Decisions to take portfolio risk are likely to be made on the belief that the bank's capital is sufficient, rather than on the belief that the insurance agency will cover any losses. Greater risk would be undertaken only with greater capital. Because of the difficulty of insulating a bank affiliate from other affiliates of a holding company, the more stringent closure rules would need to be applied to the entire holding company as well as to the bank affiliate. This would be the price paid by a holding company for access to federal deposit insurance for its bank affiliate.

Three, in measure because of the different dollar losses that may be experienced by the insurance agency and uninsured depositors, present closure policy does not treat all failed banks equally. Uninsured depositors at large failed banks are reimbursed at full regardless of a bank's condition, while those at small failed banks are frequently assessed losses related to the market value of a bank's assets. This policy has important inequitable competitive implications that are severely disadvantageous to smaller banks. By effectively eliminating

depositor losses, timely closure permits more equal treatment of banks regardless of their size, location, or nature of their business. No bank would be "too-large-to-fail".

As a result of the lower premium costs to banks, the greater freedom from regulation of bank risks and activities, and greater equity in treating banks in similar financial predicaments, timely reorganization may be more efficient and attract less opposition than either reductions in insurance coverage or risk sensitive premiums. The major opposition may be expected to center on 1) the application of a different, more stringent standard of insolvency for banks than for nonbanking firms, 2) the high cost of bank failure to the community, and 3) the difficulties in implementing market (current) value accounting and more frequent, almost on-line monitoring.

A nonbank firm is generally declared involuntarily bankrupt and remedies for creditors started when it fails to pay a major scheduled payment on time and in full. Economic insolvency, per se, is not generally considered sufficient grounds for creditors to file for involuntary bankruptcy and request remedies, although it may be for voluntary bankruptcy.³⁷ Thus, nonbank firms are permitted some time to continue to operate after they become economically insolvent. However, banks are different from nonbank firms in many ways and different and more timely failure resolutions may be justified, in part, as payment for one of these differences, namely federal deposit insurance.

As noted earlier, unlike the debt of nonbank firms, much of the debt (deposits) of banks contains a put option that is exercisable at par at any time at the discretion of the depositor

and much of the rest of its debt is very short term. Thus, in the absence of deposit insurance, attempts by some depositors to withdraw their funds as a result of concern over the bank's solvency, can result in immediate large scale demands from other depositors that the bank could not accommodate. Economic insolvency for banks is therefore only one inevitable step short of the necessary condition for involuntary bankruptcy for nonbank firms. Action to declare a bank in this condition legally insolvent can now be seen to represent effectively equal treatment for the two types of firms. However, it is counter-productive to permit banks to default if they do not have to economically. Rather, more timely failure resolutions based on market valuations that would in a noninsurance environment ignite the inevitable run and bring on the solvency crisis appear to be a cheaper and more efficient remedy.

Evidence that more timely closure reduces losses to creditors is quite strong. Until recently, the FDIC closed banks reasonably quickly after it became evident that the market value of their assets had declined below that of their liabilities and, except in the cases of major fraud, experienced minor if any losses.³⁸ In the absence of major fraud, the market values of banks are unlikely to decline abruptly overnight. Rather, they generally will deteriorate slowly through time and be able to be monitored reasonably accurately. Through 1931, losses at failed and swiftly closed national banks were estimated to be about 10 cents on the dollar, compared to 90 cents on the dollar at nonfinancial firms.³⁹ In a recent study of defaulted corporate bonds, Edward Altman estimated that the immediate loss in market

bond values from 1974 through 1984 was about 60 percent.⁴⁰ This is consistent with the loss ratios estimated by W. B. Hickman for the 1900-to-1943 period. These losses to creditors reflect the delay in initiating involuntary bankruptcy procedures for nonfinancial firms.

The fear of the high cost of bank failures is based on a belief that one or more of the following occurs: 1) failed banks are liquidated and disappear; 2) bank services are unique and even a brief interruption is exceptionally harmful to the community; and 3) failure of one bank can set in motion a domino effect tumbling other banks throughout the country and the payments system.⁴¹ The weight of available evidence suggests that none of these fears is justified. Liquidation of failed banks or any other type of firm is generally limited to smaller firms. The others are recapitalized, merged or sold, although some time in bankruptcy may be required to work out a least-cost solution for larger institutions. Recent proposals, some already implemented, for the FDIC to establish "bridge" or "trusteeship" banks would provide the necessary time for these banks. As already noted, the Federal Home Loan Bank Board operates failed savings and loan associations under a management consignment program until they can be sold or privately recapitalized.⁴²

