THE FUTURE OF DEPOSIT INSURANCE:  
AN ANALYSIS OF THE ALTERNATIVES

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As of January 1989, the Federal Savings and Loan Insurance Corporation (FSLIC) listed approximately 340 federally insured savings and loan institutions as insolvent. Estimates of the cost of meeting obligations to the insured depositors of these insolvent institutions run from $90 billion to about $285 billion.¹ But such estimates refer to the cost net of recoveries, which means that the initial outlays needed to close the insolvent institutions could be much higher.

FDIC Chairman William Seidman has estimated that as many as 700 to 800 FSLIC insured savings and loans with an aggregate $400 billion in assets will ultimately need to be sold, reorganized, or liquidated.² Because the FSLIC's cash reserves have dwindled to less than $2 billion, the fund cannot close its insolvent institutions without substantial outside assistance. And indeed, Congress is now considering legislation that would authorize up to $50 billion in additional borrowing to close or merge the most deeply insolvent thrifts.

Although the commercial banking industry and its insurance fund, the Federal Deposit Insurance Corporation (FDIC), have fared somewhat better than the thrift industry, the past decade has witnessed record numbers of bank failures. While the FDIC claims to face no backlog of insolvent banks under its supervision, the caseload of “troubled” banks remains high by post-Depression standards. In fact, the agency recorded its first annual loss in its 5.5 years of existence in 1988. The fund’s net worth dropped 23 percent, from $18.3 billion at the end of 1987 to $14.1 billion as of the end of 1988.³ While sufficient to deal with any failures foreseeable under present circumstances, the reserves could prove inadequate in the event of a major economic dislocation such as a recession or massive defaults on loans to less developed countries.

The Shadow Financial Regulatory Committee, a group of prominent academics, bankers, and attorneys who analyze and comment on matters of financial regulation, has estimated that the true net worth of the FDIC approaches zero if the agency were to establish reserves for foreseeable losses.⁴ To be sure, not all would agree with such dire estimates. What is important, however, is the growing consensus that the financial difficulties associated with federal deposit insurance are not confined to the thrift industry and the FSLIC alone.

Current Initiatives

By now it is recognized that further deterioration in the financial condition of the federal deposit insurance funds could have potentially devastating consequences for the taxpayer. In response, the executive and legislative branches, along with the federal bank and thrift regulatory agencies, have already proposed measures to deal with the problem. The proposals range in scope from changes in capital requirements to a complete overhaul of the thrift industry’s regulatory structure. Three of the more noteworthy are described below.

Risk-based capital  In the summer of 1988, representatives of twelve major industrial nations agreed on a uniform set of bank capital guidelines based on the riskiness of a bank’s asset portfolio. In the United States, banks and bank holding companies will phase in risk-based capital guidelines through 1992. While one may argue with specifics of the proposal, it clearly marks an advance over previous regulation of banks for at least three reasons. First, it places implicit costs on certain risky activities. This makes banks internalize some of the costs of taking on added risk while at the same time allowing banks more flexibility than under direct regulation. Second,

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² "Questions Arise over Size and Scope of Resolution Trust Corp," American Banker (March 17, 1989); see also Peter J. Elmer, "Notes, Guarantees Needed in FSLIC Bailout," American Banker, June 6, 1989.
it helps control risky behavior in the form of activities that do not appear on the balance sheet of a bank or holding company. Finally, because it represents a uniform international standard, it permits regulators to impose stricter capital standards without placing banks at a regulatory disadvantage relative to foreign competitors.

**Early intervention** In December 1988, the Federal Home Loan Bank Board proposed a rule that would allow the Bank Board to close a thrift institution if its net worth had declined to 1.5 percent. The rationale for the proposal is to facilitate early intervention in the event of an insolvency to prevent a troubled institution from plunging more deeply into the red. Such authority would be a clear enhancement of the ability of regulators to protect the deposit insurance fund since it would allow the regulators to act rather than force them to wait until net worth under regulatory accounting principles goes below zero. While one might object that the 1.5 percent regulatory net worth threshold is too low given the distortions inherent in regulatory accounting principles, the proposal is clearly a step toward more effective regulation.

More recently, Comptroller of the Currency Robert L. Clarke advanced a new policy that would result in the more prompt closing of national banks. Under the old policy, national banks were declared insolvent only after primary regulatory capital, which consists essentially of shareholder equity plus loan loss reserves, reached zero. This means banks were only closed well after shareholder equity fell below zero. Under the new proposal, however, national banks would be declared insolvent once shareholder equity falls to zero.

**The Financial Institution Reform, Recovery and Enforcement Act** On February 6, 1989, the Bush administration announced a legislative proposal detailing a set of wide-ranging reform and recovery measures to deal with the deposit insurance fund crisis. The proposed legislation, titled The Financial Institution Reform, Recovery and Enforcement Act (FIRREA), is now under consideration by Congress. Proposed reforms include:

- Creation of a new deposit insurance fund for the thrift industry under the authority of FDIC.
- Creation of a Resolution Trust Corporation to take over the resolution of all thrift insolvency cases from the FSLIC.
- Creation of a Resolution Funding Corporation with the authority to borrow up to $50 billion to resolve current insolvencies.
- Reorganization of the thrift industry’s regulatory structure. The Federal Home Loan Bank Board would be abolished and only the Chairman of the Federal Home Loan Bank System would remain. The Chairman would be placed under the oversight of the Treasury Department as is now the case with the Comptroller of the Currency. Boards of Directors of Federal Home Loan Banks will be modeled after those of Federal Reserve Banks.
- Uniform capital requirements for banks and thrift institutions. Thrifts have until mid-1991 to have capital up to 6 percent of assets. Further, capital requirements will be based on riskiness of investments.
- Increased deposit insurance premiums for both banks and thrifts.
- Uniform accounting and disclosure standards for banks and thrifts.
- Allowing bank holding companies to acquire healthy thrifts.

In addition, the FDIC has already entered into a contract with the Federal Home Loan Bank Board to place the worst of the insolvent thrifts into conservatorship until final resolution.

The administration’s program is important for several reasons. First, it will provide badly needed funding to close or recapitalize the worst of the current crop of insolvent thrifts. Second, it administratively separates the federal thrift chartering agency (the FHLBB) from the industry’s deposit insurance agency and severs the close ties between the regulator (the Federal Home Loan Banks) and the regulated industry (thrifts). Many observers have concluded that at least part of the industry’s current problems can be attributed to lax regulation arising from the close ties. Third, it brings more uniform regulatory and accounting standards to all insured depository organizations. Under the administration’s plan, no one class of institutions will receive more favorable treatment than another. Finally, it shores up the financial condition of the federal deposit insurance funds.
Regulators will be able to deal with future insolvencies more promptly.

The need for reform  Treasury Secretary Nicholas Brady’s statement describing the administration’s plan contains the following desiderata:

- “Never again should we allow a federal insurance fund that protects depositors to become insolvent.
- Never again should we allow insolvent federally insured deposit institutions to remain open and operate without sufficient private capital at risk.
- Never again should we allow risky activities permitted by the states to put the federal deposit insurance funds in jeopardy.”

In other words, it is not sufficient to simply deal with the current crisis. On the contrary, it is necessary to ensure that there are no repetitions of what happened to the savings and loan industry.

The administration plan is an important first step toward eliminating the possibility of such a recurrence, but it also recognizes the need for additional measures to ensure the financial stability of insured depository institutions. It calls for a comprehensive study of the deposit insurance system by the federal bank and thrift regulatory agencies. Thus, one may expect a continuing public debate over the role of deposit insurance and reform of the bank regulatory system even after the sweeping legislation is enacted. In an attempt to provide some current perspective on these subjects, this paper will examine a number of different proposed reforms. The ensuing discussion will cover some of the more noteworthy reform proposals advanced by academic economists as well as those advanced by the federal bank and thrift regulatory agencies. Before looking at the specific proposals, however, it is helpful to review more generally the goals of bank regulation and the limits of just what such regulation can reasonably be expected to accomplish.

Regulatory Reform

Deposit insurance: Why reform is needed  Federal deposit insurance lessens the incentive of depositors to run on banks when they hear of impending problems at particular institutions. As a result, it has been widely credited with stabilizing the banking system and making it safer. Indeed, for its first forty-five years or so the system appeared to work as intended.

But there is a paradox inherent in deposit insurance. By making banks safer for individual depositors, the banking system as a whole has been made less safe. Among private insurers it is widely recognized that insuring an individual against the risk of loss lessens the insured’s incentive to attempt to prevent the loss from occurring. This tendency is known as moral hazard. Moral hazard arises in connection with deposit insurance because depositors are relieved of the need to pay close attention to the safety of their banks. This in turn removes some of the discipline that otherwise would inhibit bank owners and managers from engaging in practices that threaten the soundness of their individual institutions and thus the deposit insurance system.

When banks and thrifts have access to insured funds, their “downside” risk is limited because they can easily fund risky investments and loans by issuing insured deposits. The incentive for excessive risk taking exists because bank shareholders do not bear the full cost of the risks assumed by the bank. If the bank fails, shareholders bear only part of the cost. The rest is borne by the deposit insurance funds. But if the outcome is favorable, shareholders collect all the profits. Because a substantial portion of the risk can be shifted to the deposit insurance funds in such a manner, bank managers have incentives to engage in excessively risky behavior. And this incentive is most pronounced among institutions that are either approaching insolvency or are already insolvent. Under the current system, such institutions have little to lose and everything to gain from taking on large risks in a desperate attempt to restore financial solvency before they are taken over by regulators.

In the absence of deposit insurance, depositors would be exposed to losses in the event of a failure. They therefore would have the incentive to restrain banks engaged in risky behavior by demanding a premium reflecting the risk associated with a bank’s activities or, in cases of impending insolvency, by withdrawing deposits. Indeed, virtually all firms are forced to borrow money at one time or another and are subject to such discipline by their creditors when they do.

But deposit insurance makes banks the exception since depositors could enjoy the high rates but not have to consider withdrawing their insured deposits. This is most obvious in the case of deposit brokers who move deposits of less than $100,000 around the country in search of high returns in insured banks regardless of condition. Thus any attempt to preserve

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8 *Statement by the Secretary of the Treasury Nicholas F. Brady regarding the President’s Savings and Loan Reform Program,” News Release, Department of the Treasury, February 6, 1989.

9 In the remainder of the article, “bank” refers to all types of depository institutions.
the deposit insurance system must include measures to counterbalance the incentives created by moral hazard.

The moral hazard problem is particularly acute now because of the widespread and justified perception that deposit insurance covers virtually all deposits, especially for large banks. The discipline that might be expected from uninsured depositors is therefore lacking. More seriously, recent attempts to resolve some large bank failures have pointed to the difficulties of imposing costs even on bank holding company debt holders. As a result, no one source of bank funds is likely to bear the full costs arising from the risks a bank takes. In fact, under the current system of de facto 100 percent deposit insurance coverage virtually all parties except the insurance funds benefit from the higher risk.

New powers for depository institutions Most proposals for banking reform include granting depository institutions additional powers such as securities underwriting, real estate investment, and insurance. A rationale for the new powers is that bank safety might be enhanced by allowing banks to diversify their income sources among more financial activities. As a quid pro quo for the new powers, the proposals suggest, for example, increased regulation by the Federal Reserve, increased regulation by the FDIC plus a system of "firewalls," and subordinated debt with firewalls.

Under the current deposit insurance system, however, there are insufficient incentives for banks to control risks even in traditional commercial banking activities. While permitting banks and thrifts to engage in a larger and more diversified group of activities could theoretically work toward reducing risk, the benefits from diversification might not be sufficient to overcome the moral hazard problem. For example, in the early 1980s Congress gave thrifts more liberal investment and commercial lending powers but did not impose any additional measures to monitor and regulate how the thrifts used their new powers. The results of ignoring the moral hazard are manifest in today's thrift crisis.

Most proposals to grant depository institutions additional powers do little if anything to change the incentives in the current system. Increased regulation might limit risk to some extent, but it often invites attempts to evade restrictions. And even if new activities were separated from banks by firewalls, the inducement to shift risks to insured affiliates where possible would still be present. Finally, if insured depository institutions involved in the new activities experience increased failures, the federal safety net, which includes federal deposit insurance and the Federal Reserve discount window, could be called upon to assist firms other than banks and thrifts.

Nevertheless, the trend toward deregulation appears inevitable. It is only a matter of time before depository institutions are given increased powers. But given the incentives inherent in the current system plus the potential risks connected with new activities, it is important that deposit insurance reform be considered at the same time as new powers. As experience with deregulation of the thrift industry has demonstrated, increased powers without corresponding measures to rein in tendencies toward undue risks can invite disaster.

Principles of deposit insurance reform: The role of regulation and market discipline Federal deposit insurance was not intended to end all bank failures. Rather, it was intended to facilitate the quick and orderly resolution of bank failures so as to limit the impact of any one insolvency on the financial system. But perhaps too much is now expected of deposit insurance. Policymakers must recognize that moral hazard is endemic to the deposit insurance system and that it leads some bankers to take risks they would be prevented from taking were deposits not insured.

Risks connected with deposit insurance can be dealt with in two ways. The first is direct regulation of risks through rule making and supervision. In essence, the regulatory approach is designed to compel bankers to act in ways beneficial to the deposit insurance system. By providing a means of monitoring and restraining risks taken by insured banks, regulation of banking can serve the purpose of reducing risks arising from the moral hazard inherent in insured banking. The second way of dealing with risks is market discipline, that is, creation of incentives for depository institutions to control risks on their own. In contrast to direct regulation, market discipline seeks to make it in the economic interests of bankers to act in ways consistent with preservation of the deposit insurance funds by making market participants bear more of the costs resulting from risky activities.

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Types of regulation

The recent increase in bank failures and the heavy losses those failures have imposed on the federal deposit insurance funds sometimes leads to calls for a return to the regulatory environment of the 1950s. Although it is important to reexamine the adequacy of the present regulatory system, it does not necessarily follow that a return to the regulatory environment of the past holds the answer to the industry's present problems. Regulation can take several forms, and not all regulation of banking can be easily rationalized from the standpoint of maintaining the safety and soundness of the banking system.

