

■ Footnotes

1. For a formal treatment of these types of bank runs, see Douglas W. Diamond and Philip H. Dybvig, "Bank Runs, Deposit Insurance, and Liquidity," *Journal of Political Economy*, vol. 91, no. 3 (June 1983), pp. 401-419.

2. See Charles Mackay, *Extraordinary Popular Delusions and the Madness of Crowds*, London: Richard Bentley, 1841. For a dissenting opinion to this popular belief, see Peter Garber, "Digging for the Roots of Tulipmania," *The Wall Street Journal*, January 4, 1988. He argues that the "tulip bubble" was not a bubble but in fact is explainable by market fundamentals.

3. See Gary Gorton, "Banking Panics and Business Cycles," Working Paper No. 86-9, Federal Reserve Bank of Philadelphia, March 1986.

4. See George J. Benston, Robert A. Eisenbeis, Paul M. Horvitz, Edward J. Kane, and George G. Kaufman, *Perspectives on Safe and Sound Banking: Past, Present, and Future*, Cambridge, MA: The MIT Press, 1986, p. 64.

5. See J. Huston McCulloch, "The Ohio S&L Crisis in Retrospect: Implications for the Current Federal Deposit Insurance Crisis," and Edward Kane, "Who Should

Learn What from the Failure and Delayed Bailout of the ODGF?" in *Merging Commercial and Investment Banking: Proceedings of A Conference on Bank Structure and Competition*, Federal Reserve Bank of Chicago, May 1987.

6. That is, of a group of assets that seem identical, banks will sell off the least desirable of the assets first. In the case of a run, the bank will want to minimize the costs of getting quick cash and will first sell assets with no informational problems (such as government securities) and will then sell highly rated corporate bonds.

7. See Gary Gorton, "Clearinghouses and the Origin of Central Banking in the United States," *Journal of Economic History*, vol. 45, no. 2 (June 1985), pp. 277-284.

8. See Gary Gorton, "Bank Suspension of Convertibility," *Journal of Monetary Economics*, vol. 15, no. 2 (March 1985), pp. 177-194.

9. See Milton Friedman and Anna Jacobson Schwartz, *A Monetary History of the United States, 1867-1960*, Princeton, NJ: Princeton University Press, 1963, p. 316.

10. See Benston, et al., op. cit., p. 64.

11. See Friedman and Schwartz, op. cit., p. 318.

ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

Bank Runs, Deposit Insurance, and Bank Regulation, Part II

by Charles T. Carlstrom

Contagious bank failures are often thought to be a possible consequence of a banking system without federal deposit insurance. This article considers whether federal deposit insurance is necessary to prevent these types of bank runs.

Part I, which was presented in the February 1 *Economic Commentary*, described some of the costs and benefits of providing deposit insurance and concluded that an analysis of contagious bank failures is necessary in order to understand these benefits.

Part II continues with an examination of contagious bank runs and a discussion of how the market handled banking panics prior to the Federal Reserve System and the Federal Deposit Insurance Corporation.

■ Contagious Bank Failures

The last apparent difference between banks and other businesses is the possibility for a rumor or a failure of another bank to ignite bank runs and cause the failure of financially sound banks.

These types of bank failures are termed "sunspots" because, if depositors truly believe that a bank's solvency depends on events unrelated to market funda-

mentals—such as the amount of solar activity—a bank's solvency would, in fact, depend on the amount of solar activity. In the typical example, a sunspot is the failure of one bank or a group of banks, which ignites rumors that other banks might also fail.

It would seem irrational for depositors to run on a solvent bank. However, because a bank's liquidity and solvency depend in part on the number of depositors wishing to withdraw money, it is rational for each depositor to queue up if he expects other depositors also to stand on line.¹

Sunspot bank runs are also said to be "bubble" phenomena. One of the most famous examples of a bubble involved tulip bulbs in Holland during the seventeenth century. Investors frantically bought tulip bulbs, expecting their price to rise, which in turn caused their price to rise.²

Sunspot bank runs are like bubbles in that they are self-fulfilling prophecies. To determine the correct regulatory response to this apparent market failure, one must first inquire empirically how frequently bank failures are caused by sunspots and then ask what is special about banking that allows these types of phenomena to arise.