But even liquidations do not necessarily indicate that a community is left without banking facilities. For example, between 1927 and mid-1932, near the height in the decline in the number of banks, less than 4 percent of the more than 10,000 cities in the United States with populations of 1,000 persons or more lost their only commercial bank, as did only 17 of the

nearly 1,000 cities with populations of 10,000 or more.⁴³ In more recent times, the number of savings and loan associations has declined by almost 50 percent from 6,200 to 3,200 in the 20 years between 1965 and 1985 and by 30 percent in the five years since 1980 alone. This is not much less than the decline in the number of commercial banks in the 1920-1933 period. Yet, there has been no major outcry by consumers about a loss of services. In large part, this may be explained by a sharp increase in the number of branches so that the total number of savings and loan association offices more than doubled from 9,200 to 20,300 between 1965 and 1985 and declined by less than 1,000 between 1980 and 1985.

A recent article in the American Banker analyzed the effects on communities of the closing of their only banks.⁴⁴ According to the author, the communities that lost their only local source of banking services in recent years were generally very small towns with populations of under 300 persons. These towns tend to be too small to support another independent bank or even a branch of a distant bank. The only bank's departure both was an inconvenience and led to reductions in revenues and even to the closings of neighboring business firms, generally retail shops. Consumers had to travel to nearby cities to obtain personal banking services and those who used to bank locally shopped less frequently at nearby shops. They transferred some of their business to shops nearer to their new banks. But these effects are hardly very different from the repercussions of the loss of a community's only movie theater, department store, or even supermarket. To provide local financial services in one of the

affected communities, eleven imaginative residents contributed \$100 apiece to form a local credit union. Within a year, the credit union had about \$700,000 in deposits, equal to 15 percent of the deposits at the old bank. In addition, business has picked up again at community stores and a few new stores opened. Capital forbearance is primarily forbearance for guilty or unlucky bank owners/managers rather than for bank customers.

There is also an additional indirect societal cost to carrying insolvent institutions. In a market economy, failure is the market's way of indicating that customers are not satisfied with the products offered by the suppliers at the prices charged. Economically insolvent suppliers of banking services are kept in business only through subsidies from the bank authorities. The welfare of the economy would be improved if the institutions were permitted to close and the resources were shifted elsewhere. Restrictions on exit are in effect also restrictions on entry and result in the misallocation of scarce resources.

Although banks at some earlier time may have produced unique liquidity and payments mechanism services by virtue of their charters, the availability of which has been restricted at least since the Great Depression, the recent dramatic advances in computer and telecommunications technology have effectively permitted anyone with a large computer system to offer similar services anywhere on short notice. In addition, different types of chartered financial institutions have been permitted to offer services previously restricted to only one type of institution. Surveys report that hardly any household now uses only one financial institution, that fully 60 percent use three or more,

and that more than 50 percent of small business firms use two or more.⁴⁵ Larger firms may reasonably be expected to use even more. Thus, failure and even liquidation of a bank is highly unlikely to leave many customers stranded.

As discussed earlier, the presence of federal deposit insurance, per se, has all but eliminated entirely the threat of nationwide bank failure contagion and multiple contractions in money and credit. Except for errors in public policy, bank runs will not drive an economically solvent bank into equilibrium insolvency nor spread to innocent banks. Although this is not discussed in this paper, bank failures are also not serious threats to a payments system that sufficiently restricts or prohibits daylight overdrafts. Similar to federal deposit insurance, Federal Reserve guaranty of each item entering its clearing process reduces the incentives for banks to carry sufficient clearing balances and capital. Computer breakdown, as in the Bank of New York example, is a much more serious threat. But even so, little research or evidence has been developed on the consequences of gridlock and unwinding transactions. Nevertheless, the regulatory authorities frequently issue statements that predict the end of the economy as we know it today if participants in the payments system defaulted. These statements are similar to those still made about the failure of large banks, e.g., the Continental Illinois Bank, despite the overwhelming evidence to the contrary reviewed above.⁴⁶ It is likely that one or a few hours' delay in payments will not cause all the lights in the world to go off!

This is not to argue that more timely closure is without costs or difficulties. Market value accounting is not easy, particularly for infrequently traded and nonfinancial assets.⁴⁷ Yet it underlies almost every proposal for reform. How is it possible for policy makers to evaluate the condition of a bank without an accurate statement of its accounts or for management itself to manage the bank systematically without such knowledge? To successfully map a plan of how to reach a target, one has to know where one is starting. Indeed, the use of book value accounting in banking was increased greatly by the bank regulators in the 1930s to deliberately mask the poor financial condition of the banks.⁴⁸ It continues to be used for this purpose today.⁴⁹