One form is geographical regulation, which attempts to limit where banks may do business. Such regulation, which in practice takes the form of branching restrictions and limits on interstate banking, is increasingly viewed as protecting banks and thrifts from competition while doing little if anything to enhance safety and soundness. If anything, such restrictions might make banks less safe because they tend to concentrate loans in one area and limit the ability to gather deposits. Consequently, geographical restrictions have been falling rapidly throughout the 1980s and no one has seriously proposed reinstating them.

Another form of regulation places limits on interest rates banks may pay for deposits. Other than the ban on paying interest on demand deposits, most interest rate regulation was rescinded in the early 1980s. But unlike the case with geographical regulation, there are still occasional calls for reinstatement of interest rate regulation.\(^\text{14}\)

It is true that interest rate deregulation has made it possible for many mismanaged institutions to attract funds for excessively rapid growth, and for others to engage in undue risk taking. But calls for interest rate deregulation attack a symptom rather than a cause of the current problems. In fact, interest rate restrictions in an inflationary environment were largely responsible for the disintermediation of funds in the late 1970s. Reregulating interest rates would have the unfortunate effect of penalizing well-managed institutions by tying their hands while depositors in search of higher rates move funds to less-regulated competitors.

While geographical and interest rate regulations are not promising ways to control moral hazard in banking, two other forms of regulation are still very much with us. One is product regulation, which limits what banks may sell. While many proposals have been made to deregulate depository institution product offerings, few institutions have actually been given new powers. As noted earlier, however, it is widely expected that product restrictions will fall over the next few years. And given the apparently substantial incentives for banks to evade product regulation, failure to explicitly deregulate product offerings may invite de facto product deregulation by means of loopholes in the law and "forum shopping" for a sympathetic regulator.

The other form of regulation in place today, and the one most heavily relied upon, is supervision and examination of banking organizations in order to monitor and control risks. Such regulation is expected to continue under virtually all reform proposals.

The goal of bank supervision and regulation should be to protect the banking system and the deposit insurance funds by deterring excessive risks and fraud. The goal should not be to deter all failures. As President E. Gerald Corrigan of the Federal Reserve Bank of New York has pointed out, "the freedoms contemplated by the current market environment must include the freedom to fail."\(^\text{15}\) Bank regulation, then, should seek to monitor banks so problems can be corrected or an institution reorganized or closed before it becomes costly to its deposit insurance fund.

But, if recent experience is any guide, regulation by itself cannot solve the moral hazard problem. It is simply asking too much of any group of regulatory bodies to be the sole barrier against disaster when the system itself seems to reward those who engage in unduly risky activities. Further, any attempts to strengthen depository institution regulation will run up against a simple fact. Regulation is costly. A look at the total regulatory budgets bears this point out. In 1988, total expenses for federal and state bank regulatory agencies amounted to just over $1 billion.\(^\text{16}\)

No one contends that the amount spent on bank and thrift regulation is excessive in view of the risks entailed in a market economy, but a closer look at the costs in the recent past shows that the cost-benefit ratio of regulation was not always favorable. The recent increase in bank failures and the heavy losses those failures have imposed on the federal deposit insurance funds sometimes leads to calls for a return to the regulatory environment of the 1950s. Although it is important to reexamine the adequacy of the present regulatory system, it does not necessarily follow that a return to the regulatory environment of the past holds the answer to the industry's present problems.

The supervision and regulation budget for the Federal Reserve System, which regulates banks holding companies and state chartered banks that are members of the System, was $211 million. The FDIC, which regulates state banks not in the Federal Reserve System, budgeted $167 million, while the Federal Home Loan Bank budgeted $225 million. Finally, the state bank and thrift regulatory agencies budgeted $182 million. All regulatory agencies except the Federal Reserve charge for supervision and regulation, so most of the costs are borne directly by banks.

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\(^{14}\) For example, a rationale often given for reimposing interest rate regulation is that allowing banks and thrifts to use high rates to compete for funds leads them to seek out riskier loans and investments that hold out the promise of covering the increased cost of funds. See, for example, Letters to the Editor, The Wall Street Journal, February 22, 1989

\(^{15}\) Corrigan, op.cit., p. 50.

\(^{16}\) The estimated expense for the Office of the Comptroller of the Currency, which regulates national banks, was $229 million. The supervision and regulation budget for the Federal Reserve System, which regulates banks holding companies and state chartered banks that are members of the System, was $211 million. The FDIC, which regulates state banks not in the Federal Reserve System, budgeted $167 million, while the Federal Home Loan Bank budgeted $225 million. Finally, the state bank and thrift regulatory agencies budgeted $182 million. All regulatory agencies except the Federal Reserve charge for supervision and regulation, so most of the costs are borne directly by banks.
involved. Still, new powers for banks and thrifts are likely to increase the costs of regulation even further. One way to lessen such costs is to develop such regulatory tools as risk-based capital requirements, which levies implicit costs rather than impose explicit regulatory constraints on risky activities. But the additional costs connected with new powers could be reduced even more with measures that are self-enforcing rather than enforced by regulatory authorities. If such measures could be put in place, regulators could concentrate on the problem cases while spending relatively less time on well-run institutions.

Market discipline Safety and soundness might be enhanced if, as a complement to direct regulation, policies and rules could be developed that would give insured depository institutions incentives to voluntarily act in ways that make the system safer. Such measures fall under the rubric of market discipline. While direct regulation compels a depository institution to change its behavior from what its economic interest might otherwise dictate, market discipline makes it in an institution’s economic interest to temper risk-taking behavior. Stated another way, market discipline is a self-enforcing variety of regulation.

But market discipline is meaningless unless it is enforced. In particular, any attempt to impose market discipline must ultimately include the possibility of failure. No institution should consider itself exempt from closing or reorganization if it becomes insolvent. If an institution’s creditors believe they will be rescued from failure, they will have little incentive to monitor risks and every incentive to tolerate risky behavior. But if creditors face a real possibility of loss, they might be more inclined to keep a close watch on what bank managers are doing. While such discipline might not be sufficient to replace supervision and regulation, it would certainly help the regulators in their job by exerting additional pressure on bank managers to run their institutions in ways that are beneficial to depositors and creditors.

When searching for the optimal mixture of market discipline and regulation, it should be emphasized that the purpose of market discipline is to make failures less likely by making them a real possibility. But this implies that some institutions may allow themselves to be operated in an unsafe manner. Regulation and supervision should focus on those institutions.

Deposit insurance reform, then, has two sides. First, market discipline involves rules that clearly outline the consequences of unsafe behavior and that ensure that accurate information about an institution’s condition can reach the public. And for market discipline to be meaningful, bank shareholders and creditors of a failed institution must bear the brunt of the costs resulting from insolvency. Second, it is the responsibility of the regulatory authority to prevent the insolvency from inflicting severe losses on the deposit insurance fund. Thus regulatory reform must begin with new policies governing the way bank insolvencies are handled.

Bank Failure Resolution

Market economies are characterized by continuous change. Every day new firms start up while others fail. But bank failures have always presented a special problem for policymakers. Because bank deposits are used to settle transactions among third parties, they have the potential to disrupt commercial activities and can hamper the normal operations of other solvent banks. Nevertheless, as long as banking remains a private activity whose owners are permitted to profit from calculated risk taking, some banks will occasionally fail.

Under the current system, bank regulators do not normally close an institution until its regulatory capital has been exhausted so economic net worth has long since gone negative. As a result, the insurance fund is exposed to at least three severe problems. First, it is likely the insolvent institution is taking in less income than it is paying out as interest expense. The longer the institution stays open, the longer the losses can grow. Second and more serious, the managers of a troubled institution face the temptation of making extremely risky loans in the hopes that the projects they fund will succeed and thereby generate high returns. But by definition, risky projects also carry a high probability of losses, losses that must ultimately be covered by the deposit insurer and perhaps by unsecured creditors. Third, uninsured depositors, such as they exist nowadays, have time either to withdraw their funds or else to cover their deposits with offsetting loans from the insolvent institution.

The growing number of bank failures in recent years has made plain the need for a better way of handling such failures. The question bank regulators are left with is how to handle such failures without creating undue disruption.

Early closure One way of doing this is to establish policies that facilitate the closure of insured banks before they actually become insolvent. Generally, early closure proposals would authorize bank regulators to close an institution before the economic value of its net worth became negative. Ideally such a policy would prevent bank insolvencies from in-
flicting severe losses on the deposit insurance funds. The effect would be to reduce moral hazard by denying managers of failing banks the option of gambling with insured deposits.

One feasible alternative to the current method of dealing with bank insolvencies has been proposed by Professors Benston and Kaufman. Their proposal contains two major elements that incorporate the principles of market discipline and regulatory reform. First, adopt market value accounting to identify problem institutions before net worth becomes negative. Second, mandate that institutions be reorganized or closed if regulatory capital (measured as estimated market value of assets minus estimated market value of uninsured debt) falls below a prespecified level. For example, a depository institution could face mandatory reorganization when its capital ratio falls below three percent.

The “bridge bank” authority granted by Congress to the deposit insurance agencies already provides a means for regulators to place insolvent institutions into receivership and to continue operating the institutions until a buyer can be found. To implement the policy proposed by Professors Benston and Kaufman, regulators would need clear legal authority to place an insured institution into such a receivership and to reorganize it before it actually becomes insolvent. Whether such authority now exists or else requires legislation should become clearer over the next few years, especially if the deposit insurance funds are given the authority to revoke insurance in a more expeditious manner than is now possible.

Of course, any comprehensive plan must allow for worst cases. Even under a stated policy of reorganizing depository institutions before they turn insolvent, some institutions will not be closed before their true economic net worth becomes negative. Continental Illinois, for example, surprised regulators as well as the market when the true magnitude of their losses became known. In such a case, it is important that uninsured depositors and other creditors be made to bear losses associated with reorganization. That those depositors and creditors would attempt to run or otherwise avoid losses makes prompt closing all the more necessary as soon as problems become known.

Arguments against prompt closing There are several arguments against prompt closing. The most frequent is that many institutions’ problems are the result of depressed regional economies that will improve over time. For example, banks that lend heavily for real estate development during a boom suffer heavily when the bust comes. But to accept the argument that such problems will disappear over time is to assume that the boom conditions are normal and that the bust is the aberration. It is far more likely that, while some recovery of value might occur as the economy improves, the vast majority of bad loans will still be bad in any but the most vigorous boom. Moreover, keeping insured banks open under such a rationale effectively puts the bank regulatory agencies in the business of speculating on real estate values, the same activity responsible for much of the present crisis in the thrift industry. If the effect of regional economic problems on bank solvency has any validity, it is in arguing against geographical restrictions on bank expansion rather than against prompt closing.

Another argument against prompt closing is that shutting down an institution before it is technically insolvent could be an unconstitutional taking of private property. While such concerns are not to be dismissed lightly, it is likely that prompt closing would not run afoul of federal law or the Constitution. First, the law authorizes regulators to place an institution that is being operated in an unsafe or unsound manner. Second, the Supreme Court may not look kindly on challenges to the constitutionality of a law designed to protect the deposit insurance system by parties who at the same time benefit handomely from the system’s existence. The main challenge is to formulate policies that enable regulators to protect the deposit insurance funds while ensuring that the procedure does not violate rights to due process.

Regulatory initiatives Policies of regulatory forbearance have presented an obstacle to the prompt closing of insolvent depositories. For example, while some institutions may refrain from closing an institution based on a belief that if given time the management will right the problems that led to insolvency. More important, decisions to close institutions are not made in a vacuum. Rather, they may involve political pressure, explicit or implicit, to favor certain institutions. But even if Congress does declare certain institutions off-limits, it does not diminish the desirability of quickly closing insolvent institutions. It is better that some be closed promptly than none.


18 For a detailed analysis of the legal basis for one early closure proposal, see Raymond Natter, “Analysis of FHLBB’s Early Intervention Proposal Suggests Legal Basis for Plan,” BNA’s Banking Report, February 27, 1989, pp. 484-89.

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While regulatory agencies are likely to want to keep the option of extending regulatory forbearance, they have at the same time proposed prompt closing policies. Among them:

- The Federal Home Loan Bank Board at the end of 1988 requested comments on a proposal that a thrift insured by FSLIC could be placed into receivership or conservatorship if its capital were to fall below 1.5 percent of total assets. The capital level would be sufficient reason for closing, and the FHLBB would not have to make any further showing that the institution was being operated in an unsafe or unsound condition.19

- The Comptroller has suggested it be given the authority to terminate deposit insurance coverage for an institution on six months’ notice if the institution appears to be operating in a manner that threatens the deposit insurance fund.20 Apparently, the authority could be exercised before market net worth were to become negative. At present, the revocation process can last years. Revoking deposit insurance would have the same practical effect as early closing. The FDIC bases its request for streamlined revocation powers on the desirability of an insurer’s having the right to determine whom it insures.

- The Comptroller of the Currency in March 1989 proposed that a national bank be declared insolvent when its equity capital reaches zero.21 The effect of the proposal would be to exclude loan loss reserves from capital. The rationale is that loan loss reserves simply recognize actual and anticipated losses and do not represent net worth. While not specifically a prompt closing rule, the proposal would move the Comptroller’s policy closer to prompt closing.

Any of the above rules would be an improvement over the current system. The first two would explicitly provide for early intervention to block losses. Further, if the Financial Accounting Standards Board eventually were to require the reporting of bank assets and liabilities at market value, the Comptroller’s proposed rule would for all practical purposes represent a prompt closing rule. Whatever one’s specific preferences, any of the above would go a long way toward protecting the deposit insurance fund from loss.

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19 Federal Register, vol. 54, p. 876.

20 Federal Deposit Insurance Corporation, Deposit Insurance for the Nineties: Meeting the Challenge, Draft Executive Summary, January 1989, p. 18.