Part I of this article, presented in the February 1 *Economic Commentary*, described some of the costs and benefits of providing federal deposit insurance. The major benefit of providing deposit insurance is the prevention of contagious bank runs—a bank failure that spreads to solvent banks. Part II, presented here, discusses why bank runs may be contagious and examines some of the ways in which private clearinghouses protected against widespread bank failures. The article concludes that federally provided deposit insurance may not be necessary in order to protect against such bank runs.

Determining how often bank runs are caused by sunspots—extraneous events—is difficult to do with any degree of statistical accuracy. However, we can examine whether bank failures were the products of the same type of deposit and withdrawal behavior during both panics and nonpanics.

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Gorton tests this hypothesis for bank failures during the U.S. National Banking Era (1863 to 1914) and shows that the factors affecting deposits and withdrawals were similar in periods of widespread bank failures and in periods when banking failures were not widespread. His results suggest that "banking panics during the National Banking Era were systematic responses by depositors to changing perceptions of risk."³

Corroborating evidence that extraneous events did not seem to cause a substantial number of bank failures prior to the Great Depression is given by Benston, et al. They show that the average annual rate of bank failures for the 1875 to 1919 period was 0.82 percent, versus 1.01 percent for non-financial firms.⁴ If banks are like other firms except for the possibility of contagious bank runs, one would expect the failure rate of banks to be at least as great as it is for other kinds of businesses.

Most bank runs do not seem to be of the type pictured in textbooks (or in the Frank Capra movie *American Madness*): banks falling like dominoes, with mass hysteria as depositors line up for blocks hoping to withdraw their money. Instead, the evidence indicates that bank runs have primarily been rational responses to changes in the financial worth of a bank. Even the recent runs on the Ohio and Maryland savings and loans seem to have been based on market fundamentals.⁵

Since the evidence against contagious bank failures is indirect, one should not completely dismiss the possibility that a contagion of sunspot bank runs might arise in an unregulated environment. However, this type of bank run does not appear to be as widespread as typically thought, so the regulatory response to this possibility should be tempered by our current state of knowledge.

■ Why Bank Runs Can Be Contagious

The possibility for extraneous events leading to bank runs arises from two elements of banking structure: the first-come, first-served aspect of banking deposits, and the illiquidity of many bank assets. The former is necessary in order for runs to exist. If the amount in a depositor's account fluctuated with the market value of the assets and liabilities of the bank (as it does in a mutual fund), bank runs would typically not occur. However, as discussed earlier, the threat of bank runs imposes a necessary discipline on banks.

A bank asset is said to be illiquid if the bank cannot sell it in a short amount of time without incurring a substantial loss. Illiquidity results from the asymmetry between the bank's perception of the value of its assets and the market's (depositor's) perception of the value of those assets. This difference arises because information that a bank learns at the time a loan is made (such as a borrower's credit history, assets, and liabilities) and information that a bank learns during the life of a loan (such as timing and receipt of payments) cannot be costlessly acquired by other financial firms.

The fire-sale value of an asset is the price that can be received for an asset on short notice. Asymmetric information explains why the fire-sale value of a government security (in which all investors have the same information about its quality) is nearly 100 percent of its longer-run market price. Similarly, the fire-sale value of a corporate bond is much closer to its longer-run value than the fire-sale value of a personal loan.

Banks will tend to first sell off assets that might look good to purchasers but that the banks know are of poor quality. Because the marketplace anticipates this, asymmetric information causes some of a bank's assets to

sell at a large discount.⁶ Therefore, when a bank run occurs, a financially sound but illiquid bank can conceivably become insolvent. A bank may be forced to sell off a high-quality asset in order to get quick cash, which may bring a low fire-sale value since information about the quality of the asset is not made public.

■ Cures for Contagious Bank Runs

The two principal methods the federal government uses to eliminate bank runs based on extraneous events are federal deposit insurance and discount lending by Federal Reserve Banks.

FDIC insurance has eliminated the need for most depositors to run on a bank, whether the run is caused by sunspots or by information that the bank has become insolvent. Federal Reserve Bank lending can minimize such runs because the Fed stands willing to provide "adjustment" or even extended credit to a solvent but troubled bank, so that it does not have to liquidate its assets at fire-sale prices.