It is interesting to note that the increased reliance on book value accounting by banks corresponds with the decreased allegiance to the "real-bills" strategy for asset management. One of the major misconceptions the public has about banking is that one needs to have faith in his bank and banker.⁵⁰ Nothing can be further from the truth! Faith belongs in churches; good assets belong in banks. If the value of the bank assets are insufficient to meet its deposit liabilities in full and on time, those depositors who have the most faith will be the last to attempt to withdraw their funds and suffer the largest losses. If a banker asks depositors to have faith in him, they should transfer their funds quickly. Market discipline requires depositor skepticism, not faith. Depositor faith in banks only permits banks to assume greater risk exposure than otherwise. A recent study of failed savings and loan associations found that

losses to FSLIC from these institutions were greater the greater the institutions' net worth as computed according to GAAP and the even less meaningful regulatory accounting practice (RAP), but the smaller the net worth as computed on the basis of market value.⁵¹ Indeed, if intangible faith and trust were prerequisites for safe banking systems, government or industry self-regulation would be required both to establish the necessary conditions, including accreditation of managers, and to monitor compliance.

The market value of a bank's net worth may be obtained either directly from the transactions data for its stock or indirectly from assigning values to its assets and liability items, including off-balance sheet accounts, goodwill, franchise value, and other intangibles. The former method is both cheaper and more accurate. Unfortunately, the shares of only a small number of the largest bank holding companies are traded publicly. Thus, the introduction of market value accounting will occasionally require imprecise and arbitrary estimations and appraisals. However, although many bank assets and liabilities are not marketable and do not have a market price, a rapidly increasing number do as a result of both increased computerization of bank accounts and increased securitization of previously nonmarketable loans, e.g., residential and mortgage loans, automobile loans and business loans. There is even a thin market for LDC loans. Many larger business loan customers issue bonds. A proxy price can now be obtained for most bank assets.

Moreover, in practice market value accounting need not be perfectly accurate, but only closer to the true value than book

value accounting. That is not a difficult goal to achieve! Indeed, it is what bank loan officers themselves are trained to do when assessing their own loan customers. However, in recognition of possible errors that may understate the true market value of a bank's capital, the criterion for declaring a bank insolvent by the authorities may be set at least, during a transition period, at minus one or two percent of total assets rather than at zero percent. In addition, a procedure for speedy appeal should be established.

Similarly, sufficiently frequent and accurate monitoring is difficult. But it is becoming easier as bank managers themselves have discovered the need for quick on-line and accurate information. Indeed, it appears that the bigger opposition to market value accounting comes not from the banks themselves but from the regulators. Nevertheless, serious problems exist. By definition, fraud cannot be easily detected until after the event. All changes in financial conditions occur neither smoothly nor continuously. Statistical jump processes can cause net worth to become suddenly negative and imposes losses on the insurance agency, even under perfect monitoring. Thus, substantial research efforts need to be devoted to improving both market value accounting and monitoring procedures. This is likely to be expensive, but the cost is unlikely to come close to the \$30 billion cost to the government of carrying today's insolvent savings and loan associations. Additional efforts need also be devoted to designing implementable procedures for achieving timely closures/reorganization and unwinding the affairs of economically insolvent institutions. But these

difficulties and costs should not delay consideration of a policy of more timely closure/reorganization. As noted at the beginning of this paper, alternative policies that have been proposed to increase the safety and efficiency of the financial structure appear to be either or both economically more costly and politically less acceptable.

VI

This paper has provided support for the argument that more timely bank failure resolution, while neither easy nor costless, deserves greater immediate attention as a politically acceptable and economically efficient and equitable solution for offsetting the undesirable incentive effects of deposit insurance; reducing the frequency, costs, and disruptions of bank failures; and substantially reducing the degree of regulation over the amount of capital and types of activities in which a bank or bank holding company may engage. In such an environment, bank runs are unlikely to invoke fears and panic in depositors or the public. Their good effects will outweigh their bad effects and help to make the banking system both safer and more efficient at minimum cost.⁵² The bad reputation of bank runs has reflected both bad public policy and undue concern over losses to bank owners and managers. Public policy also needs to refocus attention away from concern over individual institution stability, which is little if at all more important than the stability of individual grocery stores or gas stations, to concern over the stability of the banking system, which is of critical importance and requires limited federal deposit insurance and/or intelligent central bank policy. To the extent

these are in place, public policy towards banking can be greatly simplified. By confusing runs on individual banks and runs on the banking system, bank runs have been given a bad rap. Public policy can improve their reputation by permitting at least the threat of their occurrence for individual institutions. The challenge is not to eliminate bank runs, but to harness their power in such a way that the financial system will be both safer and more efficient.