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Measures to Improve Bank Regulation

Capital Regulation

Recently, bank regulators from twelve industrial nations agreed on a common set of risk-based capital guidelines for banks. Essentially, the guidelines require that more capital be maintained against relatively more risky activities. Such regulation represents an implicit form of pricing and as such helps make banks aware of the costs they impose on the deposit insurance funds. Of course, risk-based capital is not a perfect solution. The risk categories are rather broad and seem a blunt instrument for dealing with certain risks. For example, all commercial loans are placed in the same category regardless of the creditworthiness of the borrower. Further, until bank accounting conventions are revised to reflect estimates of market values, net worth under the new procedures might still be overstated. But while not a panacea, risk-based capital is an improvement over its predecessor.

The Federal Home Loan Bank Board has issued for comment a set of risk-based capital guidelines for thrift institutions. Their proposal specifically includes a component to reflect interest rate risk,22 which if adopted would represent an advance over the standards for banks. More recently, the Bush administration has proposed that thrifts be required to meet the same capital requirements as banks. Both proposals would represent an important complement to existing regulation. They would enhance equity by treating all institutions alike and requiring that they play by the same rules. They would enhance efficiency by increasing incentives for depository institutions to control risks.

Because the newer and more stringent capital requirements represent a significant departure from past practices, they have raised a great deal of concern among many in the thrift industry.23 Opponents of the new capital standards contend that bringing their capital ratios up to 6 percent by 1991 would involve an unprecedented need to raise funds in the market and would drive many otherwise sound thrifts out of business. But while meeting the new standards would present a challenge, those standards would not force solvent but undercapitalized institutions out of business. Instead, it would make it difficult for such institutions to continue supporting their current levels of investment. One could just as easily frame the argument in terms of excessive asset growth leveraged by insured deposits with too little attention to
capital. In other words, if raising capital would be difficult, thrifts could shrink their asset base until their ratios reach regulatory minimums. It is by no means clear that the current level of thrift assets is consistent with a financially sound thrift industry.

**Market value accounting** Information concerning the true financial condition of banks could be greatly improved if banks were required to report estimates of the market values of their assets and liabilities. The reason is that market values give the most accurate estimate of a depository institution's true net worth. Put more simply, market values reflect reality more closely than do historical (or book) values. This truth becomes obvious in an insolvent, when the ultimate cost to the deposit insurer is determined by the market value of assets less that of liabilities. Book value of equity is for all practical purposes irrelevant.

In any banking system, changes in creditworthiness or in interest rates might drive the market value of an institution's assets below that of its liabilities. But under current regulatory accounting standards the change would not be reflected as such until loan loss reserves were increased, part of the asset written off, or the asset sold. This is especially obvious with long-lived assets such as fixed-rate mortgage loans.

While market value accounting would be a major departure from current practice, it is already being studied by at least two regulatory bodies. First, given the well-documented vulnerability of thrift institutions to interest rate risk, Federal Home Loan Bank Board member Lawrence J. White has expressed interest in developing market value accounting methods for thrifts. Second, the Financial Accounting Standards Board (FASB) published a proposal in 1987 and established a task force in early 1989 regarding reporting of financial instruments at market values or an estimate thereof. Thus some form of market value accounting eventually could be adopted for depository institutions.

Market value accounting would have several advantages for banking policy. First, making market values the standard for determining solvency would reduce the potential losses borne by the deposit insurance funds. If regulators close a bank when its market value first goes negative rather than waiting for book value to go negative, further loss will have been avoided. Second, capital regulation will be more effective if net worth is based on actual values of assets and liabilities. Specifically, measurement of capital ratios under market value accounting would account for interest rate risk and imbalances between asset and liability durations. This would be particularly important in the case of thrift institutions making long-term mortgage loans.

Third, marking assets to market would reduce some perverse incentives existing under the present system to sell high quality assets to realize gains while retaining poor quality assets to avoid recognizing losses. For example, a bank wishing to build up its capital might be tempted to sell a profitable subsidiary in order to realize the gain while at the same time leaving troubled loans on its books rather than sell them at a loss. Under market value accounting, in contrast, the gain in value of the profitable subsidiary and loss on the loan would already be recognized so the bank would have less incentive to sell the good asset.

Despite the desirability of market value accounting, there are reasonable questions about its feasibility. It might be helpful to first consider areas in which market value accounting would present no major implementation problems. First, securities holdings are already reported at market value along with book value in call reports, so there is no obstacle to substituting current for historical values. Most securities held in a bank's investment portfolio are traded on active markets, so there is virtually no information problem in marking such assets to markets. Indeed, securities in trading accounts are already marked to market.

Second, high quality loans of one-year maturity or less or with (at least) annually adjustable rates could be assumed to be at market value. Whatever advantages may accrue from marking such assets to market are probably swamped by the costs. Interest rate risk may exist for such assets, but it is limited by the early repricing opportunity.

Third, loans for which a secondary market exists, such as loans to developing countries, could be marked to market. In fact, Salomon Brothers and Merrill Lynch issue quotes of market values that are reprinted periodically in the *American Banker*. Such loans are to a relatively small and easily distinguished class of borrowers, each of which has sufficient debt outstanding to support market trading. Interested parties sometimes object that market values do not represent the ultimate collectable amount. But such arguments are inconsistent with

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conventional economic reasoning. The market value in fact reflects the present value of what is expected to be collected ultimately. It is unlikely that participants in such a sophisticated market would systematically and repeatedly underestimate the value of the debt.

The major area of difficulty for adopting market value accounting is in valuing loans for which no secondary markets exist. While interest rate risk presents few practical difficulties, loan quality is another matter. Unlike loans traded in a secondary market, most other bank loans are dispersed among a large number of heterogeneous borrowers. While loans to the largest corporations might easily be valued, loans to consumers and medium- and small-sized businesses might not.

At present, loan loss reserves (also called valuation reserves) help to move a bank's net worth toward market value. Generally, methodologies for computing such reserves are based on percentages of loans outstanding in various quality classifications. While somewhat inexact, it does serve to help offset the distortions of carrying assets at book values.

A possible solution might be to adjust the values of groups of assets rather than individual assets. At present, banks are actively involved in converting groups of loans, most notably mortgage and automobile loans and credit card receivables, into securities. When loans are packaged into securities, they are priced to reflect certain assumptions about prepayment and default risks. In addition, loan sales between banks are becoming commonplace. The point here is that the knowledge now being developed in the private sector could be used to develop valuation methodologies. The result might be similar to the current practice of offsetting assets with reserves, but the methodologies would be more exact than is now the case.

The actual effects of market value accounting on most banks' portfolios could be minor for those institutions that have followed conscientious loan loss reserve practices. More important, recognizing market values would simply change the focus of where losses are realized from the income statement to the balance sheet. That is, under the current system losses occur over time as an asset valued at its historical cost suffers an impaired income stream. The result is a lower return on the asset. But if the asset were marked to market, there would be a one-time loss of value but the income would now reflect a "normal" return on the marked-down asset.

Deposit insurance premiums There are three significant aspects of deposit insurance pricing. The first is determining a price sufficient to keep the level of insurance fund reserves at an adequate level. The Bush administration plan to raise premiums for thrifts is in that spirit. Further, the FDIC has suggested that it be given the authority to base rates on a three-year average of net loss experience. The major objection to such authority is that across-the-board rate hikes unfairly penalize soundly run institutions. But unless the insurer can easily distinguish among banks, all pricing schemes (including the current one) will suffer from this deficiency.

The second aspect of pricing is basing the premium paid by a particular institution on the riskiness of its activities. As with risk-based capital, risk-based premiums could enhance equity and efficiency by placing costs on banks engaging in activities perceived to increase risk exposure. Further, the risk-based component of the insurance premium would diminish the perceived inequities of adjusting premiums across the board to reflect loss experience.

Unfortunately, efforts to develop variable prices have not been encouraging. The practical effect of pricing schemes advanced thus far would be to penalize losses after they have been incurred rather than to discourage beforehand the behavior that leads to the losses. In other words, pricing proposals have been based on after the fact observations when their stated purpose should be to modify behavior before the fact.

Banks that engage in risky behavior should be required to bear the costs associated with those risks. Whether the price of added risk should be imposed explicitly in the form of risk-based premiums or implicitly in the form of risk-based capital is essentially a question of ease of implementation. While feasibility now favors risk-based capital, it would be premature to abandon all efforts to develop variable premiums.

A final pricing issue is the base for assessing premiums. The FDIC has suggested that the assessment base be expanded to include secured borrowings from, for example, Federal Home Loan Banks. The rationale is that such borrowings on the liability side are secured by a high quality asset on the asset side. As a result, after a failure the secured lenders would get away with the highest quality assets while the FDIC would be left with more questionable assets.

The FDIC demurred at the opportunity to propose including foreign deposits in its rate base. The

27 FDIC, op. cit., p. 13.
rationale for including foreign deposits is that the current system of de facto 100 percent deposit insurance relieves foreign depositors of losses even if their funds are not explicitly insured. Charging premiums on foreign deposits would simply recognize the reality that foreign deposits are effectively covered and would recover some of the costs of the insurance actually provided. But even if de facto 100 percent insurance were scaled back to a less generous modified payout policy in which uninsured depositors took some losses, foreign depositors would still benefit from the prompt reorganization and immediate availability of all but a small percentage of their deposits made possible by deposit insurance.

The argument against including foreign deposits in the rate base is that money center banks with significant foreign deposits would be handicapped relative to their counterparts in other countries that would not be so charged. But the fact remains that current policy insulates our largest banks from failure and that such insulation must be worth something to the banks. Even if foreign countries subsidize their banks’ competition with our own, there is little substance to the argument that our largest banks should be undercharged for the protection they get while the vast majority of banks pick up the additional tab.

State banking powers A final regulatory reform issue involves conflicts between state and federal authority over banking powers. Given the division of authority over banking between the states and the federal governments, it is inevitable that there will from time to time arise some disagreement over what powers depository institutions may prudently exercise. Indeed, it is often pointed out that the most egregious examples of imprudent investment occurred in California and Texas, both of which allowed their state-chartered thrifts powers denied their federally chartered brethren.

Given that depository institutions are insured federally, it makes sense to allow the deposit insurance funds veto power over activities of state-chartered federally insured institutions. Otherwise, federal authorities are limited in their ability to control their risk exposure.

Market Discipline

Short of stationing an examiner in every bank, it is difficult to conceive how direct supervision and regulation can do the entire job of ensuring safety and soundness. But it is likely that if banks were monitored by other parties in addition to regulators the result would be more timely spotting and correcting of problems.

One may object that bank stockholders already have incentives to keep a close watch on the actions of bank managers. But monitoring by shareholders is not enough. After all, they are only liable up to the amount of their initial investment. If the bank goes deeply insolvent, the equity may be wiped out but the rest of the bill will be divided among the deposit insurer and unsecured creditors. It seems advisable, therefore, that there should be more parties involved than just the shareholders.

End de facto 100 percent deposit insurance coverage Federal deposit insurance was not designed to protect banks against failure. Most bank failures now involve some type of merger or an even more direct bailout. Because nowadays all depositors and sometimes even debt holders are rescued from bearing any costs in an insolvency, depositors and other creditors have little reason to pay close attention to the condition of their banks. If market discipline is to have any relevance to current policy, then it is imperative that bank regulators pursue all bank failures with rescue of insured depositors only in mind. The sole exceptions should be cases in which an institution is shut down before its market value of net worth becomes negative.

Imposing market discipline on uninsured depositors and creditors would have two significant advantages, especially in the case of a large bank failure. First, by making it possible to close or reorganize institutions before net worth dropped well below zero it would minimize costs to the deposit insurance funds. Consequently, it would also minimize the burden imposed on well-run institutions through deposit insurance premiums. Second, it would provide an added incentive for depositors and other creditors to cooperate with the efforts of regulators to reorganize or liquidate troubled institutions.

One objection to imposing depositor discipline is that individual depositors are not in a position to monitor banks effectively. The objection falls on two counts. First, banks are themselves a major category of uninsured depositors. It is difficult to imagine a group more advantageously situated to monitor a bank’s condition than a bank’s peers. Second, given that deposits of $100,000 and less are insured, it is only large depositors that would be expected to bear failure costs. Certainly it is not unreasonable to expect large depositors to possess sufficient sophistication to pay attention to the financial condition of their banks.28

28 The FDIC seems to be of two minds on this issue. On one hand, they do not believe in reliance on depositor discipline due to the danger of runs. On the other hand, they do not believe in explicit 100 percent deposit insurance coverage because it would reduce market discipline. See FDIC, op. cit., pp. 14-15.
The depositors may receive further distributions if pessimistic. Such a policy was actually used for franchise, reorganization might be preferable to their funds less a deduction to reflect expected losses. A second method would be limiting deposit insurance for each individual to the statutory amount. The problem with such an approach would be the difficulty of enforcing it for almost 20,000 depository institutions.

A more meaningful way to restore the concept of uninsured deposits would be to return to a modified payout policy in which uninsured depositors receive their funds less a deduction to reflect expected losses. The depositors may receive further distributions if the initial deduction turned out to be overly pessimistic. Such a policy was actually used for dealing with the failure in 1982 of the Penn Square Bank. Further, if a failed bank still had a significant franchise, reorganization might be preferable to liquidation. The deposit insurer could in that event use its “bridge bank” authority to effectively create a new banking organization from the assets and remaining deposits of the old. The bridge bank could then be sold to new owners. Thus, a modified payout policy need not involve liquidation of the failed institution in every case.

Unfortunately, the failure and rescue of Continental Illinois in 1984 sounded a retreat from market discipline. The Continental rescue shows the complications that can arise when attempting to save a bank from failure. Because of covenants written into the debt issued by Continental’s parent holding company, federal regulators were virtually forced to rescue holding company creditors along with the bank itself. In other words, not only were all deposits insured but so were the creditors. Similar problems have arisen in Texas with First City Bancorp. and MCorp. Only the failure of First Republic Bank Corp. may have been handled in such a way as to expose debt holders to losses. Only time will tell if the FDIC will prevail against the litigation of First Republic’s creditors.

Making market discipline credible. Given the problems with the implicit guarantees of bank holding company debt, it is necessary that means be devised to expose both uninsured depositors and bank holding company creditors to the threat of loss. In particular, it would be helpful to develop and make public a policy statement with the following two elements:

- An outline of the procedure to be followed in the event of a large bank failure, including a description of treatment of uninsured depositors.
- An explicit statement that there is no protection for bank or bank holding company stockholders or bank holding company creditors, even for large companies. Especially in the light of a recent Federal District Court decision regarding MCorp in Texas, such a policy might require legislation to make it effective.