Before the Federal Reserve Act, the pre-1914 banking industry was organized by a system of regional clearinghouses, whose powers and functions resembled those of a central bank. In many ways the Federal Reserve System was simply the nationalization of the private clearinghouses.

A study by Gorton indicates that the New York Clearing House was also a private deposit insurance company. It "taxed" sound banks in order to pay off depositors at a troubled bank.⁷ The New York Clearing House also maintained capital requirements and reserve requirements and required banks to publish their balance sheet items. In addition, it could effectively shut down an insolvent bank.

These practices are similar to current proposals to allow private insurance companies or mutual insurance funds to insure banks. Critics of this

approach argue that the insurance companies could fail with a contagion of bank runs, as were experienced during the Great Depression. However, branch banking, to some extent, enables a bank to insure itself. During the Great Depression, only one bank in California failed, and no banks in Canada failed—both areas in which branch banking was allowed.

How broad a role private insurance could play in our banking system is an open question. The recent crisis with the Ohio thrifts, in particular, seems to cast doubt on the ability of a private insurance system to protect against bank runs. In spring 1985, runs occurred on thrifts insured by the Ohio Deposit Guarantee Fund (ODGF) after the fund was depleted by the failure of the Home State Savings Bank.

Any viable private insurance scheme, however, would have to give the insurance company the right to cancel a contract or the right to close a bank. That is, it would have to resemble the functions of the private clearinghouses. The ODGF did not have the right to close its member thrifts when they became insolvent, however. Consequently, institutions like Home State Savings were not closed promptly.

Another way the New York Clearing House helped eliminate contagious bank runs was by suspending convertibility of deposits into specie or currency: a bank would stay open and make payments, but temporarily would not honor cash withdrawals. Although suspending convertibility was technically illegal, it was allowed to occur on at least eight occasions during the nineteenth and early twentieth centuries.

Gorton argues that "such accommodating behavior arose because suspension was part of a mutually beneficial arrangement." He maintains that by

suspending convertibility, banks signaled to depositors that further liquidation of the bank's assets was not in their best interests.⁸ The ability to temporarily suspend convertibility not only helped to quell existing bank runs, but it also reduced the chance that a run based on extraneous information, or sunspots, could occur.

■ Bank Runs During the Great Depression

Another lesson can be learned by examining bank failures during the Great Depression. With the inception of the Federal Reserve System, suspension of convertibility did not occur (except for the government-imposed banking holidays). Friedman and Schwartz argue that "if the pre-Federal Reserve banking system had been in effect ... restriction (suspending convertibility) would have almost certainly taken place in September 1931 and very likely would have prevented at least the subsequent failures."⁹

Instead, the total suspension that eventually took place aggravated the situation. The haphazard ways in which states declared banking holidays in 1932 and 1933 further worsened the runs as depositors in open states rushed to get their money after neighboring states imposed holidays.¹⁰

Ironically, at its inception, the Federal Reserve System instituted a discount window in order to prevent banking panics. As argued earlier, discount lending lessens the incentives for banks to hold liquid assets, making banks more vulnerable to runs. Instead of lowering the discount rate in order to provide liquidity during the panics, the Federal Reserve raised the discount rate in September 1931 and again in February 1933.

Although the level of discount lending increased during the Great Depression, banks also had to dump

assets on the market to try to meet depositors' withdrawals.¹¹ The Federal Reserve System aggravated the situation by not actively pursuing open market operations in order to prevent a multiple contraction of the money supply.

■ Conclusion

Many agree that reform of the current banking structure is overdue. To their credit, bank regulators allowed nearly 200 insolvent banks to fail in 1987. Unfortunately, they may not be letting enough insolvent banks fail, and even when regulators close a bank, the FDIC sometimes employs a rescue procedure that protects the "uninsured" depositors.

Although reform of the present banking system may be desirable, a growing body of evidence indicates that many of the current financial problems in banking are at least partly the result of the incentive structure created by deposit insurance and by the way deposit insurance is administered.

Regulators contemplating reform of the banking system should consider the costs associated with federal deposit insurance. Left on its own, the private system provided many of the current safeguards considered necessary for a well-functioning banking system.

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