FOOTNOTES

1. Indeed, it is often believed that spreading "rumors" about a bank that can start a run is a crime subject to penalties. No such federal law exists, although some states may have such statutes. In early December 1986, the Magnet Savings Bank, the largest thrift institution in West Virginia, experienced a run when a proposed merger was cancelled. Depositors withdrew about \$1 million within 24 hours. In response, the bank offered a \$5,000 reward for information leading to the conviction of those starting the rumor. The president of the bank explained that the bank had recently paid a \$3,000 reward to catch a bank robber and that he considered the act of spreading rumors at least as serious as robbery. "Magnet Bank Cites Rumors in Run", American Banker, December 11, 1986, pp. 2, 9. Attempts to penalize individuals who doubt the ability of banks to redeem their claims are not new in the United States. A study for the National Monetary Commission noted that

... many in the earlier period of the [nineteenth] century considered it improper and injurious to call upon a bank for specie in payment of its bills. "Brokers who sent home the bills of country banks were denounced as speculators and bloodsuckers, whose extirpation would be a public benefit." Respectable men defended the conduct of banks in interposing obstacles to the payment of their notes to brokers who had brought them up to discount. A Boston broker was brought before a grand jury of Vermont for demanding payment in specie for the bills of one of its banks.

Davis R. Dewey and Robert E. Chaddock, State Banking Before the Civil War (Washington, D.C.: National Monetary Commission, 1911), vol. 4, p. 74.

2. Robert W. Norcross, Jr., "The Bank Insolvency Game: FDIC Superpowers, the D'Oench Doctrine, and Federal Common Law", Banking Law Journal, July/August 1986, p. 318.
3. C. T. Conover, "Testimony" in U.S. Congress, Subcommittee on Financial Institutions Supervision, Regulation and Insurance of Committee on Banking, Finance and Urban Affairs, Inquiry Into Continental Illinois Corp. and Continental Illinois National Bank: Hearings, 98th Cong., 2nd Sess., 1984, p. 287-288.
4. The process of a bank run is described in greater detail in George J. Benston, Robert A. Eisenbeis, Paul M. Horvitz, Edward J. Kane, and George G. Kaufman, Perspectives on Safe and Sound Banking (Cambridge, MA.: MIT Press, 1986), particularly Chapter 2; and in George J. Benston and George G. Kaufman, "Risks and Failures in Banking: Overview, History, and Evaluation" in George G. Kaufman and Roger C. Kormendi, eds., Deregulating Financial Services (Cambridge,

- MA.: Ballinger Press, 1986). For an analysis of the causes of bank runs, see Gary Gorton, "Banking Panics and Business Cycles", (Working Paper, 86-9, Federal Reserve Bank of Philadelphia, March 1986).
5. Nor can any business organization but the very smallest use currency as an efficient medium of exchange. Nevertheless, in 1907 Henry Ford threatened to "build a vault to take our money out of the banks and put it in the vault, so we can pay our men in cash". Ford did not follow up on this threat. Susan F. Kennedy, The Banking Crisis of 1933 (Lexington: University Press of Kentucky, 1973), p. 92.
 6. John H. Kareken, "Federal Bank Regulatory Policy", Journal of Business, January 1986, pp. 36-37. Indeed, a run on the banking system as a whole frequently is the only type of run analyzed in the academic literature, e.g., Douglas W. Diamond and Philip H. Dybvig, "Bank Runs, Deposit Insurance and Liquidity", Journal of Political Economy, June 1983, pp. 401-419. This article also considers only runs from bank deposits into consumption rather than currency. Such runs, however, effectively represent indirect redeposit runs and are not likely to lead to nationwide contagion or contraction in total bank deposits. Moreover, runs from deposits into consumption should increase income, which is inconsistent with both theory and observation.
 7. George Benston et al., Chapter 2. A recent study by Anna Schwartz suggests that major banking crises occurred even less frequently in foreign countries. Anna J. Schwartz, "Financial Stability and the Federal Reserve Safety Net", Working Paper for American Enterprise Institute, February 1987 and "Comments on 'The Big Bust' and 'The Truth About Bank Runs'", CATO Journal (forthcoming).
 8. Even in the 1929-33 period, regional rather than national contagion appears to have been the case until late 1932 when Nevada declared the first state bank holiday. H. Parker Willis and John Chapman, The Banking System (New York: Columbia University Press, 1934), p. 9; Elmus Wicker, "A Reconsideration of the Causes of the Banking Panic of 1930", Journal of Economic History, September 1980, pp. 571-83.
 9. Benston et al., Chapter 2 and Bert Ely, "The Big Bust: The 1930-33 Banking Collapse -- Its Causes, Its Lessons", Proceedings of a Conference on Bank Structure and Competition (Federal Reserve Bank of Chicago, 1986), pp. 19-63; Charles P. Kindleberger, "Bank Failures: The 1930s and the 1980s" in The Search for Financial Stability in the Past Fifty Years (San Francisco: Federal Reserve Bank of San Francisco, 1985), pp. 7-34.
 10. Gilbert Thorndyke, "Fiction and Fact on Bank Runs", American Bankers Association Journal, June 1929, p. 1222. Also Schwartz notes that few bank failures appear to be attributable to runs. Schwartz, "Financial Stability and

the Federal Safety Net".