Such a policy would be helpful in two ways. First, it would enable the public to plan their actions on the basis of known government policy rather than engage in a guessing game regarding regulators’ intentions. Second, as an explicitly outlined procedure it would be more credible than would any policy that relied heavily on the discretionary powers of regulatory agencies. If the policy were credible, it would be more likely to affect behavior in the market than would a policy in which regulators were always expected to flinch when standing face to face with a major failure.

One way to make policy with respect to bank failures more credible would be to place legal limits on the discretion regulators could exercise in dealing with insolvent banks. At present, banks are not subject to bankruptcy law in the same way as other firms. A failing bank does not enter bankruptcy proceedings administered by the judicial system. Instead, a bank is declared insolvent by its chartering agency, which typically places the failed bank into a receivership under the auspices of the deposit insurance agency. To be sure, depositors and other creditors who feel they have been dealt with unjustly by the deposit insurance agency have recourse to the courts. But the judicial system currently lacks the mandate to limit initial payouts to insured depositors only. Given that case law has not been clear on the issue, such a mandate would probably require legislation.

Dotsey and Kuprianov argue in favor of placing bank failures under the jurisdiction of the courts to ensure that the deposit insurance agencies be limited to paying not more than the legally insured amount, which is now $100,000 per account. Once an insured

bank or thrift were declared insolvent, the court would appoint a receiver and instruct the deposit insurance agency to initially compensate only legally insured depositors.

Of course, for such an approach to be workable, some deposits must be uninsured. As long as all deposits a bank issues are fully insured, there will be little incentive for creditors to force the bank into bankruptcy proceedings. The bank could simply meet all its bills by accepting additional insured deposits, much as many insolvent thrifts have done with brokered deposits in recent years. Therefore, it is critical that at least some depositors be placed at risk of loss so that when the financial condition of the bank becomes questionable it is forced into bankruptcy proceedings or reorganized before it actually becomes economically insolvent.

"Safe Banking" The above measures might seem unduly harsh, if not disruptive, to some. If so, there are two alternatives short of abandoning deposit insurance. One is to stay with the current system. That this would be intolerable is obvious from the current situation. The other alternative is to adopt a "safe banking" system that separates banks' deposit taking and payment activities from risky lending.

There are several such proposals. They generally have in common that they would limit banks to "safe" investments such as government securities and highly rated corporate securities. Commercial lending would be by separate entities funded by commercial paper. The salient characteristic is that depositors would be required to sacrifice the economic gains made possible by the existence of financial intermediaries that combine the functions of offering both payment services and lending facilities in return for virtually complete safety. But under such a system, it is unclear why deposit insurance would be necessary, other than to protect depositors against cases of outright fraud and theft.

It may be too early to pursue such an alternative. But if the moral hazard in deposit insurance cannot be controlled, there may be no other feasible choice.

Conclusion

Just as the paper began with a paradox, it will conclude with a variation of the same paradox: To make banking safer, it must be made less safe for bank creditors. In other words, unless depository institutions know they can fail and will be allowed to fail, some may not have sufficient incentives to conduct their business in a safe manner.

In order to encourage responsible behavior, several aspects of the current system must change. First, regulators should have the means to deal promptly and firmly with insolvencies before they threaten the soundness of the deposit insurance funds. Second, no institution should be considered too big to fail. Third, no depositors or creditors except those insured under the law should be treated as insured. Fourth, the flow of information to the market should be as accurate as possible. Fifth, explicit and credible policies should be in place for handling future failures.

None of the above measures is meant as a panacea. Some bankers will still make bad loans and as a result some banks will fail. But the above measures should at least help avoid the widespread insolvencies that in the 1980s were the result of the lopsided incentives inherent in the deposit insurance system.
FIFTH DISTRICT BANKS' RETURN ON ASSETS:
HIGHEST IN DECADE

John R. Walter and Donald L. Welker

Overview

In 1988 commercial banks in the Fifth Federal Reserve District enjoyed a significant improvement over the previous year's return on assets (ROA), defined as the ratio of net income to average assets. This figure reached its highest level of the past ten years. A special factor, namely the extraordinary provisions for loan losses set aside in 1987, accounts for much of this improvement. Loss provisions in 1987 exceeded actual loan charge-offs. The excess allowed Fifth District banks to set aside smaller provisions for loan losses in 1988 and provided some of the fuel for a historically strong 1988 profit figure. Other than lower provisions for loan losses, income and expense relative to assets at Fifth District banks changed little from 1987 to 1988. Much the same experience was typical of all U.S. banks, although the relative improvement in ROA for the nationwide group was greater than for Fifth District banks. Despite this gain for all U.S. banks, ROA in the Fifth District still exceeded the national average because of Fifth District banks' higher interest margins and better loan quality.

Interest Margin

Even as interest rates increased an average of 100 basis points during 1988, average net interest margin remained remarkably stable for Fifth District banks (Table I). Closely matched asset and liability interest rate sensitivities enabled District banks to maintain a steady net margin. True, rates paid on Fifth District banks' liabilities were on average slightly more sensitive to interest rate movements than were their asset yields; therefore, rising interest rates in 1988 tended to push up interest expenses more than interest income. But banks offset the negative effect this had on net margin by increasing loans and decreasing securities. Table V shows that on average loans earned considerably more than securities.

In 1988, Fifth District banks continued a long-standing trend of posting higher net interest margins than banks nationwide (Tables I and II). District banks enjoyed slightly more interest income relative to assets and much lower interest expense than did all U.S. banks. The significant difference between District and all U.S. banks' interest expense relative to assets was due to District banks' greater access to lower cost funding. Specifically, Fifth District banks depended much less on costly foreign office deposits, and relatively more on the liabilities Table VI categorizes as other deposits, including NOW accounts, MMDA accounts, savings deposits, and small time deposits. Table VI shows the benefits of such a strategy in terms of cost of funds.

Loss Provisions

Most of the improvement in ROA at banks in the Fifth District and throughout the nation resulted from a much lower loan loss provision in 1988 compared with 1987. During 1987 banks set aside large provisions for future loan losses based on anticipated losses on loans to less developed countries (LDCs). As can be seen in Tables I and II, banks in the Fifth District and in the nation as a whole returned provisions to more customary levels in 1988. Large banks (end-of-year assets in excess of $1 billion) were responsible for most of the reduction in loss provisions for the aggregate of all banks at the District and national levels in 1988 since they make the majority of LDC loans. In the Fifth District virtually all the LDC debt on large banks' books was sold or charged off in 1988.

Allowance for loan losses is analogous to a savings account from which future loan losses can be deducted. In 1987 large Fifth District banks added more funds to the account than they withdrew to charge off bad loans; while in 1988 they withdrew more than they added. Across the United States,

Valuable research assistance was provided by Richard Ko.

1 Maryland, Virginia, North Carolina, South Carolina, the District of Columbia, and most of West Virginia. The District of Columbia is referred to as a "state" in this study.

2 It should be emphasized that this is an analogy and not an identity. Unlike a savings account, the allowance for loan losses is not a source of cash.
large banks followed the same pattern of loss provisions exceeding charge-offs in 1987 and charge-offs exceeding loss provisions in 1988 (Tables I and II).

Since large banks allocated more to "savings" than they used in 1987 and less than they used in 1988, ROA and return on equity (ROE), the ratio of net income to average equity, were administratively lowered in 1987 and administratively raised in 1988. There is no evidence, however, that this development constitutes a "milking" of reserves for the purpose of enhancing reported earnings. Rather, banks simply chose to bear much of the pain of lowered profits caused by nonperforming LDC loans in one year - 1987. The observed results do serve to highlight a material problem when attempting to compare bank performance from one accounting period to another.

In 1988 Fifth District banks continued to exhibit much lower ratios of past due and nonaccruing loans to total loans than the national composite. Loans past due or not accruing interest were .87 percent of total loans in 1988 compared to 1.11 percent in 1987. Throughout the nation this ratio stood at 2.95 percent in 1988 as compared to 3.49 in 1987, more than three times the comparable delinquency rate for Fifth District institutions. The Fifth District's low level of problem loans meant that banks charged off fewer loans and set aside lower provisions for loan losses than did banks in the rest of the nation, leading to superior ROA and ROE results for District banks.

Noninterest Revenue and Expense

Noninterest income increased and noninterest expense declined at Fifth District banks during 1988 (Table I). The net effect was a six basis point improvement in income before taxes. Noninterest income grew because of slight increases in service charges on accounts and leasing income, but mostly from growth in all other noninterest income consisting chiefly of trading account income, trust income, credit card fees, mortgage servicing fees, and deposit box rentals. Noninterest expense, which includes salaries, bank premises expenses, fees paid by banks to their bank holding companies, deposit insurance fees, legal fees, and advertising, declined largely because of a fall in salaries relative to assets. This means that the labor input per dollar of assets fell, possibly indicating greater internal operating efficiencies.

For the nation as a whole, noninterest income relative to assets rose more than in the Fifth District. Noninterest expense also rose, so that the net result was a six basis point improvement in before-tax income relative to assets. A comparison of Tables I and II shows that noninterest income for all U.S. banks was a higher percentage of assets than was noninterest income for Fifth District banks. Still, Fifth District banks earned more relative to assets from service charges on accounts than did the average U.S. bank. Unfortunately the data are not specific enough to paint a more complete picture of the difference. There is evidence, however, that large banks at the national level derived substantially more income from trading accounts, foreign exchange trading, and trust activities than did their Fifth District counterparts. Over the years covered in Tables I and II, it is clear that while Fifth District banks have been unable to raise noninterest income as quickly as the U.S. average, they have continued to lower noninterest expense, an accomplishment that has eluded banks throughout the rest of the nation.

Management fees assessed by parent bank holding companies on their bank subsidiaries, a noninterest expense, can lead to a distortion of performance results. Banks that are not subsidiaries of holding companies obviously do not pay such fees, while the fees are fairly large relative to assets for bank holding company subsidiary banks. Distortion of the subsidiary bank's profit occurs if this expense category is simply used to pass income upstream from the bank to the bank holding company. There is no distortion, of course, to the extent that management fees pay for services performed by the bank holding company that would otherwise have to be provided by the subsidiary bank. If fees exceed service costs, however, the bank subsidiary's income, ROA, and ROE will be artificially depressed. Management fees amounted to approximately 14 percent of Fifth District subsidiary banks' net income and about .13 percent of total assets in 1988. Without this expense allocation, such banks' income before taxes relative to assets could have been as much as 13 basis points higher.

Income Taxes

Relative income tax burdens were remarkably stable across size classifications of U.S. banks in 1988. Whether large, medium (assets between $100 million and $1 billion) or small, banks paid out roughly 30 percent of income before taxes. While on average Fifth District banks paid taxes equal to 23 percent of income before taxes, there were differences among size classes. Though small- and medium-sized District banks' taxes amounted to slightly more than 25 percent of income before taxes, large District banks were able to limit this figure to 22 percent. The lower effective tax burden for Fifth District banks accounts for one-half of their 18 basis
point superiority in 1988 ROA relative to the performance of all U.S. banks.

Profits

Table I shows that ROA at Fifth District banks climbed from .88 percent in 1987 to 1.01 percent in 1988. At the national level (Table II) the improvement in ROA was spectacular, growing from a dismal .11 percent in 1987 to .83 percent in 1988. Return on equity grew at Fifth District banks (Table I) from 13.83 percent for all of 1987 to 15.60 percent for 1988, high by historical standards. For all U.S. banks (Table II) ROE improved from 1.88 percent in 1987 to 13.50 percent in 1988. From 1987 to 1988 the proportion of Fifth District banks reporting no net income or losses remained about 10 percent (Table I). For banks throughout the nation the proportion fell from 18 to 14 percent (Table II).

The improvement in ROA at the District level reflected substantial improvements at large banks and medium-sized banks. Table III shows that both large banks' and medium banks' average ROA increased from 1987 to 1988, while ROA for small Fifth District banks fell. Small District banks’ ROA, falling since 1985, was below the average for the District for the first time in recent years in 1988. To a large degree the decline in ROA for small District banks reflects their inability to offset declining net interest margins with improvements in noninterest income or savings in noninterest expenses.

Bank profitability varied considerably among states in the Fifth District (chart and Table IV). In terms of ROA, Virginia and North Carolina banks topped the six states in the District. Both the Virginia and the North Carolina economies have been robust performers, contributing to the strong performance of banks in these states. In addition, bank holding companies in Virginia and North Carolina have led the nation in interstate bank acquisitions.

Although West Virginia banks continue to show relatively high ROAs, the state had the lowest average 1988 ROE in the District. The difference between ROA and ROE in West Virginia’s banks is attributable directly to their strong capital position. While the West Virginia economy has not been strong in recent years, banks there have learned to adapt and produce consistently strong earnings compared with most of the nation’s banks. The stable ROA produced by West Virginia banks in recent years (chart) contrasts with the fluctuations in ROA of District of Columbia banks. But D.C. banks were able to record a higher ROE number than their West Virginia counterparts due to higher leverage (the ratio of assets to equity).

Capital

Risk-based capital guidelines adopted by the Federal Reserve in January 1989 will phase in minimum capital ratios between 1990 and 1992 to make regulatory capital sensitive to differing levels of risk borne by the bank. The guidelines require banking organizations in the United States to achieve minimum ratios of regulatory capital to assets with attention to asset riskiness and off-balance sheet exposure. Concern with meeting the requirements led banks, especially large banks likely to engage in off-balance sheet activities, to add capital during 1988.

Fifth District banks increased equity capital relative to assets in 1988 (Table VII). Large banks added most substantially to capital, doing so mainly by retaining some of the year’s earnings. Small banks made limited additions to capital by increasing common stock and surplus relative to assets, though this was offset to a degree by lower contributions to retained earnings due to weaker 1988 income performance. Assets grew more quickly than common stock and surplus at medium banks leading to a decline in the equity capital to assets ratio despite additions to retained earnings.