11. Gorton; Philip Cagan, Determinants and Effects of Changes in the Stock of Money, 1875-1960 (New York: Columbia University Press, 1965).
12. George Kaufman, "Banking Risk in Historical Perspective", Staff Memoranda, 86-3 (Federal Reserve Bank of Chicago), May 1986 and Proceedings of a Conference on Bank Structure and Competition (Federal Reserve Bank of Chicago, May 1986), pp. 231-249. A listing of the reasons national banks could be declared insolvent before 1930 and a receiver appointed appears in Cyril B. Upham and Edwin Lamke, Closed and Distressed Banks (Washington, D.C.: Brookings Institution, 1934), p. 19.
13. Lawrence H. White, Free Banking in Britain (Cambridge, U.K.: Cambridge University Press, 1984). For a somewhat different interpretation see Hugh Rockoff, "Institutional Requirements for Stable Free Banking", CATO Journal, Fall 1986, pp. 617-634.
14. White, p. 143.
15. Arthur J. Rolnick and Warren E. Weber, "Banking Instability and Regulation in the U.S. Free Banking Era", Quarterly Review (Federal Reserve Bank of Minneapolis), Summer 1985 and _____, "The Causes of Free Bank Failures", Journal of Monetary Economics, October 1984.
16. Harold van B. Cleveland and Thomas F. Huertas, Citibank, 1812-1970 (Cambridge, MA.: Harvard University Press, 1985). Recently, Citibank may be returning to this strategy. Peter Truell, "Citicorp's Reed Takes Firm Stance on Third-World Debt", Wall Street Journal, February 4, 1987, p. 6.
17. Most early students of banking from Adam Smith on argued that commercial banks should concentrate their lending on short-term self-liquidating loans in order to be able to meet potential currency and deposit losses. This represented a "real bills" micro bank management strategy as opposed to a "real bills" macro monetary policy strategy. This strategy also underlies the development of special banks for longer-term lending, such as for agriculture and residential housing, which would be financed by longer-term deposits. Harry F. Miller, Banking Theories in the United States Before 1860 (Cambridge, MA.: Harvard University Press, 1927 and New York: Augustus Kelley, 1972); Melanie L. Fein, "The Separation of Banking and Commerce in American Banking History", in Appendices to the Statement by Paul A. Volcker Before the Subcommittee on Commerce, Consumer and Monetary Affairs of the Committee on Government Operations, U.S. House of Representatives (Washington, D.C.: Board of Governors of the Federal Reserve System, June 1986); Randall C. Merris and John Wood, "A Deregulated Rerun: Banking in the Eighties", Economic Perspectives (Federal Reserve Bank

of Chicago), September/October 1985.

18. Richard H. Timberlake, Jr. "The Central Banking Role of Clearinghouse Associations", Journal of Money, Credit, and Banking, February 1984, pp. 1-15 and Gary Gorton, "Clearing-houses and the Origin of Central Banking in the United States", Journal of Economic History, June 1985, pp. 277-283.
19. The National Bank Act of 1863 effectively guaranteed the par value of national bank notes until their retirement in 1935, so that runs on banks to redeem notes were no longer of significance, particularly as notes of state banks were taxed out of existence after 1865.

The National banking system was essentially an extension on a national scale of the free banking systems established earlier in many States. That is, subject to certain restrictions, banking was open to all persons who qualified under the law and note issues were secured by the posting of collateral, in this case United States bonds. However, one important different between the State systems and that adopted by the Federal Government was that the primary guaranty for the notes was the credit of the Government rather than the value of the posted collateral.

Holders of notes of a failed national bank were to be paid immediately and in full by the United States Treasury regardless of the then existing value of the bonds posted and whether or not any difficulty was encountered in disposing of the bonds. As the Comptroller of the Currency stated in his first report to Congress:

If the banks fail, and the bonds of the government are depressed in the market, the notes of the national banks must still be redeemed in full at the treasury of the United States. The holder has not only the public securities but the faith of the nation pledged for their redemption.

It was apparently not foreseen early in the 1860s that deposits, rather than circulating notes, would come to constitute by far the largest portion of the nation's circulating medium. In 1860 the two items were about equal in amount. By 1870 deposits were about twice, and by the end of the century seven times, circulating notes.