Table VII shows that for all U.S. banks, equity capital to assets ratios increased even more than in the Fifth District. Most of the increase was in the large bank category as was the case for the District. But even with the larger increases to equity capital at the national level, Fifth District equity capital re-
mained a bit higher on average than did that for U.S. banks.

Conclusion

Fifth District banks continued to outperform the average for all U.S. banks in 1988 in terms of ROA and ROE. While the relative performance gap between the Fifth District's and the nation's banks narrowed during the year, this was mainly because earnings at Fifth District banks did not fluctuate as dramatically due to year-to-year changes in loan loss provisions.

Recent regulatory emphasis on strong equity capital positions for all commercial banks sends the message that banks must generate an income stream commensurate with required levels of capital. Fifth District banks' performance in 1988 demonstrated the ability to generate such an income stream.

### Table I

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<tbody>
<tr>
<td>Gross interest revenue</td>
<td>10.02</td>
<td>9.48</td>
<td>8.51</td>
<td>8.09</td>
<td>8.62</td>
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<td>Gross interest expense</td>
<td>6.33</td>
<td>5.70</td>
<td>4.97</td>
<td>4.59</td>
<td>5.13</td>
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<td>Net interest margin</td>
<td>3.69</td>
<td>3.78</td>
<td>3.54</td>
<td>3.50</td>
<td>3.49</td>
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<td>Noninterest income</td>
<td>1.15</td>
<td>1.22</td>
<td>1.22</td>
<td>1.22</td>
<td>1.25</td>
</tr>
<tr>
<td>Loan and lease loss provision</td>
<td>0.33</td>
<td>0.46</td>
<td>0.40</td>
<td>0.50</td>
<td>0.33</td>
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<td>Securities gains</td>
<td>-0.02</td>
<td>0.06</td>
<td>0.15</td>
<td>0.07</td>
<td>0.02</td>
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<td>Noninterest expense</td>
<td>3.37</td>
<td>3.40</td>
<td>3.29</td>
<td>3.17</td>
<td>3.14</td>
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<tr>
<td>Income before tax</td>
<td>1.12</td>
<td>1.20</td>
<td>1.23</td>
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<td>Taxes</td>
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<td>0.22</td>
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<td>Other 1</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<td>ROA: Return on assets</td>
<td>0.93</td>
<td>0.98</td>
<td>1.00</td>
<td>0.88</td>
<td>1.01</td>
</tr>
<tr>
<td>Cash dividends declared</td>
<td>0.31</td>
<td>0.31</td>
<td>0.34</td>
<td>0.47</td>
<td>0.48</td>
</tr>
<tr>
<td>Net retained earnings</td>
<td>0.62</td>
<td>0.67</td>
<td>0.66</td>
<td>0.41</td>
<td>0.53</td>
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<td>ROE: Return on equity</td>
<td>14.62</td>
<td>15.41</td>
<td>15.87</td>
<td>13.83</td>
<td>15.60</td>
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<td>Average assets ($ millions)</td>
<td>137,131</td>
<td>156,574</td>
<td>181,133</td>
<td>203,376</td>
<td>221,581</td>
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<td>Net income ($ millions)</td>
<td>1,275</td>
<td>1,539</td>
<td>1,817</td>
<td>1,775</td>
<td>2,234</td>
</tr>
</tbody>
</table>

| Loan and lease loss provision ($ millions) | 453    | 713    | 733    | 1,022  | 731    |
| Loan and lease charge-offs, net of recoveries ($ millions) | 251    | 405    | 533    | 727    | 745    |
| Percent of banks with net income less than or equal to zero | 6.0    | 6.3    | 8.3    | 10.3   | 10.1   |

Note: Discrepancies due to rounding error.

1 Average assets are based on fully consolidated volumes outstanding at the beginning and at the end of the year.

2 Includes extraordinary items and other adjustments after taxes.

3 Return on assets is net income divided by average assets.

4 Return on equity is net income divided by average equity. Average equity is based on fully consolidated volumes outstanding at the beginning and at the end of the year.

Source: Consolidated Reports of Condition and Income.
Table II

INCOME AND EXPENSE AS A PERCENT OF AVERAGE ASSETS:
ALL U.S. COMMERCIAL BANKS, 1984-88

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross interest revenue</td>
<td>10.11</td>
<td>9.23</td>
<td>8.15</td>
<td>7.99</td>
<td>8.56</td>
</tr>
<tr>
<td>Gross interest expense</td>
<td>6.95</td>
<td>5.98</td>
<td>5.02</td>
<td>4.87</td>
<td>5.34</td>
</tr>
<tr>
<td>Net interest margin</td>
<td>3.16</td>
<td>3.25</td>
<td>3.13</td>
<td>3.12</td>
<td>3.22</td>
</tr>
<tr>
<td>Noninterest income</td>
<td>1.27</td>
<td>1.39</td>
<td>1.46</td>
<td>1.63</td>
<td>1.73</td>
</tr>
<tr>
<td>Loan and lease loss provision</td>
<td>0.55</td>
<td>0.66</td>
<td>0.76</td>
<td>1.24</td>
<td>0.53</td>
</tr>
<tr>
<td>Securities gains</td>
<td>-0.01</td>
<td>0.06</td>
<td>0.13</td>
<td>0.05</td>
<td>0.01</td>
</tr>
<tr>
<td>Noninterest expense</td>
<td>3.05</td>
<td>3.15</td>
<td>3.17</td>
<td>3.26</td>
<td>3.30</td>
</tr>
<tr>
<td>Income before tax</td>
<td>0.82</td>
<td>0.89</td>
<td>0.81</td>
<td>0.29</td>
<td>1.13</td>
</tr>
<tr>
<td>Taxes</td>
<td>0.19</td>
<td>0.21</td>
<td>0.19</td>
<td>0.18</td>
<td>0.33</td>
</tr>
<tr>
<td>Other</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>ROA: Return on assets</td>
<td>0.64</td>
<td>0.70</td>
<td>0.63</td>
<td>0.11</td>
<td>0.83</td>
</tr>
<tr>
<td>Cash dividends declared</td>
<td>0.31</td>
<td>0.33</td>
<td>0.33</td>
<td>0.36</td>
<td>0.44</td>
</tr>
<tr>
<td>Net retained earnings</td>
<td>0.33</td>
<td>0.37</td>
<td>0.31</td>
<td>-0.24</td>
<td>0.39</td>
</tr>
<tr>
<td>ROE: Return on equity</td>
<td>10.63</td>
<td>11.33</td>
<td>10.22</td>
<td>1.88</td>
<td>13.50</td>
</tr>
<tr>
<td>Average assets ($ billions)</td>
<td>2,398</td>
<td>2,604</td>
<td>2,199</td>
<td>2,926</td>
<td>2,994</td>
</tr>
<tr>
<td>Net income ($ billions)</td>
<td>15.4</td>
<td>18.1</td>
<td>17.4</td>
<td>3.3</td>
<td>24.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan and lease loss provision ($ billions)</td>
<td>13.2</td>
<td>17.2</td>
<td>21.3</td>
<td>36.3</td>
<td>15.9</td>
</tr>
<tr>
<td>Loan and lease charge-offs, net of recoveries ($ billions)</td>
<td>10.8</td>
<td>13.0</td>
<td>16.1</td>
<td>16.0</td>
<td>17.7</td>
</tr>
<tr>
<td>Percent of banks with net income less than or equal to zero</td>
<td>14.0</td>
<td>17.0</td>
<td>20.6</td>
<td>18.2</td>
<td>13.8</td>
</tr>
</tbody>
</table>

Notes: Discrepancies due to rounding error.
For footnotes see Table I.
Source: Consolidated Reports of Condition and Income.

Table III

RETURN ON ASSETS AND EQUITY
FIFTH DISTRICT BANKS
(Percent)

<table>
<thead>
<tr>
<th>ROA: Return on assets</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>1.05</td>
<td>1.06</td>
<td>0.82</td>
<td>0.88</td>
</tr>
<tr>
<td>1988</td>
<td>0.97</td>
<td>1.15</td>
<td>0.98</td>
<td>1.01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ROE: Return on equity</th>
<th>1987</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.14</td>
<td>10.25</td>
<td></td>
</tr>
<tr>
<td>13.31</td>
<td>14.37</td>
<td></td>
</tr>
<tr>
<td>14.50</td>
<td>16.90</td>
<td></td>
</tr>
<tr>
<td>13.83</td>
<td>15.60</td>
<td></td>
</tr>
</tbody>
</table>

1 See footnote 3, Table I.
2 See footnote 4, Table I.
### Table IV

**BANK PERFORMANCE MEASURES BY FIFTH DISTRICT STATE—1988**

(Percent)

<table>
<thead>
<tr>
<th></th>
<th>DC</th>
<th>MD</th>
<th>NC</th>
<th>SC</th>
<th>VA</th>
<th>WV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SMALL BANKS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>-0.06</td>
<td>1.01</td>
<td>0.46</td>
<td>1.02</td>
<td>1.18</td>
<td>0.95</td>
</tr>
<tr>
<td>ROE</td>
<td>-0.62</td>
<td>11.07</td>
<td>4.23</td>
<td>9.57</td>
<td>12.58</td>
<td>10.72</td>
</tr>
<tr>
<td>Nonperforming loans &amp; leases</td>
<td>1.19</td>
<td>0.79</td>
<td>0.83</td>
<td>1.31</td>
<td>1.08</td>
<td>2.07</td>
</tr>
<tr>
<td>Net charge-offs</td>
<td>1.01</td>
<td>0.15</td>
<td>0.39</td>
<td>0.33</td>
<td>0.32</td>
<td>0.60</td>
</tr>
<tr>
<td>Number of banks</td>
<td>10</td>
<td>46</td>
<td>37</td>
<td>56</td>
<td>123</td>
<td>138</td>
</tr>
<tr>
<td><strong>MEDIUM BANKS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.98</td>
<td>1.16</td>
<td>1.22</td>
<td>0.83</td>
<td>1.27</td>
<td>1.12</td>
</tr>
<tr>
<td>Nonperforming loans &amp; leases</td>
<td>1.02</td>
<td>0.58</td>
<td>0.90</td>
<td>0.93</td>
<td>0.70</td>
<td>1.63</td>
</tr>
<tr>
<td>Net charge-offs</td>
<td>0.28</td>
<td>0.13</td>
<td>0.20</td>
<td>0.35</td>
<td>0.37</td>
<td>0.47</td>
</tr>
<tr>
<td>Number of banks</td>
<td>7</td>
<td>36</td>
<td>21</td>
<td>12</td>
<td>42</td>
<td>36</td>
</tr>
<tr>
<td><strong>LARGE BANKS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.66</td>
<td>0.84</td>
<td>1.09</td>
<td>1.05</td>
<td>1.05</td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>13.64</td>
<td>13.20</td>
<td>18.85</td>
<td>16.85</td>
<td>18.77</td>
<td></td>
</tr>
<tr>
<td>Nonperforming loans &amp; leases</td>
<td>1.20</td>
<td>0.89</td>
<td>0.66</td>
<td>0.76</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>Net charge-offs</td>
<td>0.66</td>
<td>0.56</td>
<td>0.46</td>
<td>0.47</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Number of banks</td>
<td>4</td>
<td>12</td>
<td>9</td>
<td>4</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.68</td>
<td>0.90</td>
<td>1.09</td>
<td>1.01</td>
<td>1.10</td>
<td>1.05</td>
</tr>
<tr>
<td>ROE</td>
<td>13.19</td>
<td>13.28</td>
<td>17.78</td>
<td>14.35</td>
<td>17.55</td>
<td>12.02</td>
</tr>
<tr>
<td>Nonperforming loans &amp; leases</td>
<td>1.17</td>
<td>0.83</td>
<td>0.68</td>
<td>0.84</td>
<td>0.83</td>
<td>1.82</td>
</tr>
<tr>
<td>Net charge-offs</td>
<td>0.60</td>
<td>0.47</td>
<td>0.44</td>
<td>0.44</td>
<td>0.57</td>
<td>0.52</td>
</tr>
<tr>
<td>Number of banks</td>
<td>21</td>
<td>94</td>
<td>67</td>
<td>72</td>
<td>173</td>
<td>174</td>
</tr>
</tbody>
</table>

Notes: Banks not operating at the beginning of 1988 and those West Virginia banks headquartered outside the Fifth Federal Reserve District are excluded from these totals. Nonperforming loans & leases are loans and leases past due 90 days or more and those not accruing interest, as a percent of total loans. Net charge-offs are loan and lease charge-offs, net of recoveries, as a percent of loans.

### Table V

**AVERAGE RATES OF RETURN ON SELECTED INTEREST-EARNING ASSETS**

**FIFTH DISTRICT COMMERCIAL BANKS, 1984-88**

(Percent)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total loans and leases</td>
<td>12.59</td>
<td>11.92</td>
<td>10.63</td>
<td>10.05</td>
<td>10.52</td>
</tr>
<tr>
<td>Net loans and leases</td>
<td>12.74</td>
<td>12.08</td>
<td>10.77</td>
<td>10.19</td>
<td>10.66</td>
</tr>
<tr>
<td>Total securities</td>
<td>9.68</td>
<td>9.01</td>
<td>8.30</td>
<td>7.61</td>
<td>8.01</td>
</tr>
<tr>
<td>All interest-earning assets</td>
<td>11.77</td>
<td>11.06</td>
<td>9.78</td>
<td>9.25</td>
<td>9.84</td>
</tr>
</tbody>
</table>

1 Net loans are total loans and leases net of the sum of allowance for loan and lease losses and allocated transfer risk reserve.