Annual Report of the Federal Deposit Insurance Corporation, 1952 (Washington, D.C., 1953), p. 66. See also Milton Friedman and Anna J. Schwartz, A Monetary History of the United States, 1867-1960 (Princeton, N.J.: Princeton University Press, 1963), pp. 21-23.

20. Gorton (1986); Friedman and Schwartz. The Federal Reserve was also significantly less interested in the plight of nonmember banks than member banks. This reduced its ability to serve as a national clearinghouse.
21. Benston et al.; Edward J. Kane, The Gathering Crisis in Federal Deposit Insurance (Cambridge, MA.: MIT Press, 1985); Edward J. Kane, "Confronting Incentive Problems in U.S. Deposit Insurance: The Range of Alternative Solutions in Kaufman and Kormendi, eds. (1986); Edward J. Kane, "Appearance and Reality in Deposit Insurance", Journal of Banking and Finance, June 1986, pp. 175-188.
22. It might appear in retrospect that forbearance was successful for the thrift industry in the early 1980s, when most of the institutions were economically insolvent because of the effects of high interest rates on their greatly mismatched asset-deposit duration structures. Many of these institutions were solvent again by 1986 after interest rates had declined sharply. Indeed, this conclusion was reached in a study of forbearance policy by the U.S. General Accounting Office. Nevertheless, this conclusion is not necessarily warranted. The sharp decline in interest rates cannot be attributed to management skills. It would have occurred regardless of who was in charge of the associations at the time. If the insolvent institutions had been "nationalized" when they first became economically insolvent, the subsequent gain in net worth would have accrued to FSLIC and the taxpayers. If instead they had been sold to new owners who had expected interest rates to decline as sharply as they actually did, FSLIC would have obtained premiums equal in present value dollar magnitude to the subsequent gain. But under forbearance, the gain accrued to the previously insolvent managers/owners. But, what if interest rates had not declined? FSLIC would have suffered all the additional loss. In retrospect, SLA management was lucky, not skillful. Even in Las Vegas the customers win nearly one-half of the times, but not on average over time. Moreover, the forbearance reduced the pressure on management/shareholders to change their strategy and to reduce their risk exposure. Thus, many associations have recently widened their asset-deposit duration mismatch again by returning to long-term fixed rate mortgages. This is likely to lead to a repeat of the interest rate risk game, but not necessarily with the same favorable outcome to FSLIC. Other institutions found other ways to increase their bets on little or none of their own capital. United States General Accounting Office, Thrift Industry: Cost to FSLIC of Delaying Action on Insolvent Savings Institutions (Washington, D. C., September 1986).
23. A rigorous statement of the incentive structure appears in Michael C. Jensen and William H. Mechling, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure", Journal of Financial Economics, No. 3, 1976, pp. 305-360; also Kane (1985).

24. This literature is described in George Benston et al. and Kane (1985). These problems are not limited to the United States. For example, see Kevin Dowd, "Some Lessons from the Recent Canadian Bank Failures" (Working Paper, University of Sheffield, England; January 1987).
25. An interesting empirical documentation appears in Robert T. Clair, "Deposit Insurance, Moral Hazard, and Credit Unions", Economic Review (Federal Reserve Bank of Dallas), July 1984, pp. 1-12. In addition, a number of credit union officials have noted that the unions increased their risk exposure after the introduction of federal share capital insurance in 1971. National Credit Union Administration, Credit Union Share Insurance: A Report to the Congress (Washington, D.C., 1983).
26. Kane (1985), Chapter 2; Edward J. Kane, "Dangers of Capital Forbearance: The Case of the FSLIC and 'Zombie' S&Ls", Contemporary Policy Issues January 1987, pp. 77-83; George G. Kaufman, "Bank Capital Forbearance and Public Policy", Contemporary Policy Issues, January 1987, pp. 84-91.
27. James R. Barth, R. Dan Brumbaugh, and Daniel Sauerhaft, "Failure Costs of Government-Regulated Financial Firms: The Case of Thrift Institutions" (Working Paper, Federal Home Loan Bank Board), June 1986.
28. Nina Easton, "Costs to FSLIC Skyrocket as Delays on Sales of Failed Thrifts Drag On", American Banker, December 15, 1986, pp. 1, 20-21.
29. G. O. Bierwag and George G. Kaufman, "A Proposal for Federal Deposits Insurance with Risk Sensitive Premiums", Conference on Bank Structure and Competition: Proceedings (Federal Reserve Bank of Chicago), 1983, pp. 223-242, and _____, "A Proposal for Federal Deposit Insurance with Risk Sensitive Premiums", Staff Memoranda 83-3 (Federal Reserve Bank of Chicago), March 1983. Barbara A. Bennett, "Bank Regulation and Deposit Insurance: Controlling the FDIC's Losses", Economic Review (Federal Reserve Bank of San Francisco), Spring 1984, pp. 16-30.
30. Federal Home Loan Bank Board, Agenda for Reform (Washington, D.C., March 1983), and Federal Deposit Insurance Corporation, Deposit Insurance in a Changing Environment (Washington, D.C., April 1983); The Working Group of the Cabinet Council on Economic Affairs, Recommendations for Change in the Federal Deposit Insurance System (Washington, D. C., 1985); United States General Accounting Office, Deposit Insurance (2 vols. and summary) (Washington, D. C., 1986).
31. Much of the criticism focuses on the theoretical and practical difficulties in measuring risk accurately and in developing appropriate premium scales. One of the earliest criticisms of these proposals was by John H. Kareken,