FEDERAL RESERVE BANK OF RICHMOND
Table VI

**AVERAGE COST OF FUNDS FOR SELECTED LIABILITIES**

**FIFTH DISTRICT COMMERCIAL BANKS, 1984-88**

*(Percent)*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest-bearing deposit accounts</td>
<td>8.72</td>
<td>7.89</td>
<td>6.77</td>
<td>6.12</td>
<td>6.58</td>
</tr>
<tr>
<td>Large certificates of deposit</td>
<td>9.47</td>
<td>7.91</td>
<td>7.07</td>
<td>6.65</td>
<td>7.43</td>
</tr>
<tr>
<td>Deposits in foreign offices</td>
<td>9.19</td>
<td>7.92</td>
<td>6.40</td>
<td>6.69</td>
<td>7.05</td>
</tr>
<tr>
<td>Other deposits</td>
<td>8.55</td>
<td>7.97</td>
<td>6.74</td>
<td>5.97</td>
<td>6.34</td>
</tr>
<tr>
<td>Subordinated notes and debentures</td>
<td>8.03</td>
<td>9.64</td>
<td>8.48</td>
<td>9.21</td>
<td>8.84</td>
</tr>
<tr>
<td>Fed funds</td>
<td>9.58</td>
<td>7.67</td>
<td>6.92</td>
<td>5.87</td>
<td>7.16</td>
</tr>
<tr>
<td>Other</td>
<td>9.18</td>
<td>6.73</td>
<td>5.19</td>
<td>7.34</td>
<td>7.75</td>
</tr>
<tr>
<td>All interest-bearing liabilities</td>
<td>8.84</td>
<td>7.90</td>
<td>6.76</td>
<td>6.13</td>
<td>6.72</td>
</tr>
</tbody>
</table>

Table VII

**EQUITY TO ASSET RATIOS**

*(Percent)*

<table>
<thead>
<tr>
<th></th>
<th>1986</th>
<th>1987</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fifth District</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td>9.41</td>
<td>7.92</td>
<td>5.56</td>
</tr>
<tr>
<td>1987</td>
<td>9.63</td>
<td>8.00</td>
<td>5.70</td>
</tr>
<tr>
<td>1988</td>
<td>9.68</td>
<td>7.92</td>
<td>5.91</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.31</td>
<td>6.41</td>
<td>6.55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1986</th>
<th>1987</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All U.S. Banks</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td>8.31</td>
<td>6.94</td>
<td>5.50</td>
</tr>
<tr>
<td>1987</td>
<td>8.55</td>
<td>7.22</td>
<td>5.18</td>
</tr>
<tr>
<td>1988</td>
<td>8.72</td>
<td>7.23</td>
<td>5.58</td>
</tr>
<tr>
<td></td>
<td>6.17</td>
<td>6.02</td>
<td>6.28</td>
</tr>
</tbody>
</table>

Note: Equity capital is common stock, perpetual preferred stock, surplus, undivided profits, and capital reserves.
MARKET RESPONSES TO PRICING FEDWIRE DAYLIGHT OVERDRAFTS*

David B. Humphrey

On an average day, about 1,100 U.S. depository institutions generate some $104 billion in funds transfer daylight overdrafts and another $55 billion in overdrafts from the transfer of book-entry U.S. government securities. Daylight overdrafts represent intraday negative reserve account balances on Fedwire (the Federal Reserve's wire transfer network) and uncovered net debit positions on CHIPS (a similar network owned by large New York banks). These overdrafts can last anywhere from a few minutes to most of the day, the latter being more common at the largest institutions.

Daylight overdrafts came into existence because it was less costly to use free intraday credit than to hold large intraday balances to cover the exponential growth in large dollar payments during the 1960s and 1970s. Until recently, there were no controls or costs associated with the use of daylight overdrafts. Thus free intraday credit led to market practices for many types of financial transactions that relied on overdrafts in order to be funded. There was no reason to develop alternative payment arrangements that would conserve on the use of this credit.

For example, in markets for federal funds, Eurodollars, and large certificates of deposit, borrowers commonly repay funds on maturing instruments in the morning but do not receive newly borrowed funds until later in the day. These repayment arrangements frequently occur even if a borrower renews or "rolls over" a maturing money market instrument with the same lender for an identical amount. A similar payment pattern is associated with commercial paper and certain types of third party or corporate payments, where payments are made in anticipation of receiving covering funds later in the day. These payment patterns can lead to daylight overdrafts in a bank's reserve account or in a customer's bank account. The purpose of this article is to consider what might happen if overdrafts are made more expensive or difficult to incur. The analysis will concentrate on funds transfer overdrafts. Similar responses are expected for U.S. government security book-entry overdrafts as well.

I. Recent Policy Initiatives

Current payment practices create credit risk for the Federal Reserve, which operates and provides for the finality of payments made over Fedwire. Should an institution fail unexpectedly while in overdraft, Reserve Banks would be exposed to losses. In addition, net debits on CHIPS, a private large dollar payment network, create systemic risk. An unexpected failure of a large CHIPS participant could cause other participants to fail in a domino-like fashion. Alternatively, if systemic risk is eliminated through a discount window loan to a failed CHIPS participant, the Federal Reserve is exposed to losses in its role as lender of last resort.

Payment system risks have been addressed by the Federal Reserve and banks and thrifts. In 1986, they and other federal and state supervisory authorities jointly implemented a system of quantitative limits on overdrafts and a program of upgrading internal credit, monitoring, and operational controls on both interbank overdrafts and overdrafts of customer accounts. These policies are currently being reexamined by the Federal Reserve. Among the possible next steps examined were: (1) further reductions in the existing quantitative limits (caps) on overdraft levels (they were reduced by 2.5 percent during 1987-88); (2) explicit fees for interbank overdrafts incurred on Fedwire; or (3) requiring clearing balances to cover overdrafts on Fedwire.

The alternatives would all have the same general effect. Overdrafts would be more expensive (implicitly or explicitly) than they now are and institutions would seek low cost ways to reduce them. After much study, the Board of Governors has chosen to seek public comment on the second alternative; that is, explicit prices on Fedwire daylight overdrafts.1

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* Comments by Ed Ettin, Tony Kuprianov, David Mengle, Steve Thieke, and John Wenninger were appreciated. This paper represents the author's views only and are not endorsed by the Federal Reserve System or its staff.

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It is understood that pricing Fedwire overdrafts would be combined with settlement finality on CHIPS so participants on both large-dollar payment networks would have incentives to reduce overdrafts. At the same time, settlement finality on CHIPS would reduce systemic risk by having participants absorb more of the risks their network creates. It also raises the implicit cost of permitting overdrafts on CHIPS and, to some extent, would reduce the likelihood of participants shifting overdrafts to CHIPS to avoid Fedwire overdraft charges.

If Fedwire overdrafts become more expensive to incur, at least four things could occur:

1. Payment reserve efficiency could improve through the use of “delayed sends” (where the sending of less time-critical payments is delayed until covering funds arrive);
2. Payments could shift from Fedwire to CHIPS;
3. New payment netting arrangements could be expanded (e.g., rollovers and continuing contracts for funds transfers); and
4. An intraday market could develop where funds can be borrowed earlier or securities delivered later, for a fee, to cover payments which would otherwise result in overdrafts.

The four responses are listed in the order of their likely increasing cost. As such, they represent an upward sloping supply curve. In what follows, each of the four market responses are analyzed in more detail. Where possible, approximate estimates of their likely effect on Fedwire overdraft reduction are presented. The conclusion is that very large reductions in Fedwire overdrafts could result from relatively small price incentives.

II. Improving the Efficiency of Payment Reserve Use

Pricing overdrafts will induce banks to use their existing stock of payment reserves more efficiently. This will be reflected by a rising turnover ratio. Instead of sending payments as fast as they can be entered into a network—creating overdrafts as a result—internal operating controls can be used to delay the entering of certain types of payments until covering funds arrive. This will mean that the same value of payments can be sent over the day with a smaller amount of payment reserves, which increases the turnover ratio.

Some large banks use such internal controls today to keep their overdrafts from exceeding a certain percentage, say 80 or 90 percent, of their cap. Because some payments will be in a queue, this arrangement can lengthen the time it can take to complete a payment. But fewer payments will be made without cover and this means lower overdrafts and payment risk.

Efficiency in the use of payment reserves: Fedwire, CHIPS, and Switzerland Some large banks on Fedwire have used delayed sends as a simple and low-cost method to control funds transfer overdrafts. Even so, the total effect for all Fedwire users has been to keep the turnover ratio of the value of Fedwire funds transfer payments to payment reserves roughly constant over the three years ending in mid-1988. Even though Fedwire funds transfer payments rose by 41 percent (Table I), payment reserves (reserves plus overdrafts) rose by 36 percent. The net effect was to increase the Fedwire turnover ratio from 6.04 to 6.26, only a 4 percent rise in efficiency.

The situation on CHIPS has been quite different. On CHIPS, payment value rose 120 percent over the same three-year period (Table I) while payment reserves (net debits or overdrafts) fell slightly by 1 percent. As a result, the turnover ratio more than doubled from 6.39 to 14.14 and generated a 121 percent increase in payment reserve efficiency. Anecdotal information suggests that this increased efficiency was the result of controls on the timing of the entry of payments into the CHIPS network. The incentive was the imposition by CHIPS participants of relatively stringent bilateral net credit limits on other participants and relatively low net debit caps imposed by CHIPS rules. (In contrast to the Fedwire cap, the CHIPS caps were low enough to be binding or close to binding on many of the large CHIPS participants.) Data on CHIPS time of origination suggest that the actual value of delayed sends associated with such a marked increase in the efficiency of payment reserve use has been small.

4 In the fourth quarter of 1985, the dollar share of CHIPS payments made between the opening of the network and noon, between noon and 3 p.m., and between 3 and 4 p.m. was, respectively, 48, 53, and 14 percent (for a total of 95 percent). In the fourth quarter of 1987, these shares were 46, 38, and 11 percent. Thus the shift from the morning to the afternoon affected 2 percent of all payments made over CHIPS (or 2 percent/48 percent = 4 percent of the morning payments value prior to caps). Belton et al. (1987), Chart 5.

4 Payments over CHIPS are currently provisional until end-of-day settlement. Under settlement finality, participants receiving CHIPS payments will be required to provide funds to assure settlement in case a sending participant in a net debit position fails to settle. There can be no settlement unwind in the event of a failure to settle by one or more CHIPS participants.

3 Because it is unlikely that there will be much of a shift in wire transfer volume or value to checks or ACH, this potential response is not discussed.
Table I

FEDWIRE AND CHIPS PAYMENT RESERVES
TURNOVER RATIOS
($ billions)

<table>
<thead>
<tr>
<th></th>
<th>1985:Q2</th>
<th>1988:Q2</th>
<th>Percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fedwire:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funds transfer payments</td>
<td>$428.0</td>
<td>$605.0</td>
<td>41</td>
</tr>
<tr>
<td>Payment reserves:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserves at Reserve Banks</td>
<td>$23.0</td>
<td>$37.6</td>
<td>63</td>
</tr>
<tr>
<td>Funds transfer overdrafts</td>
<td>$47.9</td>
<td>$59.0</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>$70.9</td>
<td>$96.6</td>
<td>36</td>
</tr>
<tr>
<td>Turnover ratio:</td>
<td>6.04</td>
<td>6.26</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1985:Q2</th>
<th>1988:Q2</th>
<th>Percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHIPS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funds transfer payments</td>
<td>$288.0</td>
<td>$635.0</td>
<td>120</td>
</tr>
<tr>
<td>Payment reserves:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserves at Reserve Banks</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Funds transfer overdrafts</td>
<td>$45.1</td>
<td>$44.9</td>
<td>-1</td>
</tr>
<tr>
<td>Total</td>
<td>$45.1</td>
<td>$44.9</td>
<td>-1</td>
</tr>
<tr>
<td>Turnover ratio:</td>
<td>6.39</td>
<td>14.14</td>
<td>121</td>
</tr>
</tbody>
</table>

1 Assumes that all reserves are, in effect, used for funds transfer, not book-entry security transfers which currently do not have a cap.

Because each $1 of delayed sends can reduce overdrafts by $1, small improvements in payments timing and synchronization can lead to large decreases in the use of overdrafts to support the same value of payments.

Far greater increases in payment reserve efficiency have been achieved in Switzerland (see Box I). In little over a year, funds transfer payments in Switzerland (Table II) rose by 11 percent but payment reserves fell by 88 percent. This led to a dramatic rise in the turnover ratio. The ratio rose from 2.77, a level of less than half that on Fedwire or CHIPS prior to caps, to 25.37, a level almost twice as high as CHIPS or four times as high as Fedwire after caps. This striking change was the result of developing a central operating facility that processes a payment on a first-in-first-out basis and automatically queues payment orders which would create an overdraft. In effect, Switzerland has an explicit policy of centralizing delayed sends where reserve balances alone are used to fund, over the day, all payments entered. Daylight overdrafts have been eliminated. The queueing process has not created an intraday market in funds of securities although, on some occasions, banks have had to purchase funds to permit certain payments to be made.

Potential for improved payment reserve efficiency in the United States  The Swiss experience with increased payment reserve efficiency is unlikely to transfer to the United States intact. Because the Swiss system is centralized, payments in each participant's queue are sent out as soon as covering funds are received. Also, early payments are encouraged by lower transaction fees in the morning compared with later in the day. Early entering of payment messages increases payment reserve efficiency by minimizing the accumulation of idle reserves or net credits by all participants. If some participants entered all their payments later in the day, others would be forced to increase the size of their queues in order to handle the same value of payments.

While the composition of payments being sent over the Swiss network are different from those over CHIPS or, especially, Fedwire, in the current environment this should not affect the efficiency of

Table II

CHANGES IN OVERDRAFTS AND RESERVE BALANCE TURNOVER
UNDER SWISS INTERBANK CLEARING SYSTEM

<table>
<thead>
<tr>
<th></th>
<th>1985:Q2</th>
<th>September 1988</th>
<th>Percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds transfer payments</td>
<td>$61.6</td>
<td>$68.5</td>
<td>11</td>
</tr>
<tr>
<td>Payment reserves:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserves at Swiss National Bank</td>
<td>$5.1</td>
<td>$2.7</td>
<td>-47</td>
</tr>
<tr>
<td>Funds transfer overdrafts</td>
<td>$17.1</td>
<td>0</td>
<td>-100</td>
</tr>
<tr>
<td>Total</td>
<td>$22.2</td>
<td>$2.7</td>
<td>-88</td>
</tr>
<tr>
<td>Turnover ratio:</td>
<td>2.77</td>
<td>25.37</td>
<td>816</td>
</tr>
</tbody>
</table>

1 Actual reserves were higher but the amounts shown here were the values transferred to a special account to be used to settle payments.
2 Daylight overdrafts ranged between 20 and 30 billion Swiss francs so 25 was chosen, giving an "average" daily dollar value of $17.1 billion with an exchange rate of 1.46 Sfr. to $1.
Box 1

Efficiency in the Use of Payment Reserves: The Swiss Experience

The experience of Switzerland is instructive as an example of an extreme case in which delayed sends are a direct and desired result of a national policy to reduce overdrafts. In the second quarter of 1987, daylight overdrafts in Switzerland were $17.1 billion (using the exchange rate of $1 = 1.46 Swiss francs). Reserves at the Swiss National Bank which were used to settle payments were $5.1 billion. Total payment reserves in use were thus the sum of these two components ($22.2 billion) and were associated with $61.6 billion in payments, around 10 percent of the value of Fedwire funds transfer payments. This gave a very low turnover ratio of 2.77 (Table II), which was less than half of the 6.04 value for the United States on Fedwire.

The Swiss policy toward overdrafts has been to ban them, in effect, by setting up a centralized system that processes a payment only if no overdraft would be created; otherwise each payment order waits in the queue to be processed on a first-in-first-out basis once covering funds are received. Typically, the 156 participants in the facility enter so many payments in the morning (45 percent of the total are entered prior to the opening of the facility) that a waiting queue of around 30 percent of the entered payment orders is maintained until midday after which the queue drops off sharply and usually reaches zero by day's end. Over one-third of payments are made (and settled) within ten minutes of being validated while two-thirds are made within two hours. Only a very small volume of payments (2.5 percent) are in the queue for more than five hours.

The fact that a payment queue develops for most or virtually all participants early in the processing day means that reserve balances and payment credits received can be reused immediately by other participants as initial out-payments are made. Thus, unlike the situation on Fedwire, and to some degree on CHIPS, large and small participants are encouraged to send payments early in the processing day and not to build up idle credits (payment reserves) for later use. On Fedwire and CHIPS, many small participants accumulate reserves and net credits early in the day and use them only later. Of necessity, this limits the increase in payment turnover efficiency achievable in the United States—which has almost 7,000 users of Fedwire and 137 on CHIPS, versus 156 on the Swiss system—unless all participants, not just the large ones, are encouraged to make payments when reserves are available.

The result for Switzerland of encouraging all participants to enter payments early (to minimize the accumulation of idle reserves) necessarily leads to the buildup of a queue of delayed sends but also leads to more efficient use of payment reserves. Prior to this development, each dollar of Swiss payment reserves supported $2.77 in payments. As of October 1988, each dollar of reserves supported $25.37 in payments. Overdrafts were zero even as an increased payment value was processed. One reason for the Swiss success is likely due to the very concentrated nature of banking in Switzerland. This has made it easier to resolve problems and simplifies the operational structure of the centralized payment queuing system.

The Swiss experience illustrates that delayed sends, if properly handled, are not inherently bad since overdrafts can be markedly reduced by increasing the efficiency of payment reserves. It also supports the anecdotal evidence that the observed increase in payment reserve efficiency on CHIPS was brought about largely by an internal policy of delaying sends at individual banks.

Currently in the discussion stage is a new CHIPS operating rule specifying that a significant proportion of each participant's payments should be sent by noon. At present, many smaller participants fall short of this figure while the larger banks exceed it. Because the larger banks now send more than 50 percent of their payments value prior to noon, the proportion of all CHIPS payments sent by noon also exceeds 50 percent but this burden is borne by the larger banks. By contrast, only 20 percent of Fedwire funds transfer payment value is sent by noon. If CHIPS adopts such a new payment rule for each participant, the accumulation of idle payment reserves (net credits) should fall, resulting in a further increase in payment efficiency. This will also relieve some of the delayed send burden currently borne by large CHIPS banks. In the CHIPS case, as well as that for Switzerland, these results have been induced by having a binding cap (which in the Swiss case is zero). Pricing, as is being proposed for Fedwire, can achieve the same ends.

These and other data are contained in Vital and Mengle (1988) and Vital (1988).
payment reserve use. In the Swiss case, over 90 percent of the value of payments handled are from foreign exchange transactions. In contrast, foreign exchange transactions on CHIPS account for 55 percent while Eurodollar transactions comprise 28 percent. Fedwire handles virtually no foreign exchange transactions but instead concentrates on federal funds, Eurodollars, and commercial paper. These are, respectively, 42, 10, and 10 percent of total Fedwire payment value. As long as there is no important intraday market in funds or securities, timeliness of payments should not be more important for any of these different types of payments. The exception is where institutional practice has evolved to make it important, as for morning return of overnight federal funds borrowings and third party real estate and other contract settlement payments.

In the United States, delayed sends are not queued in a centralized location; instead the queue occurs at individual banks before the payment orders enter Fedwire. This fact, and the lack of an incentive for all participants to minimize the accumulation of idle reserves or credits, likely means that the upper limit to the turnover ratio in the United States will be considerably less than that for Switzerland. It also means that the costs of implementing delayed send arrangements in the United States will exceed those for Switzerland (even after adjusting for the different payment volume levels) because each bank will have to develop and refine its own system rather than having a centralized arrangement. Overall, however, it may not be unreasonable to assume that Fedwire could achieve one-half the payment reserve efficiency increase recently experienced by CHIPS. If realized, such an improvement in efficiency could reduce Fedwire funds transfer overdrafts by 63 percent and thereby effect a significant reduction in payment risk with no offsetting increase in risks elsewhere. If, instead, only one-fourth of the CHIPS payment reserve efficiency is realized on Fedwire, then overdrafts would fall by 39 percent.

III. Shifting Payments from Fedwire to CHIPS

A second market response to priced Fedwire overdrafts is a shift of Fedwire funds transfers to CHIPS. Priced Fedwire overdrafts could become unpriced

6 Cooperation among CHIPS participants is important because if only one participant shifted its Fedwire payments and overdrafts to CHIPS, then receiving CHIPS participants would find that their Fedwire overdrafts and costs had increased since they would be receiving a CHIPS credit payment in place of a Fedwire credit. In response, the receivers could lower their bilateral net credit limit to the sending participant, reducing the value of CHIPS payments received, and/or have the receiving customer instruct the sending customer to send a Fedwire payment as before.
In addition to the relative economic costs of overdrafts on CHIPS and Fedwire, bank accounting conventions might also encourage shifting. While the Fedwire charges will be directly reflected on the bank’s annual income statement, CHIPS’s economic costs do not appear on the income statement unless a loss were to actually occur. This is also a reason why correspondent balances have often been favored over the payment of direct fees for the purchase of interbank services. Thus, even if the actual economic costs of incurring an overdraft on CHIPS were equal to those on Fedwire, CHIPS could be the preferred network to incur an overdraft, at least until a sizeable loss actually occurs.

How much may shift Fedwire payments could be shifted if there were unused or excess overdraft cap capacity on CHIPS. An idea of the potential for such shifts may be gained by calculating the difference between each participant’s current CHIPS cap and its peak net debit. This represents an initial estimate of the value of each participant’s excess cap capacity. Assuming the initial overdraft value which could shift to CHIPS to be the smaller of a participant’s current Fedwire overdraft or excess cap capacity on CHIPS, the initial shifts would total to $6.7 billion. Because each $1 in Fedwire funds transfer payments of a single bank in or about to go into overdraft on Fedwire is on the margin associated with $1 in overdrafts, a shift of $6.7 billion in Fedwire overdrafts implies a similar shift in payment value to CHIPS.

While these estimates are correct if each bank acts in isolation, they cannot be summed. Once many banks simultaneously shift their payments to CHIPS, the marginal relationship for an individual bank of $1 in shifted Fedwire payments to $1 in reduced Fedwire overdrafts cannot be used. As other banks also shift their payments to CHIPS, the receipt of Fedwire credits will fall such that each $1 in Fedwire payments shifted to CHIPS will generate less than a $1 reduction in Fedwire overdrafts. Thus when many banks act together, the average relationship between Fedwire overdrafts and Fedwire payments is the more likely outcome. Here each $1 in shifted Fedwire payments would reduce Fedwire overdrafts by $0.98 (not $1). Applying the average relationship between overdrafts and payments to the payment shift estimate would then provide an estimate of the reduction in Fedwire overdrafts.

But the payment shift estimate of $6.7 billion probably should not be used; it is likely to be a lower bound due to a feedback effect. While each $1 previously sent over Fedwire by a CHIPS participant to another participant will initially reduce the sender’s Fedwire overdraft by $1, it will also reduce the receiver’s Fedwire credits by $1. With fewer Fedwire credits, the receiver’s Fedwire overdraft may rise by as much as $1 (if the receiver is already in overdraft on Fedwire). In response, the receiver may also shift payments from Fedwire to CHIPS and, in a dynamic interaction among the various CHIPS participants, may eventually succeed in increasing the Fedwire overdraft of the original sender.

The feedback effect will stop only when: (a) CHIPS receivers reduce their bilateral net credit limits; (b) Fedwire overdrafts by CHIPS participants equal zero; or (c) all CHIPS to CHIPS payments over Fedwire have shifted to CHIPS. The limiting case is (c) since the value of shifted payments under (a) or (b) could not exceed those of (c). With case (c), $204 billion in Fedwire payments could shift to CHIPS. Assuming that the average relationship between all Fedwire funds transfer overdrafts and payments holds for all CHIPS to CHIPS payments, then $20 billion in Fedwire overdrafts could shift to CHIPS ($204 × .098 = $20). This would represent a 34 percent reduction in Fedwire funds transfer overdrafts and a 45 percent increase in CHIPS net debits.

IV. Payment Netting for Funds Transfers

In markets for federal funds and Eurodollars, it has been institutional practice for some time for borrowers to repay funds on maturing instruments in the morning, even though they do not receive newly borrowed funds until later the same day. These repayment arrangements frequently occur even if a borrower renew or rolls over a maturing money market instrument with the same lender for an identical amount. A similar payment pattern is associated with certain types of third party or corporate payments, where payments are made in anticipation of funds to be received later in the day. These payment patterns create daylight overdrafts.

Payment netting represents a fundamental change in the institutional structure and underlying risk of participation in financial markets. Today, gross legal payment obligations typically lead to corresponding gross payment flows between two parties in a transaction. Certain types of netting would reduce the underlying legal payment obligations to net terms, leading to smaller net payment flows to satisfy legal obligations. Such an arrangement can significantly lessen actual risk between banks since legal exposures are reduced. And, since this directly translates into a reduced value of payment flows over Fedwire (or CHIPS), payment netting should also limit the size and growth of daylight overdrafts. Other types of netting merely involve the movement of net funds flows.
which are equal to the difference in gross payment obligations between two consecutive time periods. This can also reduce overdrafts.

Types of payments that are easiest to net Funds transfer payment netting arrangements can perhaps be most easily applied in three different financial markets. These are spot and forward foreign exchange transactions, overnight federal funds borrowings, and overnight Eurodollar positions. Some idea of the effect of payment netting on Fedwire and CHIPS overdrafts is obtained by comparing the percent that overdrafts are of payments with the percent of nettable payments shown in Table III. On Fedwire, overdrafts are 9.8 percent while nettable payments are 52 percent. Thus if only a relatively small portion of Fedwire nettable payments were actually netted, daylight overdrafts would be significantly reduced. A similar conclusion also applies to CHIPS since overdrafts there are 7.1 percent while nettable payments are 83 percent.

Overdraft reduction from federal funds netting Overdrafts can be reduced through many different types of netting arrangements (see Box 2). This includes netting by novation for foreign exchange transactions along with rollovers and continuing contracts for overnight federal funds and Eurodollars. Overdrafts are also reduced with on-the-books settlement procedures or the use of term rather than overnight funds. In what follows, the overdraft reduction which could result from rollovers and continuing contracts is estimated.

With a federal funds rollover, all funds borrowed from one seller for one overnight period would be reborrowed from the same seller for the following period. Overdrafts would be reduced because both parties would have agreed that until the rollover arrangement is terminated, there would be no need to move funds back and forth between themselves. Since there is no change in the gross overnight position between the buyer and the seller, the net payment required is zero. For banks that regularly incur overdrafts, each dollar of overnight federal funds rolled over represents a dollar's worth of daylight overdraft reduction.

With a continuing contract, only part of the overnight position is continued to the next overnight borrowing period. Instead of sending two wire transfers for the gross amounts involved, a single wire transfer for the net change in the gross position (plus the previous day's interest) would need to be sent. This too can reduce overdrafts but by a smaller amount than a rollover, depending on the size of the net difference in gross positions and hence the size of the single net wire transfer being sent.

---

### Table III

**IMPORTANCE OF NETTABLE PAYMENTS ON FEDWIRE AND CHIPS**

(1988:Q2)

<table>
<thead>
<tr>
<th>Type of Payment</th>
<th>Payment Value over Network</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fedwire (percent)</td>
</tr>
<tr>
<td>Spot and Forward Foreign Exchange</td>
<td>0</td>
</tr>
<tr>
<td>Overnight Federal Funds¹</td>
<td>42</td>
</tr>
<tr>
<td>Overnight Eurodollars</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>52</strong></td>
</tr>
<tr>
<td><strong>$ All Overdrafts²</strong></td>
<td><strong>9.8</strong></td>
</tr>
<tr>
<td><strong>$ All Payments</strong></td>
<td></td>
</tr>
</tbody>
</table>

1 Includes 3-party repurchase agreements which will show up as a funds rather than a securities transfer.

2 The overdraft/payment ratios do not include security transfer overdrafts.


The first step in estimating the potential effect of federal funds netting is to determine the underlying purpose of the federal funds being purchased. Toward this end, the Large-Dollar Payments System Advisory Group sponsored a recent survey of eight large banks in New York, Chicago, and elsewhere. The results are summarized in Table IV.

The survey revealed that 79 percent of federal funds purchased were related to funding requirements, while 14 percent were used for end-of-day positioning for reserve requirement purposes. Finally, 7 percent were associated with trading activity, where the purchased funds were resold to other buyers later in the day. Unfortunately, not all three categories are equally amenable to payment netting. The successful implementation of rollovers or continuing contracts requires that the seller and buyer be the same between contract periods. This is most likely to occur for funding requirements but would be more difficult for end-of-day positioning or trading activity.