"Deposit Insurance Reform or Deregulation is the Cart, Not the Horse", Quarterly Review (Federal Reserve Bank of Minneapolis), Spring 1983, p. 109. Kareken is also one of the first proponents of replacing federal deposit insurance by establishing uninsured "money market" bank affiliates, which would offer transaction deposits and invest only in near riskless securities. Other types of deposits would be offered by other affiliates of the bank or bank holding company, which could invest in risky securities and would not be federally insured. See also John H. Kareken, "Federal Bank Regulatory Policy", pp. 39-46; Carter H. Golembe and John J. Mingo, "Can Supervision and Regulation Ensure Financial Stability", The Search for Financial Stability: The Past Fifty Years, pp. 125-146; and Robert E. Litan, "Evaluating and Controlling the Risks of Financial Product Deregulation", Yale Journal on Regulation, Fall 1985, pp. 1-52. For a criticism of these proposals see George Benston and George G. Kaufman, "Deposit Insurance and Risk Regulation", a study for the American Enterprise Institute, in process.

Allan Meltzer and Thomas Huertas have proposed a variant on this proposal in which financial institutions that offer transaction balances may only invest in assets that can be marked to market. Thus, depositors can easily monitor their institutions' financial conditions. A side benefit of this proposal may be to encourage the development of procedures for marking-to-market assets that are currently not so valued as a byproduct of banks attempting to expand the range of permissible investments. However, as is argued later in this paper, all these proposals still require a clear and enforced closure rule in order to be effective.

32. Previous studies of the relationship of bank capital and deposit insurance include David H. Pyle, "Deregulation and Deposit Insurance Reform", Economic Review (Federal Reserve Bank of San Francisco), Spring 1984, pp. 5-15 and David H. Pyle, "Capital Regulation and Deposit Insurance", Journal of Banking and Finance, June 1986, pp. 189-201.
33. Because of problems of monitoring and the possibility of abrupt declines or jump processes in the market value of an institution's net worth, it may be desirable to reorganize the institution before the market value of its net worth declines to zero, say at some small positive percentage of assets such as 2 or 3 percent. If any ex-post losses are incurred, they should be borne pro-rata by the federal deposit insurance agencies on the de jure insured deposits and the uninsured depositors. Alternatively, the reorganization/closure rule could be specified at some higher positive level of capital defined in nonmarket terms, e.g., book value. Existing shareowners would be provided with an opportunity to recapitalize the bank at that point. If they failed to do so, the institution would be transferred to the regulators. It may reasonably be assumed that shareholders have better information about the "true"

market value of their institutions than do the regulators, and that they would be willing to provide additional capital if this value were positive and would walk away if it were negative. These alternative closure schemes are analyzed more carefully in George Benston and George Kaufman, American Enterprise Institute, forthcoming study.

34. Benston et al., Chapter 5. Because it is unlikely that private insurance firms will be legally permitted to reorganize institutions when their capital approaches zero, private deposit insurance is likely to be more costly and less efficient.
35. Reasons for policy makers wanting to affect the timing of closures are discussed in Bierwag and Kaufman.
36. Bierwag and Kaufman.
37. Benjamin Weintraub and Alan N. Resnick, Bankruptcy Law Manual (Boston: Warren, Gorham and Lamont, 1986).
38. Benston et al., Chapter 4.
39. Joseph S. Lawrence, "What is the Average Recovery of Depositors?", American Bankers Association Journal, February 1931, pp. 655-56, 722-23. Losses tended to be greater from 1921 through 1930, at smaller banks, in smaller cities, where bank failures were greatest, and at liquidated banks. In this period, losses to depositors at fully liquidated banks were about 50 percent, but these were the smaller banks. Depositors at 50 percent of failed banks with loans and investments in excess of \$1 million received 100 percent of their deposits and 70 percent received 80 percent or more. Upham and Lamke, Chapter 7.
40. Edward I. Altman and Scott A. Nammacher, "The Default Rate Experience on High Yield Corporate Debt", Financial Analysts Journal, July/August 1985, pp. 25-41.
41. F. Gerald Corrigan, "Are Banks Special", Annual Report, 1982 (Federal Reserve Bank of Minneapolis, 1982); and Paul A. Volcker, "Statement Before Subcommittee on Commerce, Consumer and Monetary Affairs of the Committee on Government Operations, United States House of Representatives, June 11, 1986 and Appendices."
42. Recently, strong political opposition has developed to having regulators declare insolvent institutions by any measure legally insolvent in areas in which large numbers of institutions are in financial difficulties. This appears to reflect a coalition of a number of interested parties including managers, who prefer to keep their positions; shareholders, who are hoping to recover their losses in ways described in the text; debtors in default who fear that new managers would be harsher in restructuring their loans and who view the status quo as not much different from a debt