To estimate the portion of the federal funds market available for netting, one must determine how the various categories of purchased federal funds are settled. According to the survey, 20 percent of federal funds are already settled by rollover or continuing contract, or are term funds. And some 32 percent of purchased funds are settled on the books of the purchasing bank. Of course, neither of these settlement categories has many payments that go over a wire transfer network. As a result, the value of federal

FEDERAL RESERVE BANK OF RICHMOND
Box 2

Overdraft Reduction Using Netting Arrangements

Foreign Exchange Netting

Overdraft reduction can be achieved a number of different ways. The most well-known netting arrangement is foreign exchange netting which is currently used in London and is under study for New York. The three salient features concerning foreign exchange netting are:

1. It is currently bilateral in nature;
2. The bilateral gross transactions flows are being continuously netted by legal agreement so that at any point in time the total exposure is only the net position; and
3. There is a single settlement payment for this net exposure on the value date.

The bilateral nature of the transaction permits the counterparties full control over their credit exposure and so assists in limiting payment risk. And the ability to continuously net gross transactions effectively means that each new transaction is associated with a new contract for the new net amount due. Since the old contract is replaced each time a new gross transaction is initiated, this has been called netting by novation. Finally, one relatively small net payment replaces what could otherwise be a series of larger gross transfers over a wire network during the course of a day. This can contribute to overdraft reduction since fewer payments would need to be made and those that are made would be for a smaller dollar amount.

Netting Overnight Funds

A somewhat different arrangement would apply for netting overnight federal funds and Eurodollar transactions. Here a single bilateral gross borrowing position may be fully rolled over into the next time period with the same seller. This means that the borrowing and lending parties extend their current borrowing agreement to the next time period without the need to transfer funds over a wire network. With a rollover, there is no need to repay the previous night’s borrowing and, after an operational delay, retransfer the same amount back again to fund the next overnight period.1

Alternatively, if only a portion of the full amount is being continued for the next time period with the same lender, only the net difference in overnight borrowings would need to be transferred (perhaps along with the interest earned from the previous overnight period). This has been called a continuing contract. Since either a rollover or a continuing contract would mean that small net payments would be made to settle changes in gross overnight or term borrowing positions with the same party, payment volume and overdrafts could fall.

Implicit Netting

Other arrangements in the funds market have the same effects as netting on payments and overdrafts. Two of the most important would be the use of term funds and on-the-books settlement. Overdrafts can be reduced when term funds are used in place of overnight funds since the repayment of borrowed funds and the subsequent reborrowing of new funds for the next period would naturally occur less frequently for term funding than for overnight funding. The effect on overdrafts is the same between overnight and term funds on the day the term funds come due, are repaid, and are refinanced for the next period. But on all other days, no such payment flows occur for term funds. Thus the use of term federal or Eurodollar funds in place of overnight funds can reduce the overdrafts as an average over, say, a two-week period.

On-the-books settlement is used today and is another way to reduce daylight overdrafts. A correspondent bank that receives a cash letter from a respondent institution would buy the same value of overnight federal funds from the respondent. It would then debit an internal “due-to” account rather than have the respondent draw down the funds with a wire transfer and later sell the correspondent (or someone else) federal funds. Repayment of borrowed funds could take place by crediting the internal due-to account the next day. Because the funds flows take place between accounts within the purchasing bank and not over a wire transfer network, they reduce external payment flows and their associated overdrafts.

---

1 Such an arrangement represents a special type of intraday market where the overnight seller of funds is also the intraday seller. When the buyer and seller differ each day, overdraft reduction can still occur by altering the time of delivery or return of overnight funds. See Section V.
Table IV  
EFFECT OF FEDERAL FUNDS NETTING ON FEDWIRE

<table>
<thead>
<tr>
<th>Funding Requirements</th>
<th>End-of-Day Positioning</th>
<th>Trading Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>(79%)</td>
<td>(14%)</td>
<td>(7%)</td>
</tr>
<tr>
<td>Rollover, Continuing Contract, and Term Settlement</td>
<td>On-the-Books Settlement</td>
<td>Fedwire Settlement</td>
</tr>
<tr>
<td>(20%)</td>
<td>(32%)</td>
<td>(48%)</td>
</tr>
</tbody>
</table>

Federal funds available for netting = 27%

(48% - 14% - 7% = 27%)

Source: D. Humphrey, 1987. This survey was sponsored by the Federal Funds Netting Committee (a working committee of the Large-Dollar Payments System Advisory Group).

funds settled using the two procedures do not contribute significantly to daylight overdrafts. Thus only 48 percent of purchased federal funds—those that move and are settled over Fedwire—are available for new netting activity from a settlement standpoint.

The very bottom of Table IV shows a final estimate of the amount of federal funds available for netting. The estimate is derived by taking the 48 percent settled over Fedwire and subtracting the 14 plus 7 percentage points of federal funds associated with end-of-day positioning and trading activity. The net result is that 27 percent of the total federal funds market could be available for netting.

The size of the overnight federal funds market averaged $186 billion a day in 1988. This includes collateralized federal funds as well as brokered federal funds (about $50 billion), although the latter may not be as easy to net. Thus, 27 percent of $186 billion yields $50 billion as the dollar estimate of the value of federal funds available for netting. Since funds transfer daylight overdrafts are $59.0 billion, the possible effect of federal funds netting could be to reduce Fedwire funds transfer overdrafts by 85 percent.8

Impact of payments netting on sellers of overnight funds

One should also consider the needs of the funds suppliers. While payment netting by funds purchasers can reduce the need to make payments and thus incur overdrafts, some funds suppliers may consider themselves disadvantaged. First, although this particular effect is likely to be small, federal funds netting by funds sellers increases total exposure from around 18 to 20 hours today, in a typical overnight arrangement, to 24 hours with netting. Today, borrowed funds are often routinely returned to the seller in the morning and then sent back to the same or another borrower 4 to 6 hours later. Under a rollover or continuing contract arrangement, however, the morning and afternoon funds flows do not take place. Second, there may be some federal funds sellers that have come to rely on the early morning return of funds lent out the previous afternoon to prevent their own payment activities from creating an overdraft.

While it is not possible to accurately quantify the likely influence these two effects may have on the amount of federal funds available for netting, there are grounds for believing their influence will be small. One reason is that most of the funding activity in the federal funds market is between large bank buyers and either small bank sellers or nonbank sellers. Non-bank sellers include the Federal Home Loan Banks and the Credit Union Centrals, which are estimated to sell 44 percent of all federal funds purchased. These sellers typically do not have overdraft problems nor do they have much large dollar wire transfer payment activity. Thus most of them would not find that they had created an overdraft problem where none existed before if they entered into a federal funds netting arrangement for a portion of the funds they sell.

The one instance in which a seller would have difficulty supplying federal funds under a netting arrangement is if the supplier is itself a large bank that either has or would have an overdraft problem if it did not have use of its own funds for 4 to 6 hours each day. But large bank buyers purchase funds primarily from large bank sellers for end-of-day positioning and trading activity, both of which have been excluded from the estimate of the value of federal funds available for netting. In sum, it is unlikely that the needs of the federal funds seller will

7 The end-of-day stock of purchased federal funds was $147 billion and reflects the 79 percent of the market related to funding activity (Table IV). This figure is adjusted upward to include end-of-day positioning (14 percent) and trading account activity (7 percent) which contribute to the federal funds market flow during the day but would likely, on average, be excluded from the end-of-day stock measure: $147 billion + .14(X) + .07(X) = X = $147 billion/79 = $186 billion.

8 These results are consistent with those performed earlier using 1981 data and a different technique. Humphrey (1984), pp. 86-89.
be an insurmountable obstacle in making payment
netting a workable arrangement, especially if pursued
aggressively by federal funds purchasers.
There is no hard information on what the costs
of federal funds netting might be. Anecdotal evidence
suggests, however, that the ongoing cost of federal
funds netting could be zero for small sellers of funds,
such as downstream respondents with other business
relationships with the purchasing bank. At the higher
end of the range, it could be 12 basis points (at an
annual rate) for large bank and nonbank sellers of
funds, that can more easily sell large amounts in a
national market.

Netting other payments There is not enough infor-
mation on the current structure of the foreign ex-
change or Eurodollar markets to provide a numerical
estimate of the effect of netting in these two areas
on Fedwire (or CHIPS) daylight overdrafts. How-
ever, industry opinion is that many of the foreign
exchange transactions over CHIPS will be amenable
to multilateral netting by novation arrangements,
similar to the bilateral netting in foreign exchange
which now occurs in London.9 United States banks
are currently working on developing such a
multilateral arrangement, with appropriate safeguards
to ensure settlement and virtually eliminate systemic
risk. Foreign exchange netting is being driven by a
desire to reduce CHIPS and bank legal exposures
and, importantly, by the new risk-based international
capital standards which will require some capital to
back these off-balance sheet activities. The Federal
Reserve and other regulators have indicated that they
will likely view the resulting net exposures (rather
than the gross position) as those requiring capital,
if the netting arrangement meets certain criteria.

Finally, there is the possibility of applying rollovers
and continuing contracts to overnight Eurodollar
funding transactions. Industry sources indicate that
these arrangements would be feasible but the likely
effect on overdrafts is unknown. However, the
effects could apparently be substantial since
Eurodollar transactions account for 28 percent of the
value of CHIPS payments and 10 percent of Fed-
wire payments (Table III).

V. Development of an Intraday
Funds Market

Probably the most operationally difficult response
to pricing Fedwire overdrafts will be the development

9 One large bank has estimated that foreign exchange netting
by novation with 25 of its top foreign exchange counterparties
could reduce its foreign exchange payments by 20 to 30 per-

VI. Summary and Conclusions

The Federal Reserve has made a policy judgement
that the credit risk of daylight overdrafts on Fedwire
needs to be reduced. One way of doing so is to price
Fedwire overdrafts. If pricing is used, four possible
market responses can be expected to reduce over-
drafts and the associated credit risk. Listed in order
of their likely increasing cost to banks, they are:
(1) improving the efficiency of payment reserves by
delaying sends of less time-critical payments;
(2) shifting payments from (priced) Fedwire to

...
CHIPS (which would have settlement finality); (3) expanding new payment netting arrangements (rollovers and continuing contracts); and (4) developing a market for intraday funds. The first three market responses, when combined, strongly suggest that Fedwire funds transfer overdrafts could be virtually eliminated even if the overdraft price were relatively low, because the cost per dollar of payments being made is also low. If in addition an intraday market develops, this conclusion becomes even more certain. The results are summarized in Table V.

Delaying sends of postponable payments is currently used by large banks on CHIPS. As a result, the CHIPS payment reserves turnover ratio (the ratio of payment value to net debits) rose 120 percent over the last three years. This is equivalent to reducing CHIPS net debits by over half if payment value were constant (instead of growing). Switzerland uses a centralized delayed send operating facility with payment queues to increase its payment reserve turnover ratio. So far, it has eliminated overdrafts but still processes the same value of payments over its (smaller) wire transfer network. Analysis suggests that the delay of certain less time-critical funds transfer payments on Fedwire could result in a potential 63 (or 39) percent reduction in funds transfer overdrafts. Such an estimated reduction is based on achieving only one-half (or one-fourth) of the improved payment reserves efficiency obtained by CHIPS over the last three years.

A second market response to more expensive overdrafts concerns the potential for shifting Fedwire funds transfer overdrafts and payments to CHIPS. Analysis of the current level of CHIPS participant to CHIPS participant payments going over Fedwire suggests that 34 percent of Fedwire funds transfer overdrafts could, at a maximum, shift to CHIPS. If such a shift occurred, overdrafts and credit risk for CHIPS participants would rise by 45 percent. However, the adoption of settlement finality on CHIPS clearly results in reduced systemic risk, even after the shift.

Third, there is the possibility of payment netting on Fedwire, specifically federal funds netting. It is estimated that federal funds netting (through rollovers and continuing contracts) could by itself reduce Fedwire funds transfer overdrafts by 85 percent. Such netting would apply only to funding activities. Based on anecdotal information, the extra cost of rollovers or continuing contracts could range from zero to 12 basis points (annual rate) per dollar of overdrafts incurred. Thus the Fedwire overdraft price would not have to be very high to induce this and other market responses.

When the above three market responses are combined, even allowing for some possible double counting, it would seem that Fedwire funds transfer overdrafts could be virtually eliminated. To the extent overdrafts remain, there is always the possibility of an intraday funds market evolving to take up the slack. If such a market were to arise, it is likely that unpriced delayed sends would become time-critical, would be priced intraday, and thereby would be absorbed as part of an intraday funds market. The most likely evolution of such a market would be the development of a price differential between early and later return of overnight borrowed funds, a differential that would likely be less than the Fedwire overdraft price. The Fedwire overdraft price suggested in the Federal Reserve’s public comment document was on the order of 25 basis points (annual rate) per $1 in average (not peak) Fedwire overdrafts. Since this would apply to only 255 business days over the year, the realized rate would be only 70 percent of the specified rate or 17 basis points per dollar of Fedwire average overdrafts.

<table>
<thead>
<tr>
<th>Market Response</th>
<th>Potential Fedwire Overdraft Reduction¹ (percent)</th>
</tr>
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<tbody>
<tr>
<td>1. Improved Payment Reserve Efficiency:</td>
<td></td>
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<tr>
<td>One-half CHIPS efficiency</td>
<td>63</td>
</tr>
<tr>
<td>One-fourth CHIPS efficiency</td>
<td>39</td>
</tr>
<tr>
<td>2. Shift Payments to CHIPS</td>
<td>34</td>
</tr>
<tr>
<td>3. Rollovers and Continuing Contracts</td>
<td>85</td>
</tr>
<tr>
<td>4. Intraday Funds Market</td>
<td>virtually unlimited</td>
</tr>
</tbody>
</table>

¹ Each estimate refers to a single market response in isolation. The responses are not additive, as this could involve double counting. Payments shifted to CHIPS could also be delayed, improving payment reserve efficiency. Once one market action is taken, the payment is no longer a candidate for another market response.
References