moratorium; and provincialists, who fear loss of control to nonlocal outsiders. See, for example, actions by new Speaker of the House Jim Wright to scale down the Administration's FSLIC recapitalization proposal. Robert Garsson, "Speaker Backs Scaled-Down Aid for FSLIC", American Banker, February 10, 1987, pp. 1, 23 and Leonard M. Apcar and John E. Yang, "Texans Are Holding Sway on Bank, S&L Regulation", Wall Street Journal, February 11, 1987, p. 6.

43. "No Banking Adjustment in 68% of All Cities and Towns", The Bankers Monthly, October 1932, pp. 585-88.
44. Andrea Bennett, "Small Town Businesses Don't Stick Around When the Only Bank Closes Its Doors", American Banker, December 2, 1986, pp. 40, 32.
45. David D. Whitehead, "The Sixth District Survey of Small Business Credit", Economic Review (Federal Reserve Bank of Atlanta), April 1982, pp. 42-47; and Veronica Bennett, "Consumer Demand for Product Deregulation", Economic Review (Federal Reserve Bank of Atlanta), May 1984, pp. 28-37.
46. George G. Kaufman, "Implications of Large Bank Problems and Insolvencies for the Banking System and Economic Policy", Staff Memoranda, 85-3 (Federal Reserve Bank of Chicago), 1985; Oliver I. Ireland, "Payments System Risk" in Appendices to Statement by Paul A. Volcker; Benston et al., Chapter 2.
47. Benston et al., Chapter 8; Kane, Chapter 4; George J. Benston, "Accounting Numbers and Economic Values", Antitrust Bulletin, Spring 1982, pp. 161-215; Ramon E. Johnson and Paul T. Petterson, "Current Value Accounting for Savings and Loans: A Needed Reform", Journal of Accountancy, January 1984, pp. 80-85; David Leah et al., "Section VIII -- The Measurement of Bank Risk - Market Value Accounting", Proceedings of Conference on Bank Structure and Competition (Federal Reserve Bank of Chicago, May 1986), pp. 311-368.
48. "Revision in Bank Examination Procedure and in Investment Securities Regulation of the Comptroller of the Currency", Federal Reserve Bulletin, July 1938, pp. 563-66.
49. When in the early 1980s even book value accounting proved insufficient to show positive net worth for savings and loan associations, the Federal Home Loan Bank Board invented regulatory accounting practice (RAP), which included a wider range of intangible and imaginary assets, to avoid having to reorganize insolvent institutions. Similar practices occur in other federal agencies. Jeff Bailey and Charles F. McCoy, "To Hide Huge Losses, Financial Officials Use Accounting Gimmicks", Wall Street Journal, January 12, 1987, pp. 1, 14.

50. For example, Gerald Corrigan, President of the Federal Reserve Bank of New York, has recently argued that "the business of banking and finance is essentially the business of public and mutual confidence". E. Gerald Corrigan, Financial Market Structure: A Longer View (Federal Reserve Bank of New York), January 1987, p. 21.
51. R. Dan Brumbaugh, "Empirical Evaluation of the Determinants of Losses for the Federal Savings and Loan Insurance Corporation (FSLIC)", (Working Paper, Federal Home Loan Bank Board, February 1986).
52. To help increase the public acceptability of bank runs, I have written new lyrics to the readily singable tune of "Let It Snow! Let It Snow! Let It Snow!" (@Cahn Music Corporation 1945, 1954, 1956, 1972).

LET THEM RUN! LET THEM RUN! LET THEM RUN!

Oh, the depositors outside are threatening
But our vault is so protecting
And if you pardon the pun
Let them run, let them run, let them run.

Well, they don't show signs of stopping
So we're selling assets nonstopping
And until our work is done
Let them run, let them run, let them run.

Now the run is slowly dying
Our cash has stopped the crying
The work has become more fun
Let them run, let them run, let them run.

So, the moral is clearly revealing
If a bank is not concealing
And its capital is like a ton
Let them run, let them run, let them run